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WORLD ECONOMIC FORUM

Preventing Global Deforestation: China's Actions and Opportunities

WHITE PAPER

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Preface

Liming Chen
Chair of Greater China and Member of the Executive Committee, World Economic Forum

Zhu Hongren
Executive Vice-President and Director-General of China Enterprise Confederation and the China Enterprise Directors Association

While international trade brings immense convenience into our lives, it also connects the world's forests and land through a web of soft commodity trading. Value chains of products such as soybean, beef, palm oil and forest products contribute to global deforestation and land use change.

How can China, as a giant consumer and manufacturer of agricultural and forest products, lead global partners in taking collective and innovative action? What role can its government and businesses play?

This white paper examines the most promising initiatives that are currently under way to build sustainability into soft commodity supply chains. Based on this, it draws some actionable conclusions.

First, multistakeholder consensus needs to be built around the conviction that establishing responsible, healthy and sustainable supply chains is essential for preventing deforestation and land degradation, which in turn are imperative for tackling climate change.

Second, global and collective actions are required from upstream producing, midstream trading and downstream purchasing/consuming companies to promote green transformation of soft commodity supply chains.

Third, while businesses are no doubt the primary players in soft commodity supply chains, efforts to mobilize collectively must include policy and financial instruments, as well as investments in technological innovation, capacity building and consumer awareness.

The efforts presented in this white paper embody China's commitment to an "ecological civilization", which entails building a shared future for all life on earth. We hope this white paper will establish a starting position from which more Chinese companies in the soft commodities segment can take action to prevent and avoid deforestation and land use change in their procurement and supply chains.

We invite more business leaders to join hands in this endeavour to make soft commodity supply chains greener and more sustainable.

Executive summary

Globally, the demand for agriculture and forestry commodities such as soybean, palm oil, beef and paper is increasing rapidly. If not managed efficiently and sustainably, forested and agricultural lands will undergo deforestation and land use changes, both of which emit vast amounts of carbon into the atmosphere.

Chinese companies, which operate in a major demand market for agriculture and forest products, have an opportunity to both contribute to and gain from the ongoing transition towards green supply chains of soft commodities. Analysis shows that more than 70% of the food industry's emissions come from land use, more specifically from agriculture and deforestation.[1]

To prevent deforestation and make agriculture more sustainable, Chinese companies can invest in technological innovation, thereby tapping into emerging business opportunities while also unleashing market demand for sustainable consumption and sustainable finance. This report suggests some ways ahead:

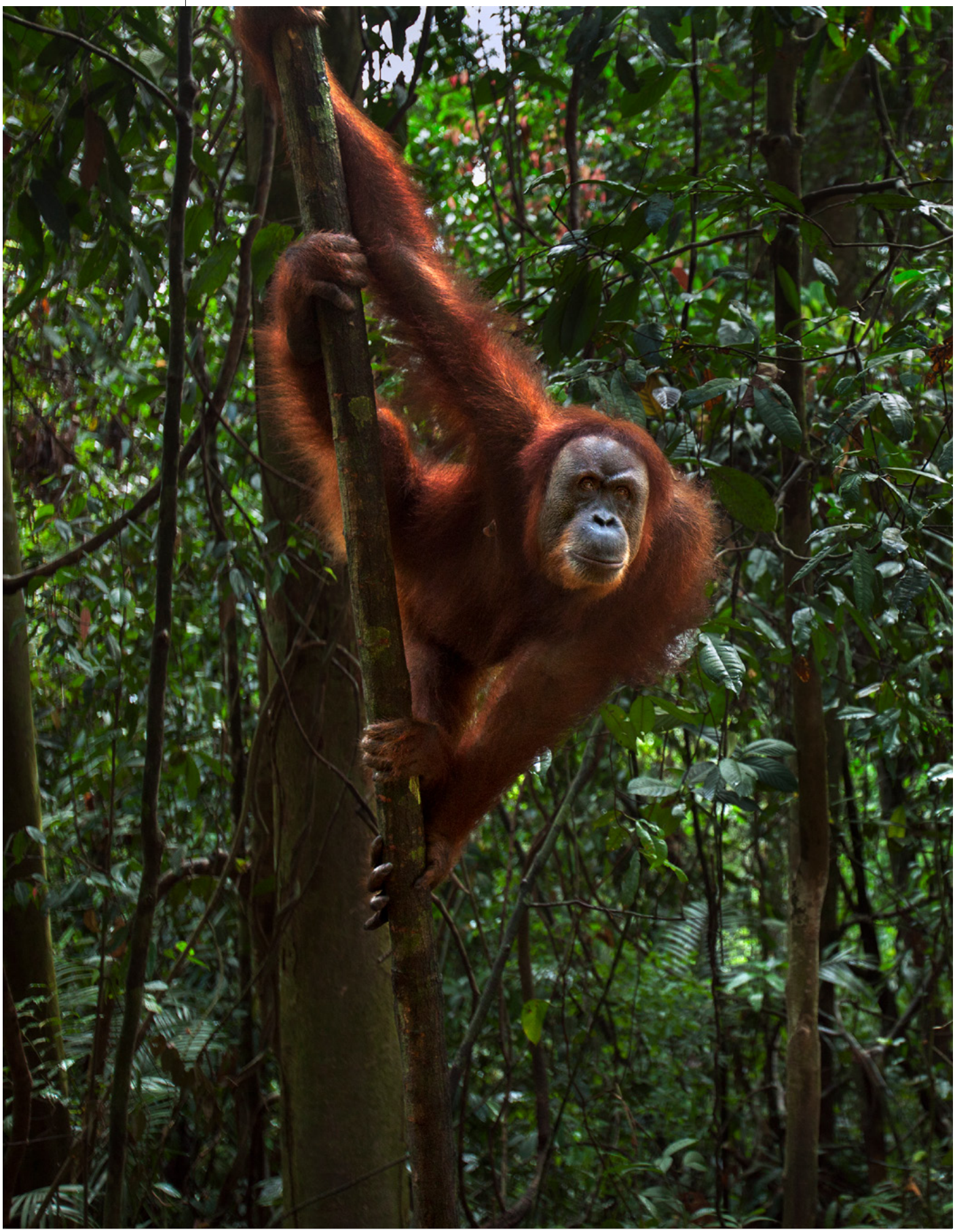
Foster breakthrough technological solutions
Agricultural technology is expected to transform the production efficiency and traceability of soft commodities. For example, the application of precision fertilization has greatly reduced the use of water and fertilizers while increasing productivity; digital management (such as the use of blockchain) in supply chains has provided transparency for tracing products to their origins; and integrated supply chain approaches are fostering sustainable intensification of agriculture. Such technological transformation can not only provide solutions to reduce commodity-driven deforestation but also create new business opportunities.

Mitigate financial risks and discover investment opportunities
Normally, soft commodity production requires pre-financing to clear land for development and planting. Establishing standards to reduce and remove harmful financial incentives for deforestation-related land clearance is important. Besides, financial institutions can establish risk-evaluation platforms to systematically manage financial risks pertaining to deforestation in their portfolio decision-making processes. This can actively contribute to climate and biodiversity targets by promoting greener soft commodity supply chains.

Create consumer awareness
Consumption is both the end and the beginning of economic activity. Billions of consumers can team up with companies to promote sustainable consumption and production. By creating consumer awareness and changing consumption behaviour, companies can achieve a win-win for profitability as well as sustainability.

Building upon the Glasgow Leaders' Declaration on Forests and Land Use, which pledged to *halt and reverse forest loss and land degradation by 2030,* China, as one of the biggest consumers of soft commodities in the world, can lead the way through business innovation, policy guidance and consumer awareness.

1 Introduction



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At the 26th Climate Change Conference of the Parties (COP26) of the United Nations (UN) in November 2021, China along with 144 countries and regions signed the Glasgow Leaders' Declaration on Forests and Land Use, pledging to halt and reverse forest loss and land degradation by 2030. Together, these signatories account for more than 90% of the global forest area, and this was the first time that China's senior leaders signed up to join major global players in reducing deforestation on a global scale.

With the major demand markets of China, Europe and the United States having made commitments and sent positive signals, it set a strong foundation for the sustainable management of forests and for cooperation among the various partners in the international trade and cross-border supply chains of agricultural and forest products.

At the 15th Conference of the Parties to the United Nations Convention on Biological Diversity (COP15), China holds the presidency and is actively urging all parties to sign the Global Biodiversity Framework. The international community expects the active participation and contribution of Chinese enterprises, and the Chinese government is developing a national strategic framework and roadmap to this end.

The production and consumption of bulk agriculture and forestry commodities (especially soybean, beef, palm oil and forest products) plays an important role in global biodiversity and in addressing the Sustainable Development Goals (SDG), particularly SDG 13 for climate action, as well as the broader aims of economic development, supply chain resilience, poverty alleviation, food security and improvement of livelihoods.

Shaping more sustainable supply chains is a shared responsibility of stakeholders including traders, processors, manufacturers, retailers and consumers, as well as governments. This report advocates that China-based companies make joint, cooperative efforts to accelerate industry-wide action to reduce agriculture-driven deforestation.

1.1 Protecting forests: Critical to curb global heating

Global population growth and increases in per capita consumption of food, energy and products such as textile fibre, timber and animal feed have caused unprecedented exploitation of land. Statistics show that a quarter to a third of the potential net primary production of land is used for food, feed, textile fibre, timber and energy.[2] Expansion of agricultural and pastoral lands has eroded natural ecosystems such as forests, savannahs, natural grasslands and wetlands, leading to a series of natural, climate, social and economic risks.

From the 1990s to the 2010s, global forests shrank by 19%, while global carbon emissions soared by 46%.[3] Deforestation accounts for 15%-20% of global carbon emissions generated by human activities in the world every year.[4] As greenhouse gas (GHG) emissions increased and forests' ability to absorb them declined, tropical forests were able to offset just 6% of human-generated carbon dioxide (CO_2) in the 2010s, down from 17% in the 1990s.

Deforestation can also destroy the hydrological cycle, leading to soil erosion, desertification, habitat loss, biodiversity loss, floods and many other climatic phenomena detrimental to life on the planet.[5] Tropical rainforests are among the most diverse ecosystems on earth, and deforestation may incur a series of systemic risks such as the outbreak and spread of infectious diseases.[6]

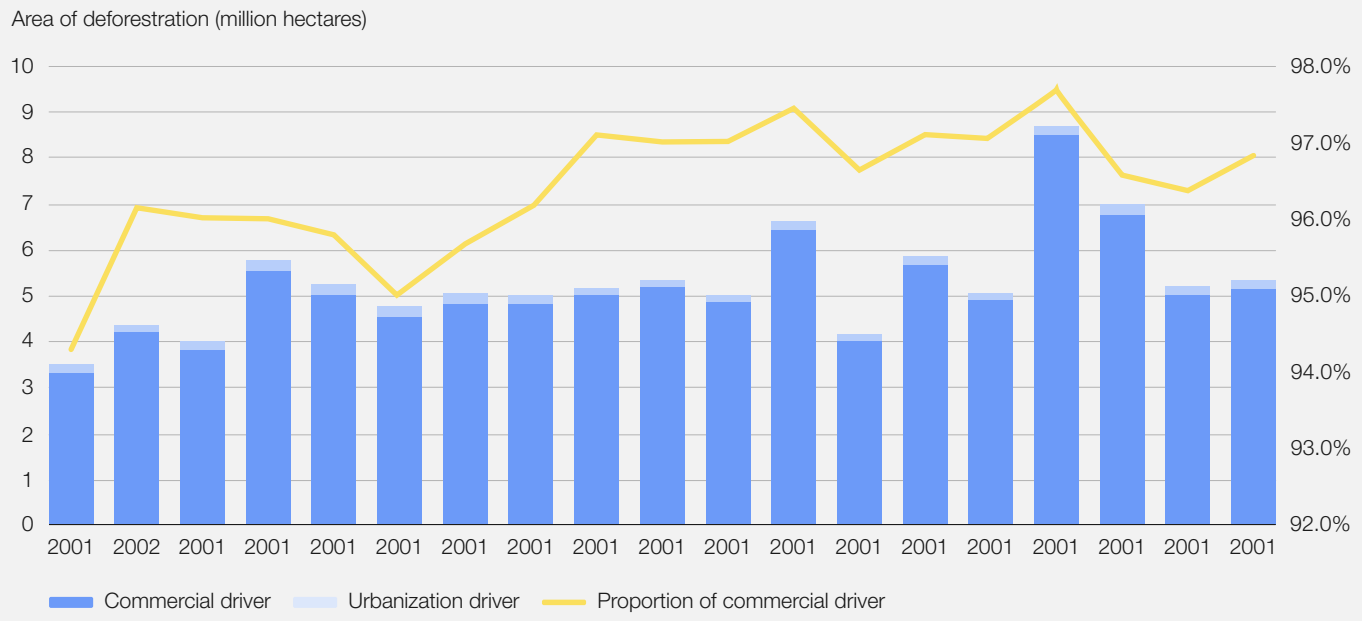
1.2 Greening soft commodity value chains: Where to start

Studies show that fluctuations in prices of agricultural and forest products can increase or decrease deforestation.[7] When a country enters international markets, local prices get closer to international prices. If trade liberalization raises local agricultural prices, deforestation increases, and the opposite is also true.

Restricting forest access can limit deforestation. In areas rich in forest resources, loose forest access and labour and capital inputs can increase deforestation.

Countries that have a comparative advantage in producing agricultural and forest products are likely to be affected more. Empirical evidence shows that increases in prices of agricultural and forest products have led to increases in deforestation in countries with rich tropical forest resources, including Australia, Brazil, Costa Rica, Mexico, Tanzania and Thailand.[8]

FIGURE 1.1: **How business drivers affected permanent deforestation from 2001 to 2019**



Source: Global Forest Watch, "Global Primary Forest Loss", https://gfw.global/3zPogL2.

Studies have shown the extent to which land use changes and farming make up for global net carbon emissions caused by the destruction of tropical rainforests, about one-third of them driven by commercial interests of international trade,[9] and at least 40% by the production of agricultural and forestry commodities such as soybean, palm oil, beef, paper and pulp.[10] In addition, the upstream supply of agricultural and forestry commodities in the international supply chains and by large multinational traders also makes up a significant part of carbon emissions.

FIGURE 1.2(A): **CO_2 emissions of major producers of agricultural and forest products, 2010-2014**

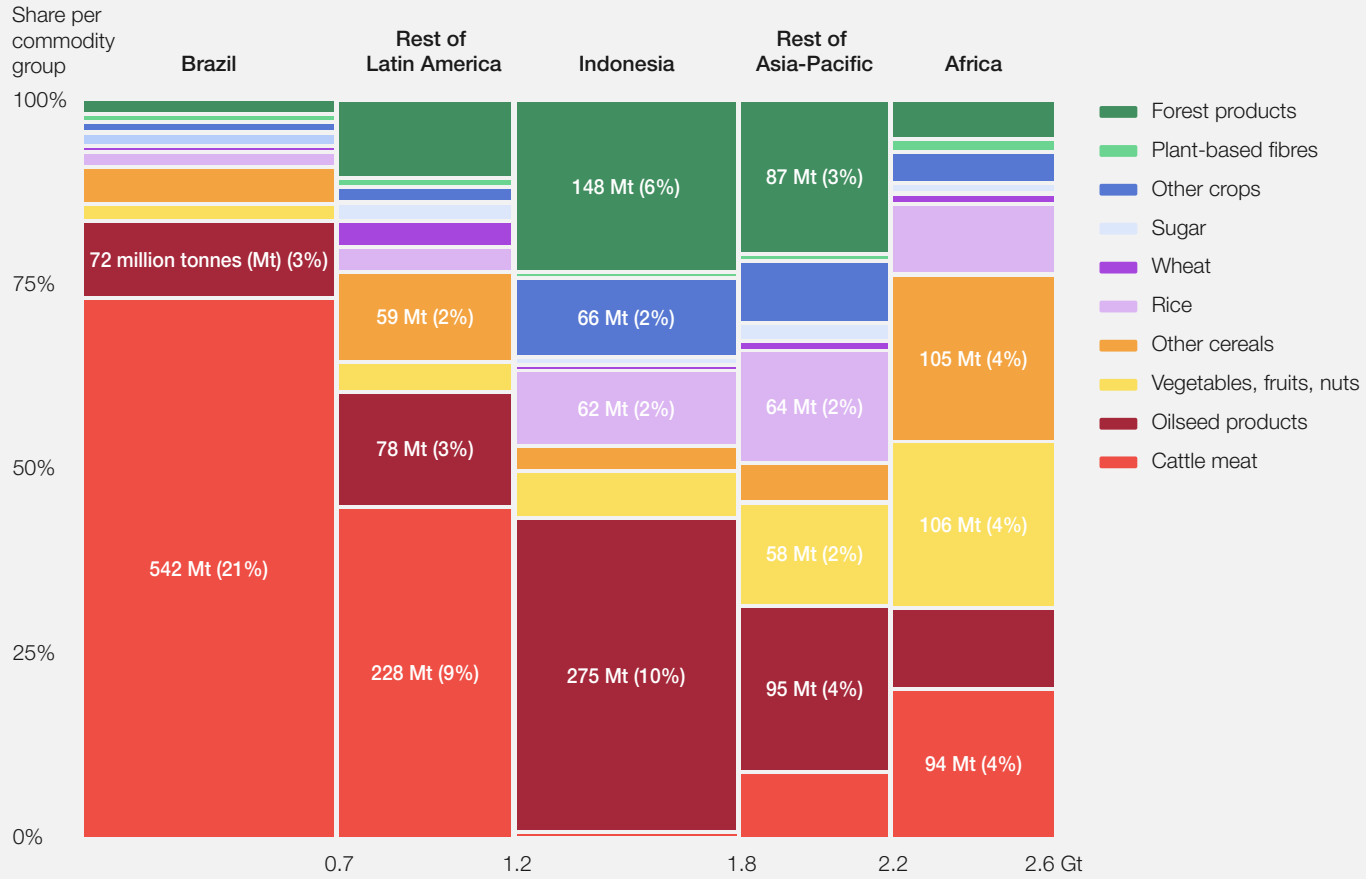
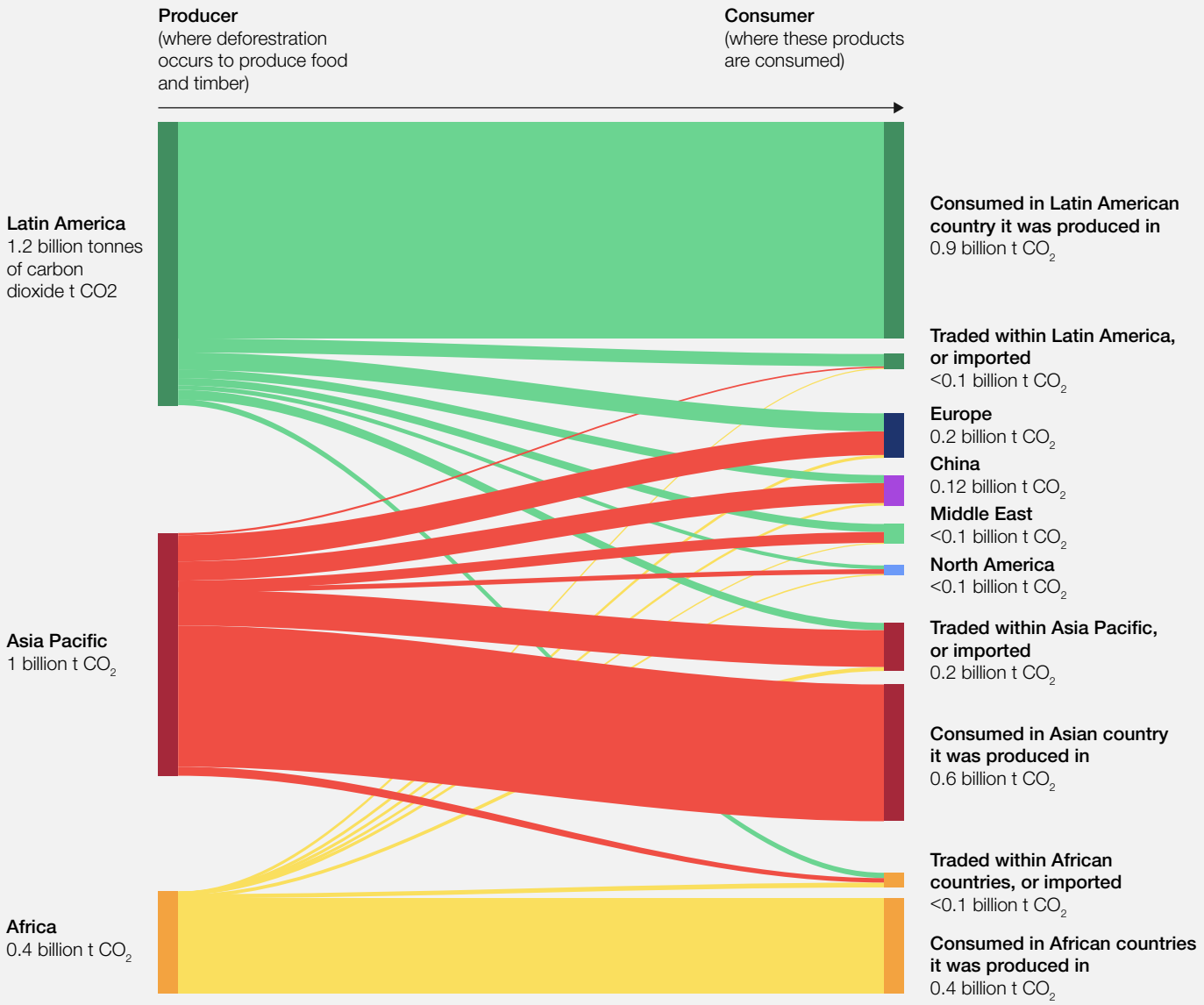


FIGURE 1.2(B): **Relationship between carbon emissions from agricultural and forest products and international trade in tropical regions, 2010- 2014**



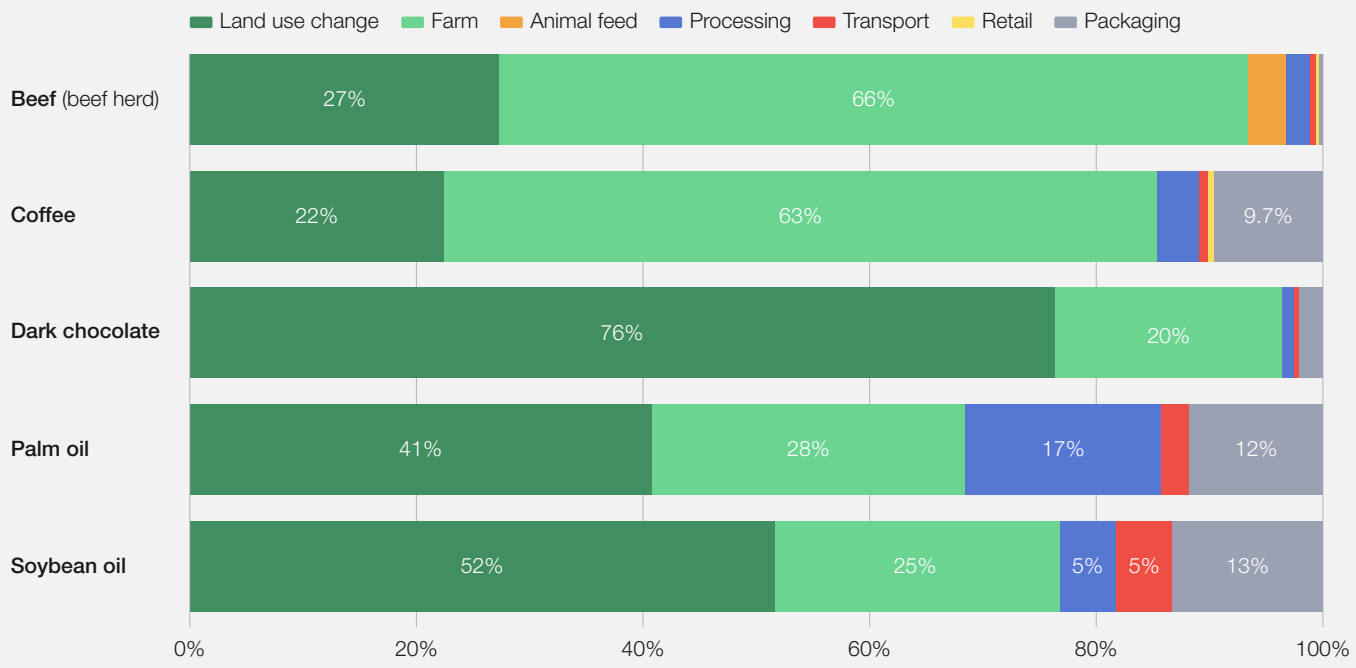
Sources: F. Pendrill, U.M. Persson, J. Godar, T. Kastner, D. Moran, S. Schmidt, R. Wood, "Agricultural and forestry trade drives large share of tropical deforestation emissions", *Global Environmental Change*, 2019, Volume 56, pp. 1-10, https://www.sciencedirect.com/science/article/pii/S0959378018314365?via%3Dihub#bib0230; H. Ritchie and M. Roser, "Deforestation and Forest Loss", https://ourworldindata.org/deforestation.

In particular, in the international market for soybean, beef, palm oil and forest products, the four largest traders – Archer Daniels Midland (ADM), Bunge, Cargill and Louis Dreyfus Company (LDC), collectively referred to as "the ABCD companies" – usually capture high market concentration and have a strong industry-wide presence. They account for 70% or more of international agricultural goods trade, with great clout in pricing and trading mechanisms.[11]

At the 26th UN Climate Change Conference (COP26), 12 agricultural commodities traders represented by the ABCD companies and the Chinese food processing and trading company COFCO International issued a joint statement reiterating their commitment to the 1.5°C pathway and an action roadmap for carbon reduction in their supply chains.

Production-linked carbon emissions in the supply chain are likely to be classified as "indirect emission sources" that fall under Scope 3 emissions, currently not subject to mandatory corporate disclosures.[12] With increasing consumer demand for green purchases, stricter supervision of corporate ecological impacts, and better-defined international trade laws such as the EU's Carbon Border Adjustment Mechanism (CBAM), excessive indirect carbon emissions will eventually hinder companies from reaching real carbon reduction goals and social responsibility commitments. Therefore, companies must work to eliminate the upstream carbon emissions of soft commodities.

FIGURE 1.3: **GHG emissions at various steps in food products' supply chains**



Source: Our World in Data, "Food: Greenhouse gas emissions across the supply chain", https://ourworldindata.org/grapher/food-emissions-supply-chain?country=Beef+%28beef+herd%29~Coffee~Dark+Chocolate~Palm+Oil~Soybean+Oil.

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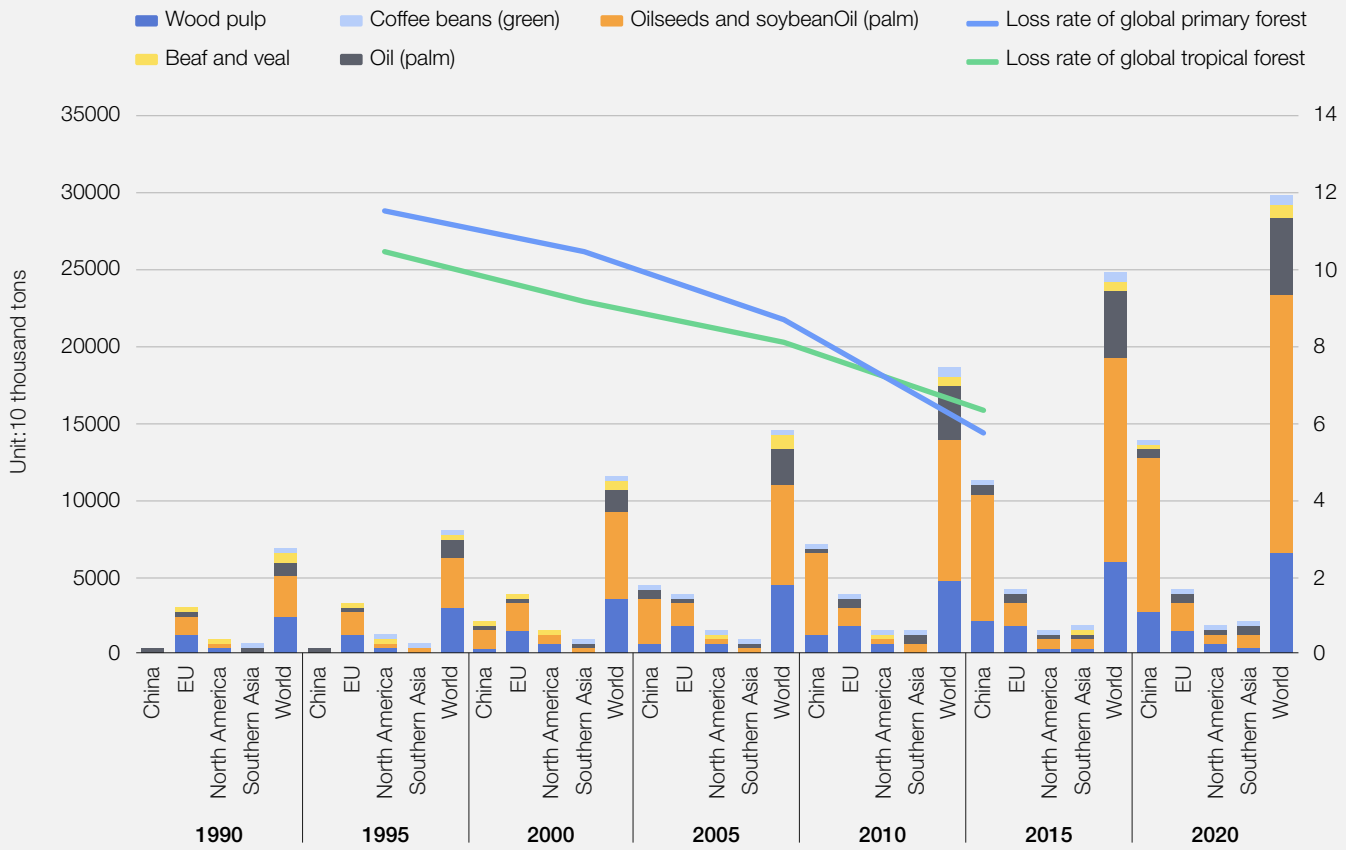
1.3 Opportunity for and value of Chinese companies' actions

The latest data show that the rate of global forest loss has declined substantially since the 1990s (Figure 1.4). While the decline is good news, agricultural expansion remains the main driver of global forest loss.[13] More sustainable solutions are needed to satisfy the need for soft commodity products while avoiding deforestation.

Driven by factors such as its increased economic strength and expanded domestic demand, China has grown into the world's largest importer of soybean, beef and forest products, and the second largest importer of palm oil. This has created great potential for China to promote the low-carbon transformation of global supply chains of soft commodities. Figure 1.5 shows to what extent various countries' import of Brazilian soybean causes GHG emissions from activities such as land use change, crop production, transportation and industrial processing.

FIGURE 1.4: **Import volume by region and global natural forest loss rate**



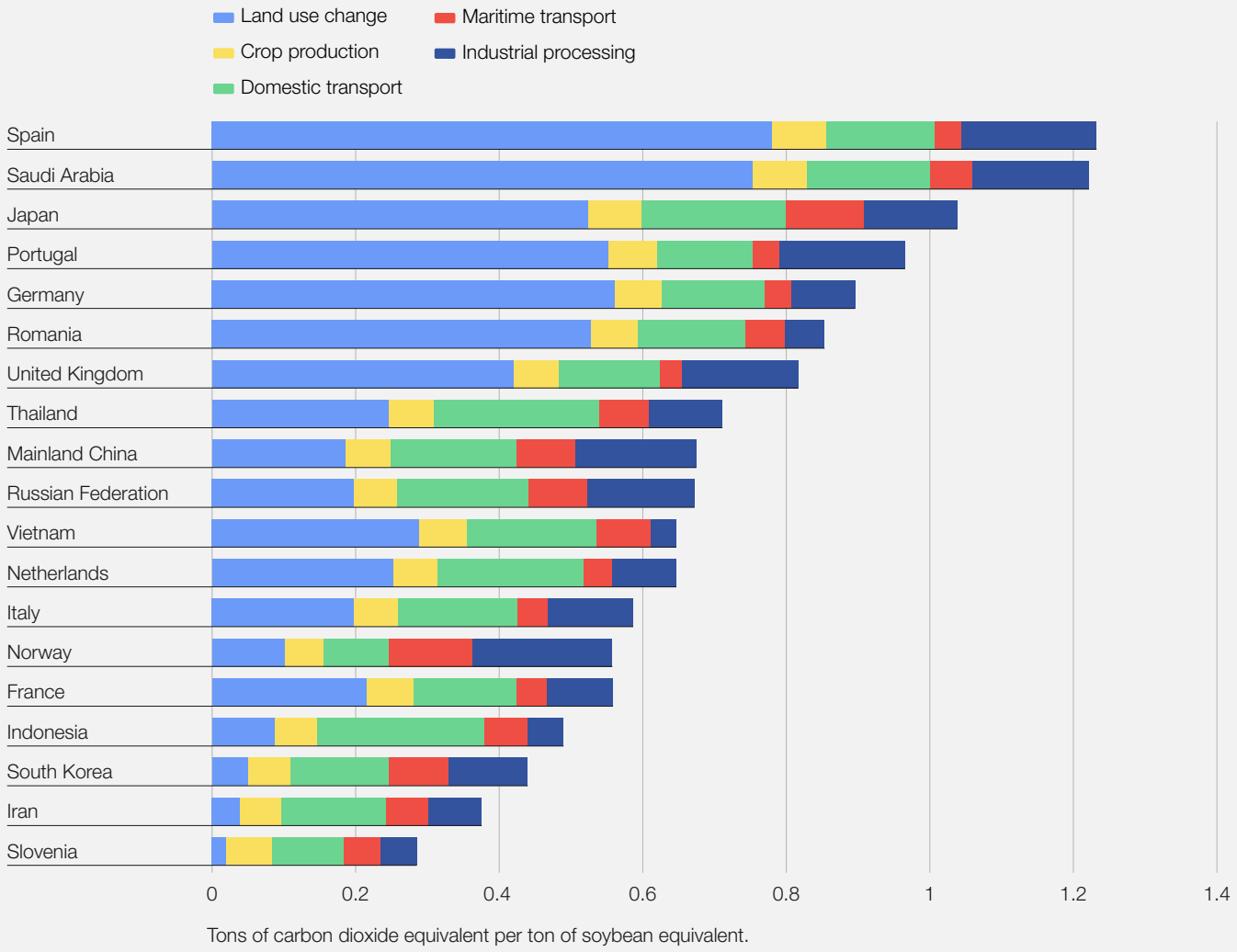
Note: The statistics for some years are incomplete, and all totals are rounded off.

Source: FAO, "Forestry Production and Trade", http://www.fao.org/faostat/en/#data/FO; USDA, "Market and Trade Data", https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery; R.J. Keenan, G.A. Reams, F. Achard, J.V. de Freitas, A. Grainger and E. Lindquist, "Dynamics of global forest area: Results from the FAO Global Forest Resources Assessment 2015", *Forest Ecology and Management*, 2015, Vol. 352, pp. 9-20, https://doi.org/10.1016/j.foreco.2015.06.014.

Reducing carbon emissions

China will aim to hit peak emissions before 2030 and to reach carbon neutrality before 2060. Chinese companies need to conform to these targets and complete their low-carbon transformation accordingly. Taking the soybean example from Figure 1.5, since China's imports are from areas at lower risk of deforestation, emissions related to land use changes and farming account for a slightly smaller proportion of GHG emissions than those from transportation and industrial processing. Choosing the right supply sources can reduce deforestation, and shows where Chinese companies have the most scope for emissions reduction in the Brazilian soybean supply chain.

FIGURE 1.5: **Carbon emissions per ton of Brazilian soybean imported by economies from 2010 to 2015**



Note: Soybean equivalent means the amount of raw soybean used in oil, cake and beans at the end of each supply chain. The figure has been simplified based on the source.

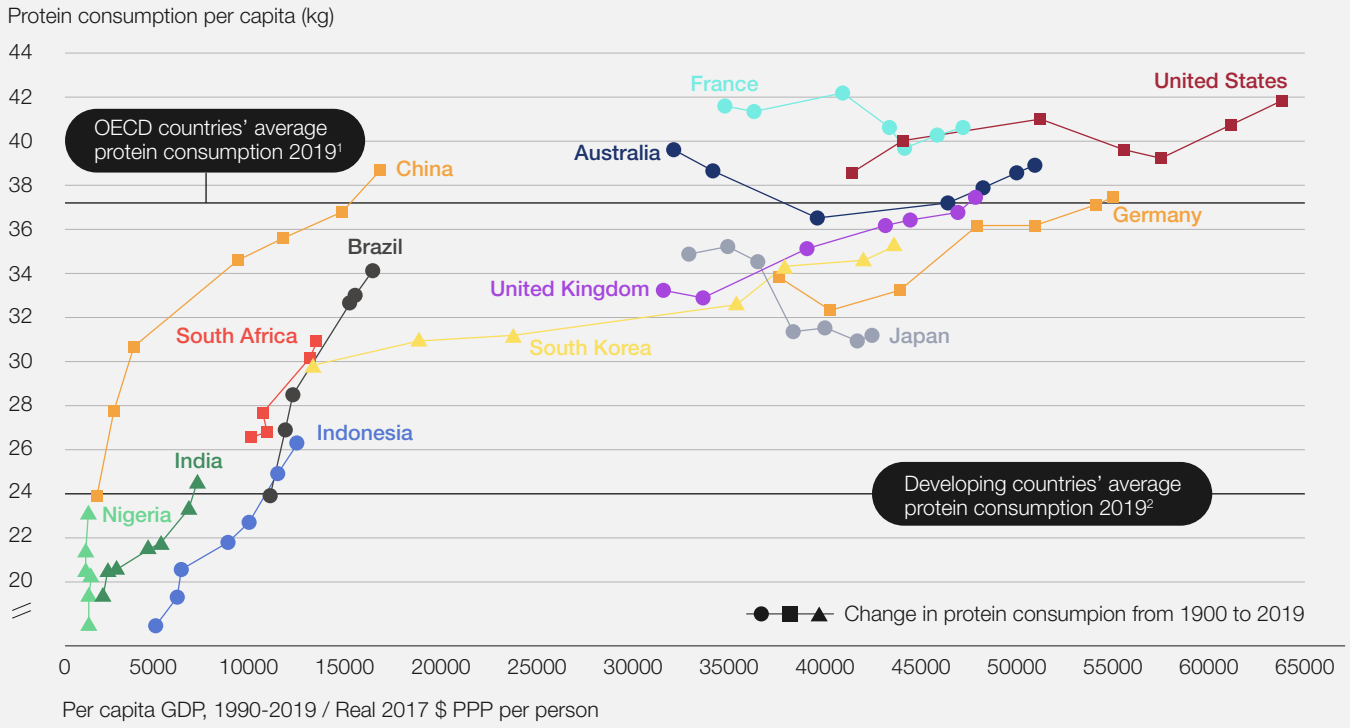
Source: N. Escobar, E. Tizado, E. Ermgassen, P. Löfgren, J. Börner and J. Godarf, "Spatially-explicit footprints of agricultural commodities: Mapping carbon emissions embodied in Brazil's soy exports", *Global Environmental Change*, 2020, Vol. 62, https://www.sciencedirect.com/science/article/pii/S0959378019308623

Cultivating new types of consumers

Benefiting from rapid economic growth, China's per capita protein consumption has overtaken the average of OECD countries (Figure 1.6).

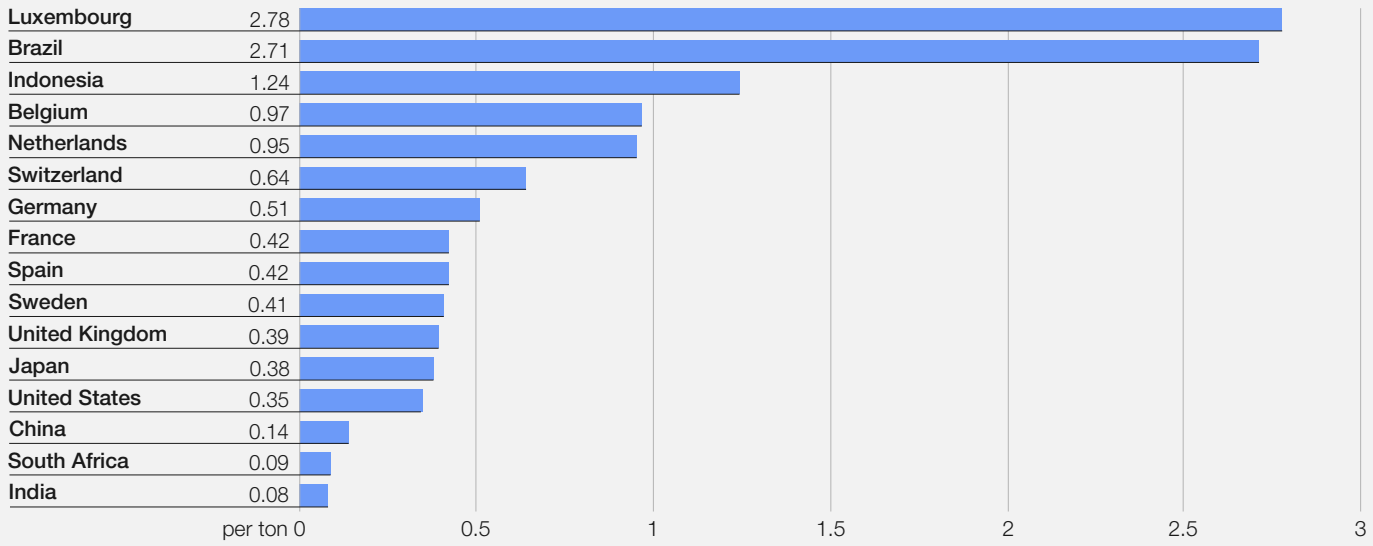
Chinese consumers may now enter a new consumption stage to place greater premium on health and environmental protection. The relatively low correlation between China's per capita carbon footprint and tropical deforestation is a favourable foundation.[14] Far-sighted Chinese companies should turn towards enabling more sustainable consumption.

FIGURE 1.6(A): **Countries' per capita protein consumption, 1990-2019**



1. This includes all protein sources: plant, meat, eggs and dairy, aquaculture, wild-catch fisheries and non-traditional.
2. Includes lower-income and lower middle-income countries as classified by the World Bank.

FIGURE 1.6(B): **Countries' average deforestation-related carbon footprint from food consumption**



Source: World Economic Forum, "Forests, Food Systems and Livelihoods: Trends, Forecasts and Solutions to Reframe Approaches to Protecting Forests", Switzerland: World Economic Forum (2021); F. Pendrill, U.M. Persson, J. Godar, T. Kastner, D. Moran, S. Schmidt and R. Wood, "Agricultural and forestry trade drives large share of tropical deforestation emissions", *Global Environmental Change*, 2019, Vol. 56, pp. 1-10, https://www.sciencedirect.com/science/article/pii/S0959378018314365?via%3Dihub#bib0230.

Strengthening influence in international trade

In 2018, China's soybean imports from Argentina, Brazil and the United States accounted for 95.63% of its total, up 1% over 2017, yet the increase in import volume did not earn a lower purchase price. Evidently, even as a major buyer on the international stage, Chinese companies have limited bargaining and discourse power in some markets of soft commodities that are highly dependent on other countries.[15] In such cases, sustainable finance and technology will be an opportunity for companies to enhance their market advantages in cross-border trade and ensure China's food security.

Avoiding reputation risks

Deforestation-related reputation events can impact a soft commodity-related company's value by up to 30%, by one estimate.[16] This value impact has increased in the last 20 years through the effect of social media. As the global awareness of environmental protection increases, investors, consumers, governments and other stakeholders take deforestation more seriously. By expanding markets through green supply chain management, Chinese companies can build their international brand reputation, reduce investment risks from climate change and increase profits.

2 Consensus and challenges

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2.1 Global consensus on forest and land use

At the COP26 in Glasgow in 2021, China together with the 144 other signatories to the Leaders' Declaration on Forests and Land Use pledged to stop deforestation and land degradation, conserve and restore forests and other terrestrial ecosystems, and conserve biodiversity. Among other steps, they agreed on the following:

1. Facilitating conducive trade and development policies, internationally and domestically, and promoting sustainable commodity production and consumption.

2. Incentivizing sustainable agriculture and promoting food security while protecting and benefitting the environment.

3. Increasing and driving finance and investment from a wide variety of private sector sources towards sustainable agriculture and forest management, as well as forest conservation and restoration.

In addition, 12 countries announced the Global Forest Finance Pledge (GFFP) to provide $12 billion for forest-related climate finance to support activities such as strengthening forest governance, supporting landscape restoration, assigning land tenure clearly and leveraging private investment.

A range of international pacts such as the United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement, Convention on Biological Diversity, United Nations Convention to Combat Desertification, as well as the Sustainable Development Goals, also converge towards the goals of sustainable agriculture and forestry and the conservation of biodiversity.

2.2 China's actions for global forest protection

2.2.1 Policy action

In addition to the joint commitment at COP26, China also pledged in the Joint Press Communiqué following the Second EU-China High Level Environment and Climate Dialogue and the US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s to support global action against deforestation through greater cooperation in:

- conservation and sustainable management of forests.
- promotion of more sustainable supply chains.
- action against illegal logging and associated trade.

The high-level commitment has also extended the scope of "ecological civilization" from eco-environmental protection to green and low-carbon development in corporate production, commodity circulation, investment and related fields.

2.2.2 Industry action

Chinese industry associations have stepped up efforts to alter their supply chains and operations for the protection of global forests. In 2017, the China Meat Association along with the World Wide Fund for Nature (WWF) and 60 Chinese meat companies released the Chinese Sustainable Meat Declaration. In 2018, the China Chamber of Commerce for Import and Export of Foodstuffs, Native Produce and Animal By-Products (CFNA), the WWF and the Roundtable for Sustainable Palm Oil jointly launched the China Sustainable Palm Oil Alliance. And in 2021, China published a Specification for Meat Industry Green Trade,[17] the industry's first collective standard calling for "avoiding the purchase of products from areas at high risk of deforestation".

Multinational corporations dealing in soft commodities have started to commit to completely avoiding deforestation anywhere in the world. Globally, 14 agricultural commodity corporations have pledged to halt forest loss associated with agricultural commodity production and trade, and 21 of the world's largest manufacturers and retailers have joined the Forest Positive Coalition of Action to collectively develop commodity roadmaps for forest-positive targets.[18] To work towards China's aim to hit peak emissions before 2030 and carbon neutrality before 2060, 242 Chinese companies have committed to climate action and emissions reduction through the Science Based Target initiative (SBTi). Among them, 82 companies have submitted their climate targets.[19] They will also prioritize shaping a green supply chain, for instance by assessing their supply chains' carbon inventory and trading in products that are certified as sustainable.[20]

2.3 Reducing deforestation driven by agricultural and forestry commodities: Key challenges

Agricultural and forestry commodities feature long supply chains, diverse business types, a wide range of areas and worldwide stakeholders with complex interests. Setting clear goals and reaching consensus for action by all parties are prerequisites for promoting zero deforestation, addressing climate change, reversing biodiversity loss, and achieving global sustainable development.

The picture is complicated by the facts that no international consensus exists on the definition and measurement of deforestation, nor are the respective responsibilities of the various stakeholders clearly defined. The channels for access to information related to forest and land use risks are not open, and since no timely disclosures are mandated, assessing progress on fulfilling commitments is difficult. No clear supervision mechanism or authority exists, and producing countries, indigenous peoples, consumer countries and individual consumers have little influence on promoting the demand for and consensus on zero deforestation.

What is needed is a bridge between national policies and actions by various stakeholders along the supply chain.

Soft commodity supply chains are complex and encompass a range of stakeholders with varying interests. The production side (mainly producers and governments of producing countries) is focused on reaping commercial rewards and achieving socioeconomic development while maintaining sustainable livelihoods for farmers and protecting the natural environment.

Processors, manufacturers and traders devote greater attention to ensuring the smooth flow of trade and a continuous supply of raw materials and commodities that meet the relevant standards.

The consumption side (mainly consumers and governments of consumer countries) cares more about the acquisition of stable, reliable, healthy and safe products, and expects more sustainable consumer behaviour.

Other organizations (mainly financial institutions, industry associations, international organizations, NGOs and research institutes) are more concerned about how stakeholders could register sustainable economic growth to ensure that commodity production is more socially inclusive and environmentally sustainable while meeting human needs and promoting development around the world.

The demands and expectations of stakeholders in the industry chain contain both incentives for forest conservation and disincentives for zero deforestation. (See Table 2.1)

As such, promoting synergies among all stakeholders at the system level is key to mitigating deforestation.

TABLE 2.1: **Incentives, challenges and actions for various stakeholders**

Stakeholder	Incentives aligned with forest conservation and sustainable supply chains	Key challenges to implementing zero-deforestation policy	Direction of action
Producers (farmers, ranchers, smallholders, etc.)	– Stabilization of market demand – Increased productivity and output	– More land is reclaimed for farming and grazing in order to maintain livelihoods, making for illegal deforestation. – Low-cost raw materials are selected to reduce production costs. – Agriculture is excessively expanded to meet the growing global demand	– Improve production technology to increase productivity – Engage in sustainable certification of raw materials – Seek compensation and incentives for forest conservation – Establish direct access to buyers of sustainable raw materials

Processors/ manufacturers	– Improved incomes and livelihoods – Legal compliance and reputation management – Achievement of climate targets with reduced carbon emissions – Stable supply chains and ability to meet market demands – Access to more capital – Improved reputation	– Cost sensitivity in procuring soft commodities as raw materials – Lack of information and access to certified products – To reduce costs, only mandated sustainable certification is carried out. Lack of actions to develop product traceability systems, take carbon inventory and related actions.	– Make a commitment on or take action for zero deforestation – Enhance efficiency and produce in a green and low-carbon manner – Monitor and evaluate the deforestation risk of the raw materials purchased – Disclose forest conservation actions regularly – Practice sustainable sourcing – Provide sustainability training to suppliers – Acquire information about sustainable consumer requirements
Suppliers/traders	– Legal compliance – Achievement of climate targets with reduced carbon emissions – Increased global trade and supply chain resilience – Access to more sustainable capital resources – Improved reputation	– More land is brought under agriculture to expand market share – Procuring products with sustainable certification costs more – Relatively low recognition or market demand for certified products	– Make a commitment on or take action for zero-deforestation products – Purchase and raise the ratio of commodities with sustainable certification – Seek sustainability loans – Set up a product traceability system – Provide sustainability training to suppliers – Disclose forest conservation actions regularly
Consumers	– Better food security, health and sustainability – Peer influence	– Due to low awareness regarding sustainable consumption, quality, security and price are prioritized when buying goods while the impact on the environment is considered less seriously – Lack of information to recognize sustainable consumption and limited expression of demand for sustainable products and services	– Pay attention to/buy sustainable goods – Place a premium on the environmental reputation and sustainable development values of a brand – Focus on corporate social responsibility information – Enhance the awareness and recognition of sustainable consumption – Express demand for sustainable consumption and refuse to buy deforestation-related goods

Financial institutions	– Reduced non-financial investment risk – Promotion of sustainable finance in alignment with national guidance – Improved reputation	– Lack of deforestation risk review, effective monitoring and investigating mechanisms for investment projects – Neglect of the environmental risk in investment projects or failure to incorporate deforestation in the environmental risk assessment.	– Develop financial products, including sustainable finance, green credit, etc. – Strengthen ESG investment – Evaluate the deforestation risk in investment – Assess the carbon emissions of the investee – Encourage the investee to seek out sustainable certification
Industry associations	– Promotion of green, low-carbon and sustainable industry development – Evaluation of companies in the industry in all respects – Fulfilment of industry's social responsibility commitments	– Lack of awareness about deforestation risk in industry sectors – Lack of an industry-wide deforestation risk supervision system – Lack of information and resource access for producing countries	– Introduce relevant norms, standards and guidelines that promote the sustainable development of the industry – Establish an exchange platform for sustainable industry development – Engage in industry-wide cooperation with sustainable standard and certification institutions – Incorporate deforestation-free issues into industry group standards – Launch industry initiatives to address climate change and stop deforestation – Conduct training on climate change, stopping deforestation and other sustainable development issues
Regulators	– Prevention and investigation of violations of laws and regulations – Building of a sound business environment – Facilitation of information disclosure – Protection of public interest	– Unclear liability for the deforestation risk caused by cross-border trade along the supply chains – Lack of globally unified regulation of deforestation risk	– Strengthen the depth of corporate environmental information disclosure and focus on the scope of carbon emissions – Enhance the regulation of environmental issues and encourage corporates to focus on deforestation-free issues – Propose carbon inventory requirements for imported soft commodities – Introduce deforestation-free market incentive policies

Government departments (of producing countries)	– Land restoration and sustainable utilization – Improved access to international financial resources – Better climate action and reduction of carbon emissions – Conservation of biodiversity and natural assets	– Ensuring the livelihoods of smallholder farmers and local communities – Inadequate recognition and assessment of the sustainable value of forest resources – Insufficient focus and management of legal deforestation – Less stringent punishment for illegal deforestation – Insufficient incentives and continuous support for certification	– Introduce more detailed forest protection-related regulations and policies – Establish forest reserves and strengthen the monitoring and punishment mechanism – Compensate non-deforestation soybean and beef producers to stimulate forest conservation – Popularize and promote deforestation-free products to raise public awareness
Government departments (of the consumer country, China)	– National food security – Improved climate action and reduction of carbon emissions – Enhanced supply chain resilience – Biodiversity conservation	– Lack of a standardized review mechanism for deforestation risk in imported commodities on the premise of meeting domestic market demand and ensuring stable supply – Insufficient incentive and continuous support for certification	– Combat illegal trade; investigate and restrict imports of illegal deforestation products – Introduce regulations, policies and standards related to sustainable trade and green procurement – Incorporate zero deforestation into actions against climate change – Build a soft commodity traceability system and encourage commodities with sustainable certification – Advocate the concept of sustainable consumption and boost the application of the zero-deforestation certification mark
International organizations/ NGOs/research institutes	– Better climate action and reduction of carbon emissions – Reversal of biodiversity loss – Progress on Sustainable Development Goals – Impetus to the green transition of companies in agroforestry and related industries	– Lack of in-depth research and international consensus on data and scientific evidence on forest and land use – Insufficient advocacy on deforestation-free issues	– Conduct research on deforestation-free solutions and establish global sustainable certification standards – Launch more initiatives and promote good practices related to zero deforestation – Establish a communication platform to promote deforestation-free products and push concerted action by public and private sectors – Provide technical assistance and training for farmers – Collaborate on technology innovation in deforestation-free products and systems – Expose companies' deforestation behaviours

3 Technology

GETTY/KDP

Given the growing global demand for agricultural and forest products, technology can tackle the contradiction between unlimited demand and limited resources. The development and application of breakthrough agricultural technology is expected to bring disruptive changes to the production and supply of soft commodities. The development and application of new technology such as digital technology in agriculture and commodity trade is reshaping supply chains towards more efficient, transparent and green development. This can not only prevent deforestation but also bring enormous new business opportunities.

3.1 Enhancing upstream production efficiency

3.1.1 Digital agriculture

The development and application of digital agriculture can boost agricultural efficiency, reducing the use of inputs including land, thus cutting down the need for deforestation and land use change.

The cattle industry is considered the primary driver of deforestation in Brazil's Amazon region. However, beef production per hectare in this region is less than 10.5% of the European average, and unit income is only 11% of that from fruit or vegetable cultivation there. According to a 2014 study by Brazilian scientists, Brazilian pastures only produce one-third of their sustainable carrying capacity.[21] If ranchers could increase the figure to half, they could satisfy the global demand for Brazilian beef in 2040 as predicted by the Food and Agricultural Organization (FAO) without adding any new livestock land.[22] Evidently, Brazil's cattle industry has great room for efficiency improvement, signaling a business opportunity to develop smart animal husbandry.

CASE STUDY: **Remote-sensing drones to accelerate land restoration**

XAG is a Chinese company that builds remote-sensing drones, unmanned ground vehicles (UGVs), autopilot consoles, agricultural Internet of Things platforms and smart agriculture systems to accurately manage the agricultural cycle of cultivation, planting, management and harvesting.

Its smart agriculture solutions include mapping and intelligent field patrolling using remote-sensing drones, and auto-accurate cultivation and management with drones, which have increased both the quality and the efficiency of land management while increasing productivity. In 2019, the yield per hectare of rice and wheat rose by nearly 2,250 kg over 2018.[23]

Precise management has saved pesticide spending of more than RMB 1 million ($140,005) and a similar sum in mechanical oil spending in a state-level farm spread over 5,080 ha in Jiangsu province of China. XAG's UGVs and drones conduct autonomous operations in designated areas, avoiding repeated or omitted spraying. Combined with its precise variable spray technology, farmers can apply pesticides on demand, thereby using 30% less pesticides and fertilizers, and nearly 90% less water.[24]

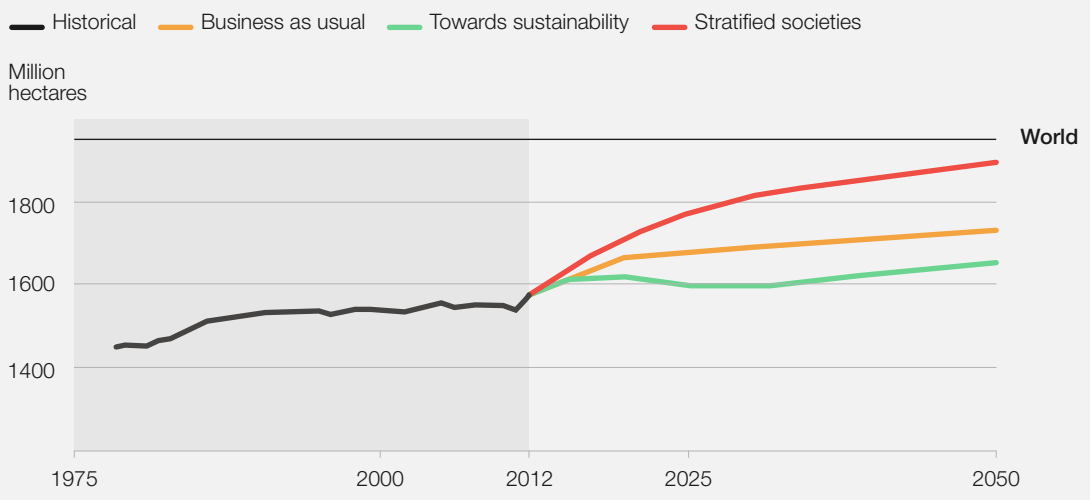
XAG's drone technology can accelerate the restoration of vegetation after environmental crises such as the Australian fires and the degradation of the Ruoergai grasslands in the Sichuan province of China.

3.1.2 Vertical farms

The United Nations projects that the world's population will be 9.7 billion by 2050 and 11.2 billion by 2100.[25] The business-as-usual scenario projects arable land to rise globally by 11% by 2050, or 172 million hectares, compared with 2012.[26]

Vertical agriculture will alleviate the pressure on land, while using renewable resources to provide the precise conditions – including temperature, humidity and light – for crops to grow fast.

FIGURE 3.1 **Land requirements projected by FAO**



Source: FAO, "The future of food and agriculture: Alternative pathways to 2050", http://www.fao.org/3/I8429EN/i8429en.pdf.

CASE STUDY: **Vertical farming to increase productivity per hectare**

US-based Plenty, a vertical farming technology leader, claims its farms produce about 400 times more food per acre than a traditional farm while using 99% less land and 95% less water.

Equipped with digital technology to monitor the environment where plants grow, it uses artificial intelligence (AI) to grow crops faster and improve their quality and output. The technology frees agricultural production from the external factors on which traditional agriculture depends, including pests and weather. Besides, when vertical farms are located close to markets, fresh produce can be taken to market without adding to the transport carbon footprint.

Another US-based company, Infarm, has received $300 million in funding and expects to have 5 million sq ft cultivated by 2025. The company is building the world's largest vertical farm to help cities become self-sufficient in food production.

Chinese companies have undertaken vertical farm pilots. However, such businesses are still working out their cost and business models to be truly successful in China.

3.1.3 Integrated farming systems

Integrated crop-livestock systems enable sustainable intensification of agriculture by utilizing the synergistic relationships between plant and animal systems. The manure and other organic matter produced as byproducts of livestock and poultry production are used as fertilizers to provide nutrients for crop production. The crops so produced in turn provide food for livestock and poultry breeding.

CASE STUDY: **Integration of forage crops, dairy farming and milk processing**

A leading Chinese dairy company applies the "zero-distance integration" model of forage planting, dairy farming and milk processing to produce infant milk powder. Through an approach based on the chain of "grass growing – cow breeding – milk production – manure treatment – power generation from biogas – soil fertilization with organic waste", it improves efficiency while reducing GHG emissions arising from agricultural and industrial activities. By encompassing the primary, secondary and tertiary industries, it fosters a circular economy.

Further, in a forage planting project, the company converted sandy farmland to grassland. Through dryland farming, the soil was prevented from further desertification and the ecosystem was protected. It carried out planting around the pasture too, transforming 25,000 ha into a forage planting site.

3.1.4 Other agricultural technologies

Among other factors, agricultural production efficiency is rooted in seed selection, breeding and cultivation. To reduce agricultural dependence on resource endowment, it is necessary to breed seeds of high quality that offer larger yields and can thrive in adverse conditions.

3.2 Upgrading product traceability and transparency

Improving the traceability and transparency along soft commodity supply chains enables companies and consumers to make informed decisions for sustainable, deforestation-free procurement and consumption.

3.2.1 New technology secures traceability throughout supply chains

Traceability is a key lever to make soft commodity supply chains green and sustainable. China has increased research and development investment in tracing technology and has instituted regulations to promote traceability under the Food Safety Law of the People's Republic of China, which requires food producers and traders to "establish a food safety tracing system".[27] In addition, the COVID-19 pandemic has strengthened the traceability of China's imported frozen foods chain.

CASE STUDY: **Digital agriculture and traceability from farm to table**

Syngenta China's Modern Agriculture Platform (MAP) has established a new sustainable low-carbon brand, beSide, which provides consumers with safe and high-quality agricultural products, as well as visualized traceability information covering the entire value chain, including growing, harvesting, warehousing, transportation and sales.

MAP empowers farmers with digital agriculture technology and innovative practices to grow high-quality and traceable crops in a climate-smart way and sell to commercial buyers at premium prices. In 2021, MAP beSide worked with farmers to assess and reduce their carbon footprint and found that the GHG emissions of the beSide rice farm in Tianjin was 7,060.35 kg CO2e per hectare, 40.20% less than the regional average.

The brand now partners with several large- and medium-sized agricultural product distributors in China such as Dole, COFCO, Freshippo and JD.[28]

The blockchain technology has enormous potential to accelerate the construction of sustainable supply chains for soft commodities. A China-US soybean trade based on blockchain technology in 2018 proves that applying blockchain in commodity trade not only greatly improves trade efficiency and reduces corruption and fraud, but also promotes green trade financing by linking trade financing channels with certifiable sustainable production sources and transparent supply chains.

CASE STUDY: **Blockchain technology facilitates traceability along the supply chain**

In January 2018, a cargo of US soybean shipped to China was traded in a blockchain-based system, with Louis Dreyfus Company as the seller, and Bohi Industry, a Chinese private oil producer, as the buyer. The transaction involved several international banks and shipping companies, which made China the first in the world to complete a full-fledged agricultural trade through blockchain.

The deal was settled on the Easy Trading Connect platform developed by a number of financial institutions including the International Netherlands Group (ING). The time spent on processing documents and data was reduced five-fold.[29]

3.2.2 Digitalization shapes a new pattern of cross-border trade

Cross-border e-commerce platforms have changed commodity circulation and product supply chains. By 2035, 50% of China's international trade by volume is projected to be via cross-border e-commerce.[30] By cutting out intermediaries or agents, such platforms shorten transaction chains, optimize processes and reduce costs. At the same time, they rapidly transmit the output and demand of sustainable soft commodities, while verifying the sustainable certification through blockchain technology, thereby creating an efficient and accurate closed-loop green trade.

CASE STUDY:

The potential of cross-border online trade

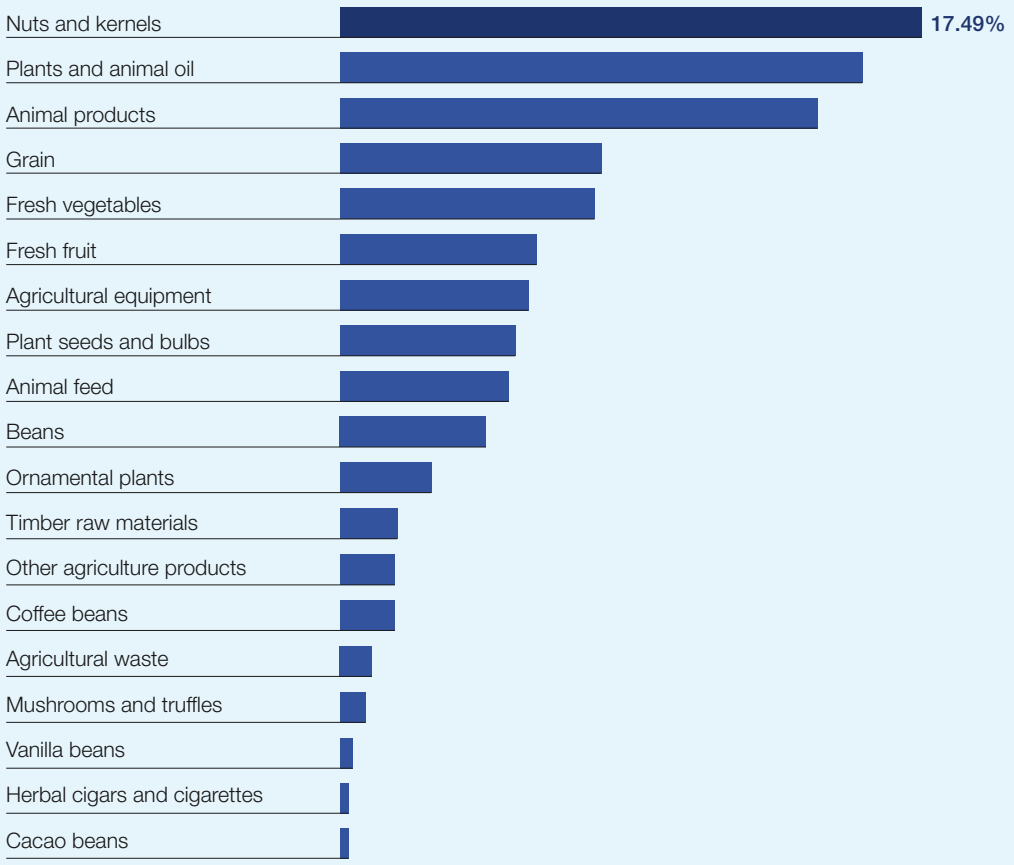
Over the last two decades, Alibaba.com has grown to be a leader in global digital trade. It reconstructs all the linkages in cross-border trade with digital technology, accurately aligning the business needs of cross-border buyers and sellers, and is speeding up the digital transformation of global trade. In 2022, there were over 245,000 paying members from China and around the world on Alibaba.com, and more than 40 million buyers from over 190 countries have sourced business or completed transactions on it.

According to Alibaba.com's 2020 Analysis Report of Agricultural Products and Food Industry, from January to May 2020, the 10 most inquired-about agricultural secondary categories included soft commodities such as edible oils, livestock products, feed and beans, projecting a bright prospect for cross-border e-commerce of soft commodities.[31]

Launched in 2016, Alibaba's multistakeholder electronic World Trade Platform (eWTP) initiative works towards more convenient, innovative and inclusive global trade through digitalization and collaboration. eWTP shares experience, deploys advanced technology and consults on policy to facilitate global trade. It has launched 10 cooperative projects on four continents. These include promoting cross-border digital commerce, improving digital finance and digital logistics, building a digital "public service platform" to facilitate trade, and carrying out digital talent training and technology sharing.

As the Alibaba example shows, online cross-border trade has huge potential to promote sustainable, digital cross-border trade of soft commodities.[32]

Ranking of the inquiry times of agricultural secondary categoris on Alibaba.com from January to May 2020



Source: Alibaba.com

3.3 Reducing imports through disruptive substitution

The growing global demand for meat, eggs and milk has accelerated the development of animal husbandry, whose demand for feed has spurred the demand for soybean. By increasing the domestic production of soybean in China, dependence on imports can be reduced. Since 2019, China has implemented a soybean rejuvenation plan to raise the yield and quality of the domestic soybean crop. Chinese soybean research institutions have made breakthroughs in breeding high-quality soybean varieties such that in 2020, the average yield per hectare of soybean in China was 48.8 kg, up 11% over 2016.[33] This helps reduce deforestation for soybean plantations in critical ecosystems elsewhere, and also reduces the transport footprint of soybean-based feed.

Scientific feed formula

Around 80% of China's soybean imports are for livestock and poultry feed. In March 2021, the Ministry of Agriculture and Rural Affairs issued the Work Plan for Reducing and Substituting the Usage of Corn and Soybean Meal in the Feed Production, whose implementation is expected to reduce soybean meal demand/consumption by 12 million tons every year.[34]

Plant-based meat

Plant-based protein can help meet the rising global demand for protein. According to one survey, 42% of Chinese respondents said they wanted foods that are better for the environment, and more than 50% said they were interested in trying novel plant-based protein products.[35] The Boston Consulting Group expects alternative-protein revenues to reach $290 billion in 2035.[36]

4 Finance

GETTY/HAO ZHANG

In many cases, soft commodity production requires pre-financing to develop land for plantation. Therefore, setting up standards to reduce and revert harmful financial incentives for deforestation is important. Besides, establishing a risk evaluation platform to systematically manage deforestation-related financial risks is also seen as measures financial institutions can take throughout their portfolio decision-making process. The sustainable management of land use changes and deforestation risks in a portfolio can actively contribute to global climate and biodiversity targets, creating new green investment opportunities in transitioning soft commodity supply chains towards greener options.

4.1 Risks from deforestation

For soft commodity companies: Producers of soft commodities are directly dependent on forests and nature for their operation, asset value and business continuity. Other supply chain stakeholders such as traders, processors and sellers also face physical, regulatory, legal, market and reputation risks from the direct and indirect impacts of their business activities on deforestation. These risks include the decline in output of soft commodities caused by deforestation-related climate change and ecological damage, government restrictions on deforestation and public interest litigation against deforestation.

For financial institutions: Industries related to soft commodities such as agriculture and food are highly dependent on natural capital such as forests, which are critical for coping with climate change and conserving biodiversity. As a result, deforestation has become closely linked to climate change and biodiversity, both of which are frontier risk-management areas of concern in the financial field. These “fat-tail risks” may produce negative impacts far greater than other risks. Financial institutions are therefore required to assess and manage more carefully the deforestation risk in their investment or loan portfolios associated with soft commodities as well as their accompanying climate and biodiversity risks.

According to a research report released by Forests & Finance, an alliance of American research groups and civil society organizations, the 50 most significant financial institutions accounted for $128 billion in credit and underwriting from 2016-2020, and a further $28 billion in share and bond holdings as of April 2021. [37] The finance came primarily from financial institutions from major commodity producing countries such as Brazil, Malaysia, the United States and Indonesia, followed by those from consumers such as Japan and China.

From January 2013 to April 2020, Chinese banks and investors provided over $22.5 billion for major companies producing and trading in commodities at high risk of driving deforestation.[38] Chinese financial institutions must improve their management and control of the credit and investment risks related to soft commodities. They must also evaluate their exposure to risks such as land use change and deforestation higher up in the supply chain and assess the corporate risk management measures taken. Further, they must incorporate deforestation risk management in the process of granting loans, screening investment projects, carrying out due diligence, signing agreements, undertaking project monitoring and embarking on an exit strategy.

The attention of financial institutions encourages soft commodity companies to prioritize the risk from deforestation in their ESG considerations. Given the heightened scrutiny from investors, companies should prioritize deforestation risk management within their overall ESG risk management, strengthen the oversight of the board of directors on deforestation risk, and develop policy mechanisms for deforestation risk management. They should also systematically identify the relationship between deforestation risk and important environmental and social issues such as climate change, biodiversity conservation and community development, in order to strengthen their management and information disclosure.

TABLE 4.1: **Deforestation risk management solutions for soft commodity companies**

Governance	– Identify the deforestation risk management responsibilities of the board of directors or senior management. – Clarify the communication and decision-making process for deforestation risk management at the board level and highlight deforestation risk in existing ESG reviews. – Identify, manage and report deforestation risk to the board of directors. – Incorporate the performance of deforestation risk management into the incentive mechanism for directors and senior managers.
Strategy	– Carry out scenario analysis from the perspective of long-term development and investigate the impact of deforestation risk on corporate development strategy. – Clarify the relationship between deforestation risk management and corporate strategies coping with climate change and biodiversity conservation. – Plan and launch cooperation plans and projects for sustainable transition of soft commodity supply chains in key markets.
Risk management	– Embed deforestation risk management in corporate risk management processes. – Identify major risks of deforestation and opportunities for sustainable transition of soft commodities, and analyse the impact on financial indicators. – Develop action plans for management of deforestation risk and sustainable transition opportunities.
Objective setting	– Develop and explain the objectives and performance of deforestation risk management and sustainable transition opportunities. – Disclose key indicators and target achievement.

4.2 Financial mechanisms for deforestation risk management

A financial system for sustainable soft commodity supply chains would have four dimensions: clear criteria, transparency, incentive mechanisms and financial products.

4.2.1 Clarify the criteria and rules for non-deforestation soft commodities

Clarifying the classification criteria for sustainable soft commodity supply chains is a prerequisite for guiding banks and investment institutions in financing sustainable soft commodity supply chains. China needs a set of classification criteria suitable for its context and in line with international standards.

Chinese financial regulators have achieved some results in creating green financial supply chains. For example, the 2021 Catalogue of Green Bond Endorsed Projects aims to support the trade of green agricultural commodities that possess sustainable certificates issued by the relevant international certification systems.[39] Regulators should further specify the criteria for identifying and classifying sustainable projects, ensuring that these align with China's criteria for green credit, green bonds and green enterprise ratings, so that banks and investment institutions can identify which suppliers meet the sustainability standards such as non-deforestation. For example, alignment with the EU Taxonomy should be strengthened to promote consistency and comparability.[40]

Meanwhile, the Guiding Opinions on Promoting the Investment and Financing in Response to Climate Change include GHG emissions from agricultural activities in the scope of support.[41] The Central Banks and Supervisors Network for Greening the Financial System (NGFS) jointly sponsored by the People's Bank of China and the central banks of seven countries is studying the relationship between biodiversity and financial stability, and is expected to give specific advice, including how regulatory authorities and financial institutions can strengthen biodiversity conservation.[42] All these have brought new opportunities for industries such as agriculture and food to garner financial support for emissions reduction in their supply chains.

4.2.2 Enhance transparency of all links in supply chains

Government bodies, regulators, financial institutions and soft commodity companies must work together to strengthen the transparency of commodity origins and the risks related to deforestation.

- While China has made it compulsory for listed companies and bond issuers to disclose environmental information, the government and regulators should refine deforestation information disclosure requirements for soft commodity companies and incorporate such information in the green financial information system for unified supervision.
- Financial institutions should promote investment and loan policies for deforestation reduction and provide more financial products and tools that can drive companies to engage in a green transition. They must disclose the size of their loans and investments in sustainable soft commodity projects to enhance confidence in the transition and motivate companies.
- Companies should actively disclose details and data on the governance, strategy, risk management and other action taken and progress made towards curbing deforestation throughout their supply chains, in accordance with the recommended framework of the Task Force on Climate-Related Financial Disclosures,[43] and the relevant methods and tools of the Carbon Disclosure Project.[44]

4.2.3 Establish a green financial incentive mechanism for soft commodities

For sustainable transition projects to be attractive to investors, they must have an acceptable risk profile and profitability, which requires the government to establish green financial incentive mechanisms. These may include:

- A mechanism to reduce tariffs on the trade of agricultural products that meet green standards and/or are deforestation-free, and to increase green quotas.
- A mechanism to lower the export credit insurance guarantee fee for soft commodities that meet green standards and are deforestation-free.
- A mechanism to increase commercial banks' ability and enthusiasm to provide financial support, for instance by cutting the refinancing rate for projects transitioning to deforestation-free soft commodity value chains.
- A mechanism to provide subsidies and loans at discounted interest rates.
- A mechanism to drive financial guarantee insurance for soft commodities, and to appropriately increase the government's share of related risks.

4.2.4 Develop diversified green financial products for soft commodities

To ensure that adequate funds are available, it is necessary to develop diversified green financial products such as loans, bonds, equity investment and insurance, and innovate the financing models based on them.

- Sustainable development loans: Financial institutions should provide low-interest sustainable development loans for soft commodity companies. For instance, COFCO International has been issued a $2.3 billion sustainable development loan (see case study).
- Sustainable investment: From the perspective of diversifying investment risks, priority should be given to introducing hybrid financing, including development finance, sovereign funds, charitable funds, China-LAC Cooperation Fund and agricultural risk funds, to leverage a wider range of private investment.
- Sustainable development bonds: The government, financial institutions and companies should issue various bonds at home and abroad in accordance with the Catalogue of Green Bond Endorsed Projects (2021), the Green Industry Guiding Catalogue (2019), the Green Investment Principles for the Development of Belt and Road Initiative, etc.[45]
- Sustainable development insurance products: Deforestation risks and liability should be included in insurance assessment. Innovative insurance products for forest assets should be developed. For instance, Conservation International has incorporated the protection and carbon storage value of mangroves for coastal communities into insurance products.[46]

CASE STUDY:

COFCO International's partnership with financial institutions

COFCO International, a unified platform for procurement, deployment, investment and development of the parent company's international agribusiness, owns transit bases in key grain export and inland logistics nodes around the globe, such as Santos in Brazil, Rosario in Argentina and St Louis in the United States.

Sustainable development loans

It secured a $2.3 billion sustainability-linked loan from a consortium of 21 banks in 2019. COFCO made commitments to sustainable development, including a year-on-year improvement of environmental, social and corporate governance (ESG) performance assessed by Sustainalytics, a leading provider of ESG ratings, as well as to increase the traceability of agri-commodities. COFCO also promised to reinvest the interest discount on the loan into sustainability work.

This represents the largest-ever sustainability-linked loan for a commodity trader in the world. This landmark loan also signaled COFCO International's alignment of finance, business operations and sustainability.

Deepening sustainable supply chains

In 2020, COFCO International signed a cooperation agreement with the International Finance Corporation for support in creating more traceable and sustainable soybean supply chains in Matopiba, a region in Brazil's Cerrado biome. The project aimed to screen soybean farms in ecologically vulnerable regions to ensure compliance with key environmental and social criteria. It used farm geolocation, satellite imagery and other geographical information and official data to ensure that supplying farms were not located on ecological reserves or embargoed areas, and were in compliance with the Amazon Soy Moratorium.[47] The project also established land conversion profiles and assessed supplier compliance with the Cadastro Ambiental Rural, an environmental registry in Brazil for protecting the Amazon rainforest.[48]

In 2020, 357 supplying farms were mapped and analyzed, covering nearly 428,000 ha. By December 2021, COFCO International had reached traceability and completed social and environmental screening of all its directly sourced soybean from current suppliers in the Matopiba region.

In addition, COFCO International provides rural communities with information on sustainable agricultural practices through a web portal, and helps farmers comply with sustainable soybean procurement policies. In 2021, the project held trainings for more than 1,000 farmers. These activities have enabled COFCO to fulfil key criteria for financing agreements with sustainability-oriented financial institutions and meet its commitments to the Soft Commodity Forum, which brings together the six biggest agribusinesses for collective action on sustainable soybean supply chains.[49]

5 Consumption

GETTY/D3SIGN

Billions of consumers can team up with companies to promote the sustainable transition of consumption and production.

In 2015, the United Nations issued 17 Sustainable Development Goals, of which Goal 12, ensuring "responsible consumption and production", clearly defines sustainable consumption and production as "increasing net welfare gains from economic activities by reducing resource use, degradation, and pollution along the whole lifecycle, while increasing the quality of life".[50] It aims to meet people's basic needs and yearning for a better life without exceeding the carrying capacity of the ecological environment by increasing people's awareness and changing their consumption behaviour.

5.1 Sustainable consumption on the upswing

Over the past few years, people have become more alert to the need for sustainable consumption and production. Sustainable consumption has become an integral part of the green development strategy. A large number of global, regional, national and local policies, measures and practices to promote sustainable consumption have come through. Europe is a forerunner in promoting sustainable consumption and has gained remarkable results. China, like other countries, is also promoting sustainable consumption through policies and practices.[51]

Consumer demand for deforestation-free products can put pressure on companies. Eco-friendly, sustainable consumption is bringing new business opportunities and stimulating the internal motivation of companies to achieve zero deforestation.

5.1.1 Sustainable consumption contributes directly to reducing deforestation

Around a third of all food produced in the world, 1.3 billion tons, is wasted every year.[52] This costs the global economy $1 trillion per year as food rots in the dustbins of consumers and retailers or spoils due to improper transportation and harvesting. By reducing food wastage, the need for growing more food by clearing forests and bringing them under food production can be obviated.

For example, Chinese consumers have used soybean as their main source of high-quality protein for thousands of years. The protein content in soybean is about 35-40%, equivalent to that of beef, but food made of soybean has a much lower carbon footprint than beef.[53] According to a carbon footprint analysis across global food systems published in *Science* in 2018, tofu only produces 1.6 kg of carbon for every 100 grams of protein, and pure edible soybean even less, only 0.65 kg; beef produces about 25 kg.[54] Therefore, soybean and related products such as soybean milk, tofu and dried bean curd, popular among Chinese people, are both nutritious and low-carbon. Eating more soybean or soybean products is a choice for a low-carbon life.

5.1.2 Consumer demand can pressure companies to reduce carbon footprint

Although much of the world's deforestation goes towards production, it ultimately serves consumer demand. As eco-friendly consumption catches on around the world, more consumers are willing to buy green and low-carbon products, which will drive soft commodity-related companies, especially producers, to make responsible purchases and reduce deforestation.

The 2019 Survey Report on the Status of General Public's Green Consumption in China said 83.34% of the respondents expressed support for green consumption behaviour, and 46.75% were "highly supportive". Consumers are not only willing to buy high-quality green products but are also concerned about the impacts of production methods on the environment. Hence, a constant increase in businesses' willingness to procure, utilize and sell environment friendly, sustainable products.[55]

5.2 Synergies to release sustainable consumption

With stricter regulation and enhanced consumer awareness of environmental protection in response to the intensifying ecological crises such as climate change and biodiversity loss, companies can integrate sustainability into their long-term development strategy and realize new competitive advantages. Not only would sustainable business choices reduce deforestation and associated business risks, they would also improve brand value.

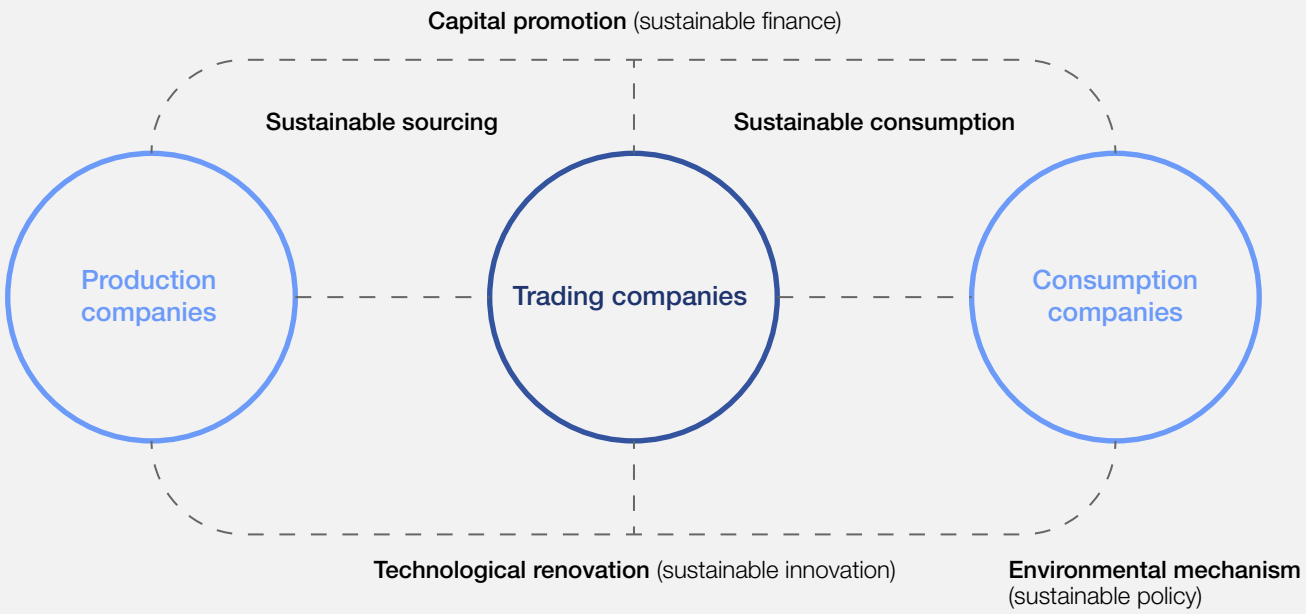
In the digital information age, advanced technology is a key instrument for reducing carbon emissions. For instance, big data has unique value in helping mitigate and adapt to climate change. Alipay's Ant Forest, for example, allows users to plant a virtual tree on their phone by accumulating "green energy" through low-carbon behaviours such as green travel, paper and plastic reduction, and online work. As an incentive for each virtual tree, Ant Forest and public welfare partners plant a real tree in desert areas to motivate low-carbon environmental protection. In the four years to 2020, 550 million users had planted more than 223 million trees.[56]

Similarly, businesses can promote healthy and environment friendly eating habits, using interactive applications to match carbon emissions reduction data to dining habits, helping people reduce waste, balance the intake of animal and plant protein, and actively participate in the responses to climate change.

6 Conclusion and recommendations

With capital as the pull, technology as the driver, consumption as the thrust, policy guidance as the mechanism, and deforestation-free production as the aim, all stakeholders must unite to drive the green and low-carbon transition of companies in the soft commodity supply and demand ecosystem.

FIGURE 6.1 **Diagram of the ecology for green and low-carbon transition of soft commodity industry chain**



6.1 Consensus-based actions

The upstream producing, midstream trading and downstream purchasing/consuming companies must all promote the thorough transformation of soft commodity supply chains by effecting their own transformation. A multitude of new business opportunities will arise in this process. Conformism is unsustainable, for without change, the future of the soft commodity industry may be upended by businesses in other innovative fields.

6.2 Global response

Coping with climate change by reducing carbon emissions is an imperative that has forged a global consensus for action. Deforestation reduction is completely consistent with the goal of tackling climate change and conserving biodiversity. The value of forest ecosystem services needs to be effectively evaluated, and forest protection technically linked to contributing to the goal of tackling climate change. Positive feedback and incentives should be provided to soft commodity companies that make changes and contribute to the goal of zero deforestation through effective policies and market mechanisms so as to guide more companies to make practical changes.

6.3 The policy environment for Chinese companies

Government guidance is a key motivation for Chinese companies, and policy and guidance can propel concrete action. Based on the pledge that China made together with 144 parties at Glasgow in 2021, an international cooperation mechanism needs to be established, in which China can play an active role through its South-South cooperation and Belt and Road initiatives.

Besides, credit and investment guidelines and standards related to deforestation risks should be developed to help and encourage financial institutions.

Companies are already making multiple efforts and taking innovative approaches, and would benefit from incentives for research and development into technological solutions as well as technical assistance.

Contributors

World Economic Forum

Pengyu Li, China Specialist, Tropical Forest Alliance

Jingxin Xiao, Early Careers, Nature-Based Solutions

Yuan Zhang, China Specialist, Tropical Forest Alliance

Chunquan Zhu, Head, China Nature Initiatives

China Sustainability Tribune

Deng Mingwen, Vice-Editor-in-Chief

Hu Wenjuan, Executive Director, Media Center

Jia Li, Researcher, Goldenbee

Yang Shihui, Researcher, Goldenbee

Yu Zhihong, Chief Editor

Zhu Lin, Editor

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Chen Ming, Deputy Chief Economist, Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment of China

Chen Yong, Deputy Director, Research Center for Economics and Trade in Forest Products, National Forestry and Grassland Administration of China

Fang Li, Chief Representative, World Resources Institute (WRI), China

Fan Shenggen, Chair Professor, China Agricultural University

Gao Guan, Vice-President, China Meat Association

Gao Wen, Secretary-General, China National Vegetable Oils Association

Jiang Yekui, Chief Sustainability Officer, Syngenta China

Li Fei, Associate Director, China, Carbon Disclosure Project (CDP)

Li Xiande, Professor, Director of Research, Office of International Agricultural Economics and Trade, Institute of Agricultural Economics and Development, Chinese Academy of Agricultural Sciences

Liu Denggao, Senior Agricultural Economist, China Soybean Industry Association

Joyce Ma, Country Director, The Nature Conservancy (TNC), China

Ma Jun, Chairman, Green Finance Committee, China Society for Finance and Banking

Peng Wei, Head, Sustainability, Grains and Oilseeds, Louis Dreyfus Company

Qiao Lu, Executive Secretary, Sustainable Development Council, Yili Group

Sun Lili, Chairperson, Society of Entrepreneurs & Ecology (SEE)

Wang Chunfeng, Executive Director-General, International Cooperation Center, National Forestry and Grassland Administration of China

Wang Yi, Vice-President, Institutes of Science and Development, Chinese Academy of Sciences

Yu Zhihong, Chief Editor, China Sustainability Tribune

Zhang Jianping, Director-General, Center for Regional Economic Cooperation, Chinese Academy of International Trade and Economic Cooperation, Ministry of Commerce of the People's Republic of China

Zhou Fei, Chief Programme Officer, World Wide Fund for Nature (WWF) China

The Project team would like to thank all those who have contributed to the consultations, interviews and workshops for this white paper:

Justin Adams, Executive Director (2018–2022), Tropical Forest Alliance, World Economic Forum

Danielle Carreira, Head of Finance Sector Engagement, Tropical Forest Alliance, World Economic Forum

Marielle Chen, Assistant Corporate Affairs Manager, Louis Dreyfus Company

Chen Ying, Chief, Cereals and Oils Dept, China Chamber of Commerce of Import and Export of Foodstuffs, Native Produce and Animal By-products (CFNA)

Kevin Chen Zhigang, Chair Professor, Zhejiang University

Dimitri de Boer, Regional Director, Asia and Chief Representative, China, ClientEarth

Dong Bo, Deputy Director, Public Affairs, Corporate Affairs Department, Yili Group

Dong Xin, Senior Project Manager, Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment of China

Fang Lifeng, Head, China, Roundtable on Sustainable Palm Oil

Feng Yuefeng, Public Relations Manager, Yili Group

Alexander Fisher, Director, Sino-German Cooperation on Climate Change (SGCCC), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Fu Xiaotian, Programme Director, Food and Natural Resources, China, World Resources Institute

Christoffer Grønstad, Counselor, Environmental Affairs, Norwegian Embassy in China

Susan Hu, Specialist, Nature Action Agenda, World Economic Forum

Hu Ying, Deputy Secretary-General, China Meat Association

Huang Qiyun, Communications Assistant, East and Central Asia Office, International Food Policy Research Institute

Jack Hurd, Executive Director, Tropical Forest Alliance, Member of the Executive Committee, World Economic Forum

Rebecca Ivey, Head of Impact and Platforms, World Economic Forum

Jia Feng, Director, Centre for Environmental Education and Communications, Ministry of Ecology and Environment of China

Jia Ru, Senior Manager, TNC China

Jiang Boya, Nature and Climate Lawyer, ClientEarth China

Jin Zhonghao, Head, Markets Practice, WWF China

Lei Wenzhong, CEO, Julong Group Indonesia

Li Shaoxin, China Agriculture Transitions Lead, Climate Bonds Initiative

Li Yonghong, Deputy Director-General, Ministry of Ecology and Environment of China

Liu Rui, Researcher, Institute of Food and Nutrition Development, Ministry of Agriculture and Rural Affairs of the People's Republic of China

Liu Ting, Deputy Head; Director, Global Value Chains Research Institute, Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment of China

Liu Yuan, Division Head, Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment of China

Mao Huayun, Sustainability Lead, New Hope Group

Tess Isabel Nepstad, Founder and Chief Strategist, Terra Bella Consulting Firm

Sebastien Paquot, Counsellor Climate and Environment, Delegation of the European Union to China

Qu Pengcheng, Head of the Geopolitical and Regional Agenda, World Economic Forum

Rong Linyun, Division Chief, International Cooperation Center, National Forestry and Grassland Administration of China

Steven Shi, Director, Government Affairs, Cargill China

Petra Tanos, Head, Strategic Partnerships, Tropical Forest Alliance, World Economic Forum

Ronnie Tham, Senior Director, Global Sourcing, Walmart

Tong Xiaolei, Policy Officer, Environment, Maritime Affairs and Fisheries, Delegation of the European Union to China

Viki Xue, Public Policy and Sustainability Manager, Bunge

Wan Jian, Research Associate, Food and Natural Resources Program, China, World Resources Institute

Diana Wang, China Sustainability Manager, Consumer Goods Forum

Wei Lihua, President, Junlebao

Wen Bo, China Adviser, Rainforest Foundation Norway

Joshua Wickerham, Engagement Manager, ISEAL Alliance

Wu Chenbo, Manager, U.S. Soybean Export Association

Xia Dongmei, Programme Officer, British Embassy in China

Xu Jin, China Head, Global Zero Deforestation, TNC China

Yan Jing, Manager, Louis Dreyfus China

Yin Ling, Deputy Chief Representative, U.S. Soybean Export Council

Yu Le, Associate Professor, Department of Earth System Science, Tsinghua University

Yu Xin, Director, Sustainable Food Consumption and Supply Chain, WWF China

Zhai Guiying, Deputy Director-General, Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment of China

Zhai Yuezhu, Senior Project Officer, Carbon Disclosure Project (CDP)

Zhang Junzuo, Director, China-UK Collaboration in International Forestry Investment and Trade Programme (InFIT)

Zhang Ruibo, Deputy Secretary-General, SEE Foundation

Zhang Xinxin, Regional Director, East Asia, Preferred by Nature in China

Zhang Xu, Center for Regional Economic Cooperation, Chinese Academy of International Trade and Economic Cooperation, Ministry of Commerce of the People's Republic of China

Zhu Mingxing, Strategy Director, Junlebao

Zou Dan, Manager, Sustainability Programme, U.S. Soybean Export Council

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World Economic Forum
91–93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744
contact@weforum.org
www.weforum.org