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Sustainable Protein Transformation in China

UPDATE ON PROGRESS AND OPPORTUNITIES



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EXECUTIVE SUMMARY

In a world defined by climate change and biodiversity loss, declining food security, and malnutrition, it is undeniable that the global food system has reached an inflection point. As such, the need to transform the way we produce and consume food has become increasingly urgent, and the largest global meat, dairy and aquaculture companies play a key role in this transformation.

The Collier FAIRR Protein Producer Index assesses the 60 largest publicly listed animal protein companies on ten key Environmental, Social and Governance (ESG) risks and opportunities each year. Chinese companies are well-represented, with 12 out of the 60 companies covered by the index being based in the People's Republic of China (hereafter "China"). These companies also represent 43% of market capitalisation in the Index – a significant portion of the global industry, meaning that they are crucial in shifting the industry towards more sustainable practices. Several developments in agri-food and finance policy within China, such as the inclusion of alternative proteins in the 5-year agricultural plan, are strong signals of change. These present opportunities both for food security and sustainability domestically, and for international trade and exports.

An analysis of Chinese companies' performance on selected ESG risks in the Index is presented alongside an overview of the current policy environment surrounding sustainable food systems and finance, informing key stakeholders about recent developments, risks and opportunities in China's agri-food system. Many of the Chinese government's prioritised policy areas, which include Carbon Neutrality, Ecological Civilisation, Rural Revitalisation, and Healthy China 2030¹ are closely linked to ESG issues in animal agriculture and the broader transformation of the food system. The overall shift in policy priorities towards environmental and social themes is in turn reflected by the Index, with promising year-on-year growth witnessed among some companies' scores and reporting on key ESG issues. This information may be of particular interest to investors who are tracking these trends.

Recent proliferation of sustainable finance and corporate reporting regulation also indicates that disclosure of ESG risks and impacts are rising up the Chinese policy agenda. Developments include more detailed ESG reporting guidelines, followed by a mandatory disclosure reporting framework intended to be in place by 2025. The report also finds that a number of the largest China-based animal protein companies are diversifying into plant-based alternatives, and that firms with alternative protein business could consider raising finance through green bonds, the market for which has grown significantly in China over the past three years.

The policy environment in China has also become increasingly conducive to low-carbon industries, including alternative proteins. Sustainable agriculture features in national conservation plans in the form of restoring farmland to forest, water saving and soil conservation. China's Nationally Determined Contributions (NDCs) recognise agriculture as a key sector for emissions reduction, and the government has pledged to build climate-resilient agriculture into South-South climate cooperation.² The mention of synthetic proteins in multiple government plans are important milestones for the industry. On the demand side, consumption of sustainable and low-carbon food – including plant-based diets – has gained traction in China, as demonstrated by policies addressing consumption as well as non-governmental organisation (NGO) and civil society initiatives. Businesses have also taken advantage of the policy context to introduce initiatives for promoting sustainable food consumption. Finally, market trends demonstrate that the market share for alternative proteins is growing in China and likely to expand further.

To accelerate the transition, food and agriculture stakeholders in China can ensure alignment with domestic government goals, and coordinate between domestic and international financial regulation and risk reporting frameworks. Private sector actors can engage both with government – at multiple levels – to encourage favourable policy environments and government support, as well as with civil society to increase awareness of the risks and opportunities associated with protein consumption.

INTRODUCTION

This progress report provides an update on last year's report: **Transforming Animal Agriculture in China**. Last year's report presented key regional findings from the Collier FAIRR 2020 Protein Producer Index, and addressed relevant implications and opportunities, while exploring the implications of recent policy developments in China. In December 2021, the newest Index data findings were published, which provide key insights into developments in the animal agriculture industry's ESG performance. Companies covered in the index are scored from 0-100 based on their disclosure of ESG information relevant to the agriculture sector.

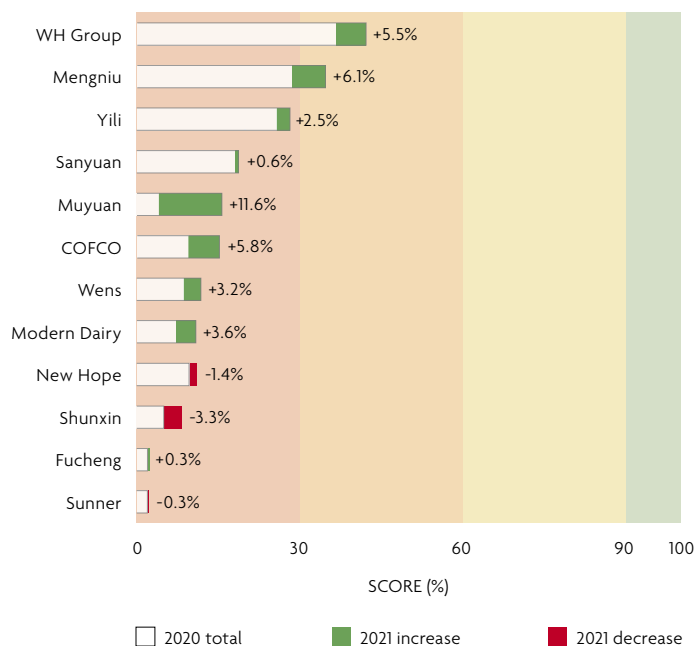
This report, co-authored by the FAIRR Initiative and Ontopology Initiative, will first present an overview of year-on-year performance of the largest protein producers in China, focusing on four key areas of relevance for the region that are covered in the Collier FAIRR Protein Producer Index: Greenhouse Gas Emissions, Biodiversity and Deforestation, Antibiotics Use, and Sustainable Proteins. Section 2 will highlight key sustainable finance and food policy developments in the region, and Section 3 will cover more broadly the market trends and opportunities for scaling alternative protein in China.

COLLER FAIRR PROTEIN PRODUCER INDEX 2021 RESULTS

Summary

The Collier FAIRR Protein Producer Index Universe of companies assesses protein producers' performance on key ESG factors across the globe. Around half of the companies covered are located in Asia, and 12 of them (representing 20% of companies) are in Mainland China. These 12 companies represent 43% of the market capitalisation of all companies covered in the Index¹ which covers 25-30% of global revenues in protein production. The size and impact of their operations means that their performance on key ESG risks is significant, and has implications for the whole industry. Companies assessed in the Index are ranked from 0-100. A score between 0 and 29 is categorised as 'High Risk', anything between 30 and 59 is 'Medium Risk', 60 – 89 is 'Low Risk' and anything above 90 is considered 'Best Practice'.

Figure 1
Average overall score by company (% YoY)



In 2020, 10 of 12 companies in China (83%) ranked as 'High Risk' across all the assessed risk and opportunity factor categories, and the other two ranked as 'Medium Risk'. In 2021 this remained the same, although some companies' performance relative to their peers has changed (See Figure 1).

In 2021, the total average performance score was higher than in 2020. Scores improved across all categories except for Governance (see Figure 2). At the same time, the average score still fell under 'High Risk' for each category in 2021, highlighting there is room for improvement.

Figure 2
Average company scores for each risk factor in 2021 compared with 2020.

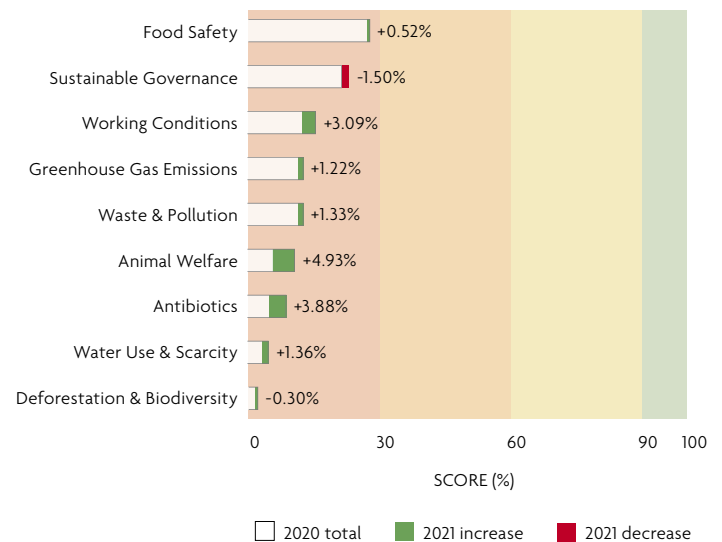







Figure 2 shows that in both 2020 and 2021, the Risk Factor categories for which companies in China achieved the highest scores on average were Food Safety and Sustainable Governance. These still fell under the 'High Risk' category. These scores remained relatively constant year-on-year. The largest year-on-year increase in scores was in Animal Welfare and in Antibiotics Use, both risk factors where general performance across the Index is poor, so it is promising to see improvements in these areas among Chinese companies. The lowest scoring indicators were Deforestation and Biodiversity, as well as Water Use and Scarcity, which also perform poorly among Index companies globally.

¹ <https://www.fairr.org/index/> The threshold for inclusion of Chinese companies was historically at \$750mn compared to \$450mn for other companies globally.

Mapping Collier FAIRR Protein Producer Index Risk Factors against government policy priorities in China

The Chinese government has announced several policy priorities over the last few years to support the country's current development agenda. A number of these are closely linked with some of the risk areas associated with animal agriculture covered in the Index, as shown below:

Table 1
Mapping Collier FAIRR Protein Producer Index Risk Factors against government policy priorities in China

| Government Development Policy Goals ² | Relevant Collier FAIRR Protein Producer Index Risk/Opportunity Factor |
|--|---|
| Ecological Civilization (《生态文明》) | Greenhouse Gas Emissions, Deforestation & Biodiversity, Waste & Pollution, Water Use & Scarcity  |
| Carbon Neutrality (《碳中和》) | Greenhouse Gas Emissions, Deforestation & Biodiversity, Sustainable Governance, Sustainable Proteins  |
| Common Prosperity (《共同富裕》) | Working Conditions, Sustainable Governance  |
| Rural Revitalization (《乡村振兴》) | Working Conditions, Sustainable Protein  |
| Healthy China 2030 (《健康中国2030》) | Antibiotics, Food Safety, Working Conditions, Waste & Pollution, Sustainable Protein  |

2 See Annex for a summary and background of each of these goals

Protein Diversification

In addition to looking at key Environmental, Social and Governance (ESG) risk reporting in the largest animal agriculture companies, the Collier FAIRR Protein Producer Index assesses Index companies' investment in or exposure to alternative proteins. For companies in the livestock and fish sectors, diversifying product portfolios to include alternative protein sources presents the biggest opportunity to mitigate operational risks, while building agility to respond to market and technological disruptions.

Figure 3
Average company scores for 'Sustainable Proteins' in 2021 compared with 2020.

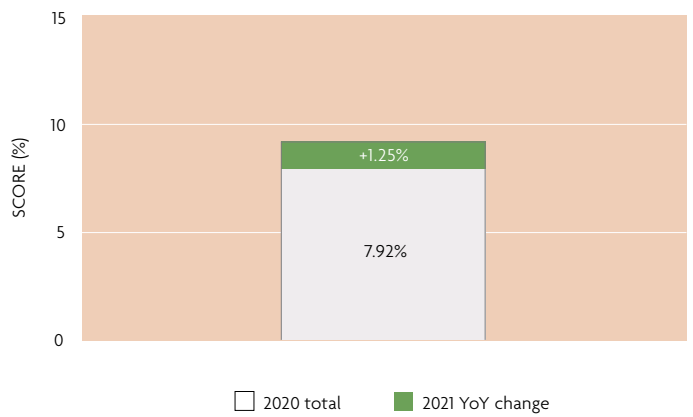
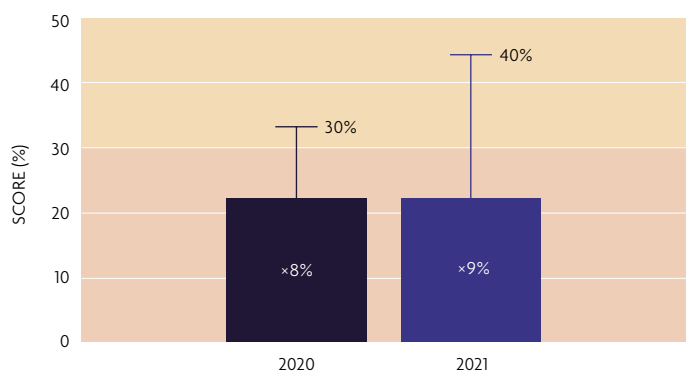


Figure 4
Company score distribution for 'Sustainable Proteins' in 2021 compared with 2020.



Four of the companies included in the Index reported some form of exposure to alternative protein production in 2020. Encouragingly, for three out of the four companies, 'Sustainable Protein' scores³ increased, reflecting a growing appetite for and interest in alternative proteins amongst producers in the Chinese market, and highlighting that their investment in alternative proteins is not a one-off. In 2021, New Hope announced aims to become the largest plant meat company in China.³ However, no additional Chinese companies report diversifying into alternative protein, and scores remain relatively low when compared with some foreign counterparts. Recent announcements and publications from the Chinese government that are supportive of alternative protein, covered in the Policy section of this report, could encourage more animal agriculture companies to explore diversification of production in the coming years.

CASE STUDY

WH GROUP

Highest Score in Sustainable Proteins

40% (Best Practice)

**FAIRR Analysis**

The company's subsidiary Smithfield Foods launched its dedicated alternative protein brand 'Pure Farmland' in 2019, which produces a range of plant-based protein products. WH Group states that strong demand and changing consumer preferences will support its strategic direction of diversifying the plant-protein segment. The company mentions that the revenue from its plant-based products increased by 56% year-on-year.

Highlight: Sustainable Proteins**Diversification of Products to Alternative Protein Sources**

Some of the companies based in Mainland China have recognised the importance of alternative proteins. To mitigate operational risks and building agility to respond to the growing market for alternatives, FAIRR recommends that companies launch dedicated alternative protein brands, while the more advanced companies expand their production capacity. Investing in alternative proteins can also form part of companies greenhouse gas reduction plan.

³ From 2022, this category will be named 'Alternative Protein'

Greenhouse Gases

Making up 77% of agricultural land use, the global livestock sector plays a key role in climate change, contributing around 16.5% of total anthropogenic GHG emissions.⁴ In turn, climate change can impact livestock production, both directly through heat stress affecting animal mortality and productivity, and indirectly through effects on grassland, species distribution and disease. This is predicted to worsen over time, with recent scientific reports from the Intergovernmental Panel on Climate Change (IPCC) predicting that extreme heat stress risk will increase for all livestock species in many regions of the world by the end of the century.⁵

Figure 5

Average company scores for 'Greenhouse Gas Emissions' in 2021 compared with 2020.

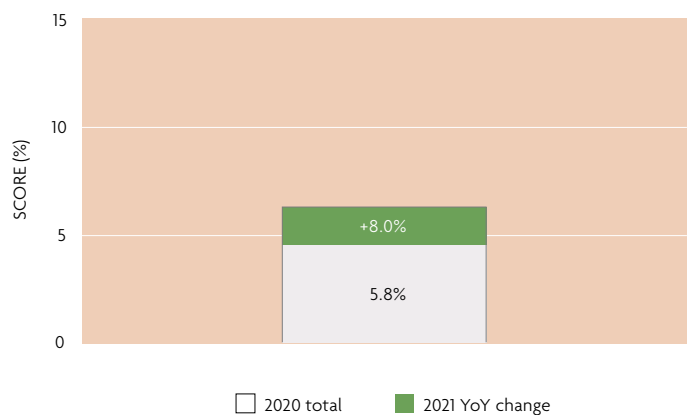
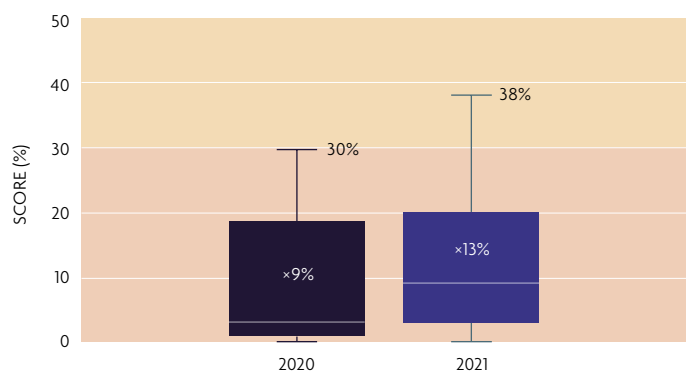


Figure 6

Company score distribution for 'Greenhouse Gas Emissions' in 2021 compared with 2020.



Despite an increasing policy focus on GHG emissions and decarbonisation, most of the protein producing companies located in China still fall into the ‘High Risk’ category on GHG emissions. In total, 92% of these companies score ‘High Risk’ on Scope 1 and 2 emissions, and none (0%) of the companies currently report having set targets for Scope 3 emissions, despite the fact that Scope 3 emissions typically constitute 70% of total emissions for this sector.⁶ For companies that improved, scores rose by a promising 7.73 points on average. This increase took place predominantly among companies already disclosing information in 2020.

The Chinese Ministry of Agriculture is currently putting together a plan for decarbonisation of the sector in line with China’s “dual carbon” or “30.60” goal – peaking emissions by 2030 and reaching carbon neutrality by 2060 – which was announced in 2020.⁷ The government’s updated NDC submission also mentions plans to reduce emissions and improve efficiency in agriculture and livestock production.⁸ This, along with the introduction of more stringent environmental reporting requirements discussed in the next section, could see company emission reporting improve and become more detailed over the next few years.

CASE STUDIES

WH GROUP – Highest GHG emissions score

Greenhouse Gas Emissions Score

37.8% (Medium Risk)



FAIRR Analysis

WH Group scores the highest on GHG emissions out of the 12 companies. Its subsidiary Smithfield Foods has set a target of 30% reduction in GHG emissions by 2030 across its entire U.S. supply chain. However, it has not specifically disclosed if this covers Scope 3 emissions. In its CDP Climate Report 2020, the company discloses it has set a target to reduce Scope 1,2 and 3 emissions by 25% by 2025 from a base year of 2010. However, it is unclear if this includes emissions from agriculture. The company does not explicitly disclose its emissions from Scope 3.

WH Group identifies climate-related risks may affect its business and finances according to the geographical location of its operations, government planning and policies, and extreme weather events. The company identifies five most important climate-risks to its business and operations.

WENS FOODSTUFF GROUP CO. LTD – Biggest Improvement

Greenhouse Gas Emissions Score

20% (High Risk)



FAIRR Analysis

Wens Foodstuff has seen the largest YoY improvement in its GHG score out of the 12 companies. The company mentions various energy-saving and carbon reduction measures, and discloses Scope 1 and 2 carbon emissions, including carbon intensity.

Next Steps

- Set science-based targets to reduce Scope 1, 2 and Scope 3 emissions
- Disclose scope 3 emission data, including feed production
- Reduce and mitigate emissions from feed farming and animal farming by innovative projects
- Respond to the CDP Climate Change Questionnaire
- Use a third party to audit the data on GHG inventory
- Complete a climate-related scenario analysis.

Biodiversity

Animal agriculture has been identified as a key driver of biodiversity loss and species extinction. Agriculture as a whole is the leading threat to 86% of species at risk of extinction globally.⁹ Some of these impacts happen down the value chain – for example, those related to deforestation and land clearing for soy cultivation to use in animal feed – while others are a consequence of waste and nutrient release into ecosystems. Soybean cultivation for meat production, especially for beef, is a key driver of deforestation.¹⁰

Over the past few years, the Chinese government has started integrating ecological considerations into decision making. Ahead of the COP15 Biodiversity Summit, which China holds the presidency of, the government announced that they plan to plant 36,000 square kilometres of new forest each year to 2025¹¹, and in October 2021, pledged to inject \$233 million into a new fund to protect biodiversity in developing countries.¹²

In China, all assessed companies still score ‘High Risk’ overall for Biodiversity and Deforestation, and just one-third of companies scored above 0. There are signs of a general ambition to address deforestation, however, with three of the companies’ scores improving when compared to 2020. Looking at the global picture, more than two-thirds of companies outside China covered in the Index (69%) are still categorised as ‘High Risk’ on Deforestation and Biodiversity. This reflects a lack of disclosure by companies about targets on deforestation or conversion-free soy, as well as a lack of disclosure on engagement and monitoring of suppliers in relation to soy or cattle-related deforestation.¹³ Global movements towards deforestation-free legislation include proposals adopted by the EU and UK on deforestation-free products, which could also be adopted by the US and China in the future, and would require increased disclosure from producers.¹⁴

As part of the Biodiversity risk assessment, the Index looks at companies’ engagement, monitoring and traceability on soy for animal feed. Chinese companies that report on this indicator score slightly lower than the overall average for Asia (including Mainland China), and companies based in Latin America perform better. There is a high variation between companies on scores, with aquaculture companies tending to score higher than land-based protein companies. 60% of aquaculture companies in these regions score Medium or Low Risk, compared with just 10% of pork, beef, poultry or dairy-focused companies.

CASE STUDY

INNER MONGOLIA YILI
INDUSTRIAL GROUP CO LTD

Highest Score in Monitoring, Traceability and Performance – Soy for animal feed

15% (High Risk)



FAIRR analysis

The company discusses engaging with the local agricultural reclamation research institute for soybean cultivation, and states that the cultivation and acquisition process is pollution-free and traceable. The company has an extensive report on biodiversity, detailing its biodiversity efforts. However, it is not specific in addressing deforestation and mentions suppliers, but not specifically feed suppliers.

The company states that it will actively research and develop other protein feed ingredients such as cotton meal, alfalfa, rapeseed meal, peanut meal etc., that can be used as protein feed for dairy cows instead of soybeans to reduce the consumption of soybean and contribute to reducing deforestation risk in exporting countries.

Best Practice is awarded when a company takes measures to engage suppliers in support of the DCF target. Measures include supplier engagement, compliance monitoring traceability and innovation.

Next Steps

- Reference deforestation/biodiversity protection in supplier code of conduct or/and in supplier selection process
- Provide support to soy producers to encourage deforestation free production
- Disclose the traceability of soy supply chain
- Set more innovations/practices to move towards sustainable feed sources and promote biodiversity and soil health in feed farming

Antibiotics

The overuse of antibiotics in farming is a key contributor to higher levels of antibiotic resistance to some human infections.¹⁵ The majority – around 66% – of the world’s antibiotics are currently used in animal agriculture¹⁶, with China remaining among the world’s largest producers and consumers of antibiotics.¹⁷ In 2017, it was the largest consumer of veterinary antimicrobials, accounting for 45% of global use, and it is projected to remain the largest consumer in 2030.¹⁸ Across Asia, 93% of assessed protein producing companies score ‘High Risk’ on antibiotics use.

HIGHLIGHT: POLICY ON ANTIBIOTICS USE

Figure 7
Average company scores for ‘Policy on Antibiotics Use’ in 2020 and 2021.

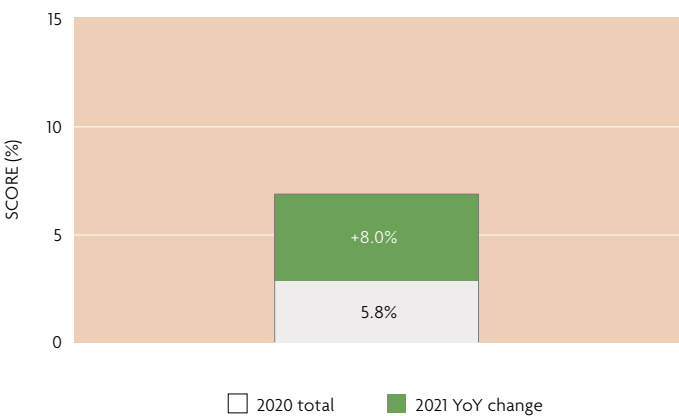
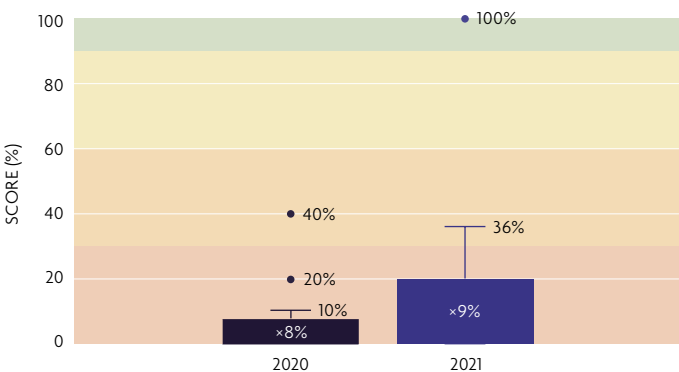



Figure 8
Company score distribution for ‘Policy on Antibiotics Use’ in 2021 compared with 2020.



Although companies are still performing relatively poorly on this risk factor, scores improved YoY for one-third of Chinese companies. In 2016, the Chinese government announced a national action plan to combat antimicrobial resistance.¹⁹ The average annual increase in Index scores reflecting company reporting on having an internal antibiotics policy in place, shown in Figure 7, could be a sign that companies based in Mainland China are starting to account for this risk and embed it into their strategies.

CASE STUDY
MENGNU DAIRY CO LTD

Highest Score in Policy on Antibiotics Use
100% (Best Practice)



FAIRR Analysis

Mengniu states that in line with the veterinary drug use principle of “reduced use and no antibiotics”, it has established a comprehensive management system for the use of veterinary drugs. The company formulates a Compliant Veterinary Drug Use Procedures and released the Mengniu Principles and Commitment for the Use of Veterinary Anti-Microbial Drugs. The company explicitly states that it completed the signing of Antibiotics Use Pledge with all ranches. The company does not use antibiotics promote animal growth and for routine use. It requires its suppliers to only use veterinary antimicrobials for the treatment of animal diseases only when prescribed by a veterinarian.

The company requires suppliers to base their veterinary antimicrobial reduction programmes on good animal welfare practices and management such as vaccination, hygiene and animal welfare practices. The company also states that it works with farmers, suppliers and other stakeholders to reduce the use of veterinary antimicrobial throughout the industry.

Best Practice

Best Practice is awarded when a company has committed to no routine use of any antibiotics across all species except in the presence of diagnosed disease and explicit measures taken to improve welfare and reduce antibiotics, or if the company has a policy on No Antibiotics Ever with explicit disclosure on supplementary animal welfare measures.

POLICY DEVELOPMENTS IN FINANCE AND FOOD

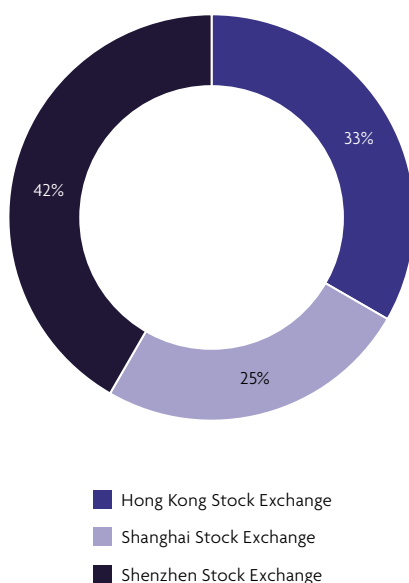
Over the past year, the Chinese government announced an array of new policy regulations that are relevant for investors and other stakeholders in the food system. These changes are directly linked to some of the risks facing protein producing companies covered in the Collier FAIRR Protein Producer Index. In this section, we divide these two developments into two categories for analysis: financial regulation and ESG disclosure, and sustainable agriculture and food policy.

Sustainable Finance and ESG Disclosure

Recent developments in mandatory ESG disclosure for companies

The twelve companies covered in the Collier FAIRR Protein Producer Index represent 43% of the market capitalisation of all 60 companies covered and are listed on either the Shanghai, Shenzhen or Hong Kong Exchanges. Companies listed on the Hong Kong Exchange have been subject to ESG regulations since 2016, which has familiarised some China-based companies with ESG trends.²⁰ Currently, one-third of the companies are listed in Hong Kong.

Figure 9
Index companies stock exchange distribution



Towards the end of 2021, the Hong Kong Stock Exchange introduced guidance for Climate Information Reporting²¹, and Hong Kong was one of the first jurisdictions to propose and implement laws and regulations to mandate Task Force on Climate-related Financial Disclosures (TCFD) aligned financial reporting.²²

In June 2021, the governor of the People's Bank of China (the central bank) announced that mainland China would also move towards mandated climate-related financial disclosure. This will initially be tested with commercial banks and listed companies.²³

Similar announcements have been made by various Chinese government bodies, with a multitude of regulation changes between 2021 and 2022 suggesting improvements in the availability of company ESG data and reporting in the near future are likely. In February 2021, the China Securities Regulatory Commission (CSRC) released guidelines for listed companies on communicating ESG information with investors. In June 2021, the CSRC published standards for the inclusion of environmental and social responsibility in a companies' annual reports. More recently, the China Enterprise Reform and Development Society (CERDS) published the first locally developed corporate ESG disclosure guidelines 'Guidance for Enterprise ESG Disclosure', drawing from international best practice but tailored to the Chinese context.²⁴ The standard includes a requirement to disclose Scope 1, 2, and 3 emissions²⁵, which would have significant implications for protein producing companies, many of whose emissions occur further along the value chain.

In February 2022 new rules laid out by the Chinese Ministry of Ecology and Environment²⁶ requiring certain types of companies to disclose environmental information also came into force. The scope of who is required to make disclosures is expanding, as well as what information needs to be disclosed. However, currently the majority of environmental and climate disclosure is still limited to voluntary reporting. The reforms proposed by the Ministry of Ecology and Environment in 2021 suggested that a mandatory disclosure system would be in place by 2025²⁷, and that reported environmental data will be centralised in a dedicated platform.²⁸

Figure 10

Sustainable Finance Policy Timeline**China's green bonds and green finance**

China's green bond market was established in 2015, and over the past 6 years has grown to become the second-largest green bond market in the world, following the US and France. In 2021, 403 green bonds were issued in China. The value of these bonds reached nearly 1.3 tn CNY (200 bn USD) at the end of 2021, and annual issuance was up 186% from a year earlier.²⁹ 2021 saw an upgrade of China's green bond policies, allowing publicly listed companies to raise finance for sustainable production that is aligned with green bond principles.

Green Bond Taxonomies in China were aligned further with international standards in 2021, benefiting protein producers planning to issue green bonds. The upgraded Green Bond Endorsed Projects Catalogue (2021 Edition)³⁰ (《绿色债券支持项目目录 (2021年版)》) and the International Platform on Sustainable Finance's (IPSF) Common Ground Taxonomy Instruction Report on Climate Change Mitigation (《可持续金融共同分类目录报告——气候变化减缓》) were released.³¹ These have made it easier to identify what economic activities classify as green projects. In July 2022, the Green Bond Standards Committee issued principles requiring that 100% of the use of proceeds must be for green projects and activities.³² The domestic guidelines aim to support environmental protection and restoration, climate change response and more efficient resource utilisation, and include industries that are related to animal protein production. Beside the economic activities listed in taxonomies, innovative projects that do not fit into the taxonomies can issue green projects once their green credentials and use of proceeds are certified by second-party organisations. As many of the largest Chinese animal protein producers who have reported diversification into alternative protein are at the beginning of this process, they might not yet have a project that falls directly into one type of listed projects. Certification by second-party organisations on green credentials and use of proceeds will also be an important step for protein producers to issue green bonds.

**One out of twelve
animal protein
companies conducted
climate risk
analysis in 2021**

Aside from underpinning the green bond policy system in general, 2021 also saw the introduction of innovative bond types, such as ‘Carbon Neutrality Bonds’³³ and ‘Sustainability-Linked Bonds’³⁴ (SLBs), to China’s bond market. According to the *Notice of Specifying the Mechanism relating to Carbon Neutrality Bonds* (《关于明确碳中和债相关机制的通知》) parties interested in issuing Carbon Neutrality Bonds are required to track and report quantified impacts on carbon emission reductions. Companies in the agriculture and food sector could raise finance linked to production of sustainable protein and diversification of production into alternative proteins. This calls for the need to develop more robust methodologies to calculate environmental impact of alternative protein production, and better methodologies and tools used to report and verify climate-related information. To issue SLBs, issuers are only required to declare Sustainability Performance Targets and set sustainability-related KPIs, and do not need to restrict the use of proceeds to endorsed green projects. Considering no issuers in China have issued green bonds for alternative proteins yet, SLBs are a more feasible option for protein producers to finance alternative protein production that contributes to sustainability.

For companies, issuing green bonds is a way to attract more responsible investors, take advantage of the booming market of green products and services, and demonstrate their environmental commitments to the public and capital markets. At the same time, raising large scale capital through green bonds for alternative protein production can help the company mitigate multiple risks associated with animal protein production, like pollution, antibiotic use, and climate impacts.

In 2020, COFCO International issued the largest sustainability-linked loan facility by a commodity trader to date, linking interest rates to ESG performance and increasing traceability of soy sourced in Brazil³⁵. In 2022, Syngenta Group (HK) Holdings Co., a subsidiary of agrochemicals company Syngenta Group, issued a 3-year sustainability-linked bond (SLB) worth USD 4.5 bn, a record for Asia. The facility is led by a group of banks including the Agricultural Bank of China.³⁶ Sustainability-linked bonds are subject to less strict criteria than green bonds, and between 2020 and 2021 the global issuance of sustainability-linked bonds grew nine-fold. Nonetheless, investors can be apprehensive about certain green and SLL bonds and their ability to bring about change within companies.³⁷ The Climate Bonds Initiative has sought to address this by publishing and updating sector specific principles and standards for green bonds³⁸, and in China, the National Association of Financial Market Institutional Investors (NAFMII) issued a document aimed at strengthening the disclosure of green bonds to manage greenwashing risks.³⁹

While “greener” companies can enjoy more flexibility in issuing green bonds (e.g by being identified as “green issuers”⁴⁰), issuing green bonds is about physical assets and projects. Companies that have good credits and have plans to invest in green projects are eligible for issuing green bonds.⁴¹ Protein producers that are diversifying production into alternative proteins could meet this standard if the sustainability goals of the diversification are specified. Therefore, the development of China’s green bond market has introduced opportunities for protein producers to attract both domestic and foreign investors, finance their projects, and scale their production by adopting more sustainable production measures. It could also play a role in transition finance, providing financing opportunities for innovative solutions in food systems.

Other initiatives promoting sustainable finance

In 2021, the G7 countries made a commitment to mandate disclosure on climate-related risks, opportunities, and impact on companies’ financial statements, based on recommendations from the TCFD. China could follow in the near future, which would provide a valuable tool for protein producers in support of the finance sector’s efforts towards green investments and alignment with the “30.60” carbon goal. The latest evidence from the IPCC highlights that livestock systems are exposed to climate risks from extreme heat stress and land degradation.⁴² FAIRR’s research, however, found that in China, only one out of twelve animal protein companies conducted climate risk analysis in 2021. Globally, just 2 (5%) of the 43 largest meat producers disclosed information on their climate-related scenario analysis. In contrast, the disclosure rate of climate-related scenario analysis in the energy and utility sector reached 23%.⁴³ Disclosure following TCFD (and in future TNFD⁴⁴) recommendations benefits companies and investors by allowing them to assess their exposure to climate and nature-related risks.

In 2021, the Hong Kong Monetary Authority issued Guidance on Climate Risk Management (《气候风险管理指引》), requiring banks to disclose on climate-related risk for the first time no later than mid-2023, and complete disclosure that aligns with TCFD recommendations no later than 2025.⁴⁵ This was the first policy mandating TCFD-aligned disclosures in the region. Considering disclosure of other issues (e.g. legal disclosure of environmental information) followed a trajectory of expanding from Hong Kong to mainland China, and from financial institutions to companies, it is possible that TCFD-aligned disclosure will soon become a requirement for companies listed in mainland China.

The animal agriculture sector is exposed to significant risk from climate change impacts.⁴⁶ Stagnation in dairy production in China, and as well as grasslands degradation and soil in Inner Mongolia could be attributed to increased periods of high temperatures and changes in weather patterns.⁴⁷ Disclosure following TCFD recommendations will enable agriculture sector firms to better analyse the impact of climate change on their business, and implement strategies to tackle climate change. For example, producers can benefit from opportunities posed by diversifying into alternative protein products with a lower exposure to climate risk. TCFD-aligned disclosure can also make companies more attractive to both domestic and foreign investors.

Sustainable food policy

In addition to new regulations and initiatives in the financial sector, the Chinese government has shown a growing interest in recent years in promoting sustainable food with respect to both production and consumption. Many of these are strongly linked to key domestic policy priorities, including ecological civilisation, rural development, common prosperity, carbon neutrality and food security. Since 2020, a range of new policy targets, guidance and regulations has been introduced in the food sector, which can be conducive to the development of China's sustainable protein industry. These cover both the demand and supply side, and some of the most significant developments are outlined in this section.

Developments on the supply-side

In 2016 China began to introduce supply-side reforms to revitalise its slowing economy, while also addressing environmental and social challenges. As part of this, the Chinese government announced a set of agricultural supply-side structural reforms in 2017. One of the priorities is “green” production, alongside sustainable agricultural development, optimising industrial production, expanding the agricultural value chain, boosting innovation and resource efficiency, consolidating shared rural development, and enhancing rural reforms.^{48,49} Among various green production measures proposed by the government, important targets include halting any further increase in pesticide and fertiliser usage and centralising treatment of livestock and poultry manure. According to the official data, the goal to halt the increase of pesticide and fertiliser use by 2020 was achieved, and the government pledged new goals in 2021 to further increase efficiency of pesticides and fertilisers by 2025.⁵⁰ These measures have implications for the livestock and poultry supply chains as they can generate incentives for business and investors to consider more sustainable sources of protein with a lower environmental impact.

Other aspects of green agriculture set in the government's reform plan are biodiversity conservation measures, including restoring farmland to forest, water saving measures and soil conservation.⁵¹ Over the last decade, China has paid increasing attention to biodiversity protection under the guidance of the National Biodiversity Conservation Strategy and Action Plan (2011-2030),) and made progress, including the establishment of many protected areas and national parks, as well as protection and restoration of wild animals and plants. As the official President of the fifteenth meeting of the Conference of Parties (COP 15) of the Convention on Biological Diversity (to be held physically in Canada in 2022), China has been promoting biodiversity conservation both domestically and across the globe. In October 2021, the Chinese government's white paper “Biodiversity Conservation in China” emphasised China's commitment to green development and sustainable utilisation of bio-resources in pursuit of harmony between nature and people.⁵² Efforts in this direction include promoting green rural and urban development, valuing green products, and strengthening eco-environmental protection. These policies could add burden to producers of animal products and subsequently provide opportunities for alternative protein producers.

Relatedly, the Chinese government has also paid increasing attention to the role of agriculture in its climate policy. In China's updated NDCs from 2021, agriculture is identified as a key sector within which to achieve greenhouse gas emission reduction and efficiency improvement.⁵³ More specifically, to support the goal of peaking GHGs before 2030 and reaching ‘carbon neutrality’ by 2060, the Chinese government pledged to intensify efforts to enhance the efficiency of chemical fertilisers and pesticides and also refine ways to treat and utilise livestock and poultry manure. Meanwhile, the government has realised the links between agriculture and ecosystem carbon sinks, and has committed to returning farmlands to forests and grassland, and enhancing ecological agriculture's ability to act as a carbon sink.

In China's updated NDCs from 2021, agriculture is identified as a key sector within which to achieve greenhouse gas emission reduction and efficiency improvement”

While it remains to be seen which specific policy instruments will be used by the Chinese government to reduce GHG emissions in the agriculture sector, prospective measures following these pledges are likely to put pressure on the traditional livestock and poultry industry, which will face transition risk as a result. Additionally, in its NDCs, China acknowledged agriculture and grassland as key fields to advance action on climate adaptation, and accordingly, plans to continue tightening grazing bans and improving grass-livestock balances. The government also pledged to promote climate-resilient agriculture in South-South climate cooperation. Given these pledges, the policy environment in China's agriculture sector is expected to become more and more conducive to low-carbon industries, including alternative proteins. This trend of supporting low-carbon production and environmental protection is reflected in the 14th Five-Year National Agriculture Green Development Plan (‘‘十四五’’全国农业绿色发展规划) issued jointly by six ministry-level agencies in September 2021.⁵⁴ The plan identifies resource protection, pollution control, restoration of agricultural ecology, and development of low-carbon agricultural industrial chains as key goals to be achieved between the years 2021 to 2025. Furthermore, in 2022 China's Agriculture ministry and National Development and Reform Commission issued a climate action plan for the agriculture sector: the 'Implementation Plan for Emission Reduction and Carbon Sequestration in Agriculture and Rural Areas'. It points out 10 key actions, such as fertiliser efficient utilisation, livestock and poultry GHG emissions reduction, and straw management.⁵⁵

Key goals between 2021-2025 for greening agriculture:

1. Resource protection
2. Pollution control
3. Restoration of agricultural ecology
4. Development of low-carbon agricultural industrial chains

The alternative protein industry can also find opportunities in the Chinese government's recent efforts to protect food security. During a Chinese People's Political Consultative Conference meeting in March 2022, President Xi Jinping mentioned the role of alternative protein in ensuring national food security through a 'greater food approach'.⁵⁶ Notably, Xi pointed out the importance of obtaining calories and protein not just from animals, but also plants and microorganisms. For many observers, this mention of alternative proteins has been seen as a clear signal of a series of new policies to support the relevant industries.⁵⁷ Increased investment in agricultural research and development (R&D) and technology innovation to produce more with less is a central goal in the Chinese government's supply-side structural reforms. The 14th Five-Year National Agriculture Technology Development Plan (‘‘十四五’’全国农业农村科技发展规划), published by the Ministry of Agriculture and Rural Affairs in January 2022, mentions cell-based meat, synthetic egg, dairy and oil, and functional recombinant protein cultivation as types of 'cutting edge and cross integrated technology' for the production of 'future food'. Most recently, the 14th Five-Year Plan for the Bioeconomy includes a proposal to develop biotechnology and conduct R&D into alternative protein, in order to reduce pressure on natural resources created by conventional animal farming.⁵⁸ This builds on the inclusion of alternative protein as a funding area under a section on 'green biomanufacturing' in the National Key R&D Program (国家重点研发计划) in 2020.⁵⁹ In 2021, the government funded a project entitled 'High-efficiency biological manufacturing technology of artificial meat' to be carried out by Jiangnan University.⁶⁰ In a context where China currently accounts for 60% of global imports of soy, these developments have implications for improving food and nutrition security, through reducing China's dependence on imports for animal feed.⁶¹ The inclusion of cultivated meat and other synthetic proteins in multiple government plans can be seen as major milestones for the alternative protein industry in China. It not only shows that the industry has been formally recognised by the Chinese government, but more importantly, may foreshadow a series of supportive policies being implemented to secure China's position as a global leader in this emerging industry.



Developments on the demand-side

On the demand side, the consumption of sustainable and low-carbon food – including plant-based diets – has gained traction in China over the last few years. An important driver of the momentum on sustainable consumption is the Chinese government’s effort to implement the United Nations Sustainable Development Goals (SDGs), especially SDG 16: “Responsible Consumption and Production”. Since the adoption of the SDGs in 2015, China has shown its commitment to SDG implementation and attempted to incorporate these into policy. In this context, green consumption has been featured in China as a key element of ‘Ecological Civilisation’. In November 2020, the National Development and Reform Commission (NDRC) and the Ministry of Justice issued “The Opinions on Accelerating the Establishment of a System of Regulations and Policies on Green Production and Consumption” (关于加快建立绿色生产和消费法规政策体系的意见) where green agricultural development is identified as a main task.⁶² After this document was issued, seven ministry-level agencies published the “Implementation Plan on Promoting Green Consumption” in February 2022 (促进绿色消费实施方案).⁶³ In this plan, the government identifies the food sector as a key area for transition towards sustainable consumption and underscores the importance of improving production and processing standards as well as promoting green, organic agricultural products. The plan also suggests shifting consumer preferences towards green and healthy food. These recent policy developments demonstrate the Chinese government’s support for consumption of green and low-carbon food. Given that alternative proteins are often labelled green and low-carbon, these products could face a friendlier market environment in China and even receive supportive measures from the Chinese state.

Businesses in China have taken advantage of this policy context to introduce initiatives promoting sustainable food consumption. The “China Chain-Store & Franchise Association” organises a yearly “Sustainable Consumption Week” to introduce sustainable products to consumers in more than 130 Chinese cities.⁶⁴ They

also launched a toolkit for e-commerce and retailers to better promote sustainable food to consumers. As alternative protein products like veggie burgers in fast-food restaurants have gradually been introduced to the Chinese market, producers and retailers of these products can use these opportunities to trial alternative proteins with Chinese consumers. 2022 also saw the launch of the “China Cellular Agriculture Forum”, convening global cellular agricultural companies to keep them updated on potential market access and link up the domestic and international industry with Chinese policymakers. The forum was organised by the industry association Cellular Agriculture Alliance (CAA), which advocates for developing cultivated meat and fermentation through science-based regulatory approval and public education.^{65,66}

In addition to businesses, civil society organisations in China have also begun to work on sustainable food and alternative proteins. The Beijing-based Good Food Fund (GFF) supports sustainable food system transformation, and in 2019, developed a “Good Food Pledge”, covering eight areas: ‘plant forward’, animal welfare, healthy eating, waste reduction, local seasonal food, circular economy, biodiversity conservation, and food education.^{67,68} The organisation has become a central actor promoting plant-based diets in China and regularly organises activities to engage consumers. Their events reach many Chinese consumers through online live streaming and discussions. The 2022 “Meatless Monday New Year’s Eve Dinner Earth Relay” was live streamed for 12 hours and drew 823,000 viewers across 6 platforms, gathering 1.15 million views in total. Other Chinese civil society organisations also recommend alternative proteins to promote a low-carbon lifestyle. For example, in May 2022, the All-China Environment Federation released guidelines to encourage low carbon lifestyle behaviours, which cover food as well as clothing, housing, transportation, and digital finance, among other categories. One of the outlined behavioural changes under the food section is replacing “traditional animal-based meat consumption with plant-based meat”.⁶⁹ These activities promoting sustainable consumption will present opportunities to socialise more alternative protein products amongst Chinese consumers.

OPPORTUNITIES IN CHINA'S SUSTAINABLE PROTEIN MARKET

Market Trends

In 2016, the Chinese Government published a “Healthy China 2030” blueprint, setting out a strategy covering public health services, environmental management, the Chinese medical industry, and food and drug safety.⁷⁰ As awareness of health risks associated with certain types of food grows in China, alongside average income growth, consumers are starting to shift consumption towards safer, healthier and greener alternatives. For example, while the market share of organic food products is still small compared to regions like Europe and the US⁷¹, there was a 125% growth in organic food sales between 2015 and 2020.⁷² Search data on Baidu, China’s main search engine, also shows that searches for terms like “low carbon eating” and “plant-based protein” have gradually increased over the past 5 years.⁷³

After the outbreak of Covid-19, consumers’ concerns over food safety grew, encouraging more people to shift their consumption towards plant-based alternatives.⁷⁴ An Ipsos consumer study conducted in 2020 revealed that over 70% of consumers in mainland China believed that processed meat products could be replaced by artificial (plant-based or lab-grown) products. The same study also found that 86% of consumers have either already changed or are willing to change their meat product consumption habits.⁷⁵ Another study found that consumers in China were significantly more positive about cultured meat than US consumers, driven by perceived health and nutrition benefits.⁷⁶ Research from the Good Food Institute found that the main barriers to large-scale shifts towards plant-based meat in China are consumer concerns about health and taste, which is similar to consumers concerns in other countries.⁷⁷ A survey conducted by Boston Consulting Group in 2022 shows that nearly 50 per cent of consumers in China have already integrated alternative proteins into their diets. Their definition of alternative protein includes traditional alternatives like soy milk, which may not always be an intentional substitute for dairy.⁷⁸

The shift is also reflected in increased flows of finance to alternative protein products in China and the wider Asia region, with capital investment in the alternative protein market increasing six-fold between 2019 and 2020 in Asia Pacific.⁷⁹ The largest share of this was in plant-based protein. In China, conservative growth estimates for the plant-based meat market were 10% year-on-year between 2019 and 2020,⁸⁰ and the sales revenue is expected to increase by over 30% between 2020 and 2025.⁸¹ ‘Agrifood’ has also been identified as a top tech investment trend in China in 2022.⁸²

Several domestic companies have indicated willingness to diversify production towards plant-based alternatives. As the Collier FAIRR Protein Producer Index data shows, some of the largest protein producing companies headquartered in China have launched plant-based products and brands. For example, dairy companies Yili and Mengniu sell soy- or oat-based milk alternatives. Similarly, the number of start-ups looking to enter the alternative protein and meat substitute market continues to grow, and multinational companies at various points in the supply chain – including Nestlé and Cargill – have also launched alternative protein products or brands in China. “Pure play” companies from abroad like Oatly and Beyond Meat have also entered the Chinese market, and the latter continues to expand its offering, launching its products on popular Chinese e-commerce platforms like Pinduoduo and JD.⁸³

Elsewhere in the region, Singapore has positioned itself as a first-mover in alternative protein development and investment, in 2021 becoming the first country globally to approve cultured meat for sale, and investing \$144m in alternative protein R&D and production. In 2022, South Korea included alternative protein in its National Plan⁸⁴, and a number of other countries in Asia have also recently invested public funds; the Japanese government invested \$2.7m and India \$0.6m.⁸⁵ Following several announcements made recently, the Chinese government could be next to allocate investment in alternative protein production and R&D. The sustainable protein industry could follow a similar trajectory to the domestic electric vehicle (EV) industry, which grew rapidly over a decade to become the world’s largest market and manufacturer on the back of government support policies and incentives.⁸⁶ Parallels have also been drawn with the clean energy industry, where government support and economies of scale led to a rapid drop in the cost of solar photovoltaics (PV)⁸⁷, making China the biggest producer in the world⁸⁸, and similarly, increasing government funding could bring down the cost of alternative protein products. Future policy innovation in the sector could also consider parallels in the energy sector – for example, exploring what could be the equivalent of a ‘Feed In Tariff’ for the agricultural transition to promote the roll-out of alternative protein or vertical farming.⁸⁹

CellX

Founder(s)/CEO

Ziliang Yang (Co-founder & CEO)
 Binglu Huang (Co-founder)
 Xiang Ning (Co-founder)
 Ran Liu (Co-founder)

Headquarters

Shanghai, China

Number of employees

35

Stage

Series A

Total capital raised (USD)

Approx. USD 15million



CellX
 Eat Meat, Not Animals

ABOUT

CellX is a cellular agriculture company based in Shanghai, working to bring cultivated meat products to consumers in China and around the world. Its goal is to provide a sustainable source of animal protein, better health for all human beings, and improved animal welfare.

Founded in 2020, CellX has built an R&D team of 35 people and raised \$15M+. The team focuses on building platform technologies with a multi-species approach. CellX is collaborating with top universities and leading companies around the world to advance the commercialization of cultivated meat. The company is also accelerating market launch and cultivated meat approval in the APAC region. More information at www.cellx.cn

INTERVIEW WITH ZILIANG YANG

1. What are currently the main drivers of cost? In what ways do you expect to achieve price parity with the conventional counterpart protein in the long term? (eg. pork, beef, chicken or multiple)

The three main drivers of cost of producing cultured meat at scale are: raw materials, fixed assets, labour, and energy. Of the raw materials needed for production, the cell cultured media - which provide the nutrition for cell growth - are the most essential. Cell culture media are made up of multiple components: water, serum or serum replacements, growth factors, amino acids, carbohydrates, vitamins, et cetera. The cost can be reduced by the following: improving the efficiency of the cell cultured media, developing media that is serum-free and using food grade raw material alternatives to reduce unit cost of culture media.

The cost of fixed assets, including the construction of bioreactors and production facilities, could also be greatly reduced, by economies of scale from increasing production. Reducing the cost of labour and energy requires further increases in production efficiency through further automation and other system improvements.

2. What kind of government policies/support do you think would be helpful in accelerating a shift to sustainable protein production and/or consumption?

Firstly, clear policy guidance would significantly improve the market's understanding of cellular agriculture technology and encourage market players to take it more seriously. In China for example, the Ministry of Agriculture and Rural Affairs and the National Development and Reform Commission (NDRC) have issued the 14th Five Year Plan for Development of Science in Agriculture and Rural Areas and related policy documents in 2021. The document clearly highlights the important role cellular agriculture can play in reducing agricultural emissions, as well as in food security. Secondly, new relevant guidance and policies for the industry, as well as 'incentive funds', can significantly accelerate industrialization of the technology. The announcement of relevant policies and funds that promote R&D, talent development and introduction of social capital in cellular agriculture, will lay the foundation for the accelerated development of the industry.

Meanwhile, further development of the industry also requires the establishment and enhancement of a market approval process and regulatory framework for cellular agriculture products by relevant government bodies. The government should also cooperate with upstream and downstream organisations to accelerate product market access. Only when these products enter the market can we really reap the benefits and social impact of this technology. Finally, including cellular agriculture products in carbon trading would rebalance the high investment vs output and increase the Return On Investment by leveraging market-based solutions.

3. What does consumer perception of cell-based products look like in China and do you expect this to change over the next few years?

As a novel food product, cultivated meat products have already attracted attention from consumers who are interested in trying and in buying these products, even before they are on the Chinese market. CellX has already held many product tasting events, where those who tried the product had positive feedback about the flavour and texture of cultivated meat. Existing market reports and research conducted by CellX both indicate that cultivated meat products are likely to be widely accepted in the Chinese market, and prospective consumers are open to the product.

As the Chinese economy grows and develops, consumers are starting to shift consumption patterns from just meeting basic needs to paying more attention to the quality and the philosophy and world views behind the products they consume. Cultivated meat products can support a mindful diet that prioritises health, nutrition and food safety. These products also encourage consumption in line with sustainable development, and are therefore well aligned with social development needs and general market trends.

4. What do you think is the biggest driver of your environmental footprint (especially at scale), and how are you working to reduce it? (for example energy use, waste and pollution)

Firstly, cellular agriculture is a green, low carbon technology involving the manufacturing of new proteins, new materials and other related products using plant, animal and microbial cells. This technology's production method is more efficient and uses resources more sustainably than traditional methods. Traditional animal agriculture relies on long and complex supply chains and inefficient production methods, which often have a large water, land and carbon footprint. The resource intensity of cellular agriculture (water and land used per kg of protein produced) is far lower than that of traditional animal protein production.

The main driver of energy use in efficient large-scale cellular agriculture is the energy needed to run the bioreactors used in cultured meat production – these bioreactors consume a large amount of electricity. However, as renewables continue to develop and grow, using renewable energy instead of non-renewables can minimise the environmental footprint in the future.

“Using renewable energy instead of non-renewables can minimise the environmental footprint in the future”

6. On cell-based technology approval - do you have a clear understanding of submission processes? How are you finding working with regulators in China and navigating the approval process?

Given that cell-based agricultural products, including cultured meat, fall under China's Administrative Measures for the Safety Review of New Food Raw Materials, the National Health Commission's National Centre for Food Safety Risk Assessment might be responsible for its safety assessment. At a later stage the food manufacturing process may also be subject to assessment by the State Administration for Market Regulation. Because cultured meat counts as a 'New Food Raw Material' the application and submission process with the regulatory authority is relatively clear. However, the information requirements and approval criteria should be improved and clarified. We also hope to collaborate with the relevant departments to establish an approval system and promote the development of the cellular agriculture industry.

CellX and other industry peers jointly held China's first Forum on Cellular Agriculture in April 2022. The forum was the first step for businesses in the industry to engage with regulatory authorities, reach consensus and share opinions on legal, supervision and market education aspects, building towards a strong two-way collaboration. The forum also laid the foundation for the joint work to promote understanding and acceptance of cellular agriculture-related products and technologies amongst the public, and for encouraging relevant regulatory authorities to introduce and implement science-based regulations.

7. How do you think the sector can support a “just transition” through the creation of new opportunities to absorb displaced workers and farmers from the conventional meat sector?

As a tech company that sets solving social problems at its core, the just transition is one of the main objectives of CellX. Firstly, as an emerging industry, cellular agriculture will create more high quality job opportunities. Traditional (animal) agriculture has a longer production cycle, lower production efficiency, and higher risks, thus has a low value in the whole industrial chain. Its employees often find it hard to achieve higher income working in traditional agriculture. In contrast, the emergence of cellular agriculture is a move forward for the industry, and will enable workers to shift towards technology-intensive jobs and higher salaries. Furthermore, the production pattern of cellular agriculture avoids the limitations of natural resources. It also allowed regions that face poor conditions for traditional agricultural production to safely and stably grow agricultural products, which could also create new job opportunities in those regions.

Secondly, the working environment and methods of traditional livestock agriculture needs improving. In the traditional livestock sector, employees are often faced with both physical and mental health risks, in the process of animal breeding and slaughtering. Cellular agriculture can change these situations and enable people to work in a safer and more friendly environment.

“In the traditional livestock sector, employees are often faced with both physical and mental health risks, in the process of animal breeding and slaughtering. ”

CONCLUSION AND RECOMMENDATIONS

As Chinese government policy priorities have shifted towards green development and carbon neutrality, and consumer preference for healthy, sustainable products grows, the role of the food system and relevant ESG issues have received more attention from both the public and private sectors in China in recent years.

Some of the largest protein producing companies based in Mainland China are starting to report on these material issues and build environmental targets into their corporate strategies. Year-on-year improvements in companies' score in the Collier FAIRR Protein Producer Index across some risk factors reflects this shift. At the same time, companies based in Mainland China are still reporting less information and considered 'higher risk' on average than many of their international peers. It is possible that companies are addressing some of these issues but not disclosing the measures taken, so that they are not captured in the data.

One key strategy for companies to understand and mitigate risks is through collecting relevant data, and reporting these data can in turn help investors acknowledge and address these risks. The past year has seen significant policy developments in sustainable finance and mandatory corporate reporting regulation in China, which have the potential to address the current data gap. Another avenue for improving sustainability performance is for companies to link their bonds to specific sustainability targets, for example linked to targets for diversification into producing sustainable protein alternatives, or for deforestation-free supply chains and responsible sourcing. Sustainable finance and reporting regulation in China has already started to align with international frameworks, and in some areas is more comprehensive. Following current trends, these are likely to become wider in scope and more robust in the near future, and improve investors' and policymakers' ability to identify and address key ESG issues in the agriculture industry.

Policies supporting sustainable food and agricultural practices have also become more prevalent, both on production and consumption sides, linked to key strategic government goals. One of the opportunities to tackle these goals lies in shifting production and consumption towards more alternative protein sources, and highlighting the links between alternative protein and these government priorities.

The analysis of market trends demonstrates that the market share for alternative proteins is likely to expand further in China. The number of start-ups, trade initiatives, and domestic and foreign companies entering the alternative protein space in China has grown, and there are strong signals that government support for the industry will also increase, which could lead to industry growth in the same way as support for EV and solar PV has done in the past.

It is evident that the agriculture and protein space is changing and developing rapidly in China. Based on the analysis, below are a set of recommendations for investors, companies and other stakeholders to address risks associated with animal agriculture and accelerate a shift to sustainable agriculture and proteins in China.

Recommendations

1. Build alignment and synergies with domestic government goals, highlighting the lower risk and low-carbon footprint associated with sustainable agriculture and alternative protein production and consumption.
2. Encourage and ensure alignment between domestic and international ESG, climate and biodiversity risk reporting frameworks, as has been demonstrated in the China-EU Common Ground Taxonomy.
3. Engage with governments at multiple levels (national, provincial, prefectural) to encourage favourable policy environments and government support for innovation and R&D.
4. Engage with communities and civil society actors to increase awareness of food system risks and opportunities, ensuring attractiveness and affordability of alternative proteins for consumers in China.

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ANNEX

Healthy China

Following a National Health Conference held in August 2016, public health became a national political priority, and the 'Healthy China 2030 Planning Outline' was approved by China's Central Party Committee and the State Council.

http://www.chinadaily.com.cn/china/2016-10/26/content_27181681.htm; <https://www.who.int/teams/health-promotion/enhanced-wellbeing/ninth-global-conference/healthy-china>

Ecological Civilisation

The concept of 'ecological civilisation' was introduced in 2007 and strengthened in policy in 2015 to address trade-offs between economic growth and environmental impacts. Measures included in the official plan, released in April 2015, include protection of natural resource rights; establishing a national parks system; better and stricter systems for arable land protection and water management; establishment of a green financing system; and improvement of environmental compensation mechanisms.

<https://thediplomat.com/2015/09/chinas-new-blueprint-for-an-ecological-civilization>

Carbon Neutrality

In 2020, the Chinese government announced its aim to peak emissions by 2030 and become carbon neutral by 2060, often referred to as its "dual carbon" or "30.60" goal.

https://www.mfa.gov.cn/zyxw/202009/t20200922_348525.shtml

Common Prosperity

The objective of achieving 'common prosperity', which aims to reduce inequality and improve the quality of life of Chinese citizens, has been mentioned increasingly often in official government speeches and documents. Some of the key objectives include raising low-income groups' income, promoting fairness, balancing regional development, and promoting growth that is people-centered.

<https://www.china-briefing.com/news/china-common-prosperity-what-does-it-mean-for-foreign-investors>

Rural Revitalization

In 2021, the Chinese government passed a new law promoting the accelerated development of rural areas, which includes measures to compensate farmers for conservation practices, protecting farmland, and providing education in agriculture. The policy plays a key role in achieving 'Common Prosperity' and the government's plan to modernise and strengthen China's economy by 2050.

<https://news.cgtn.com/news/2021-04-29/China-passes-law-to-revive-rural-areas-ZQT6oc1Qbe/index.html>; <https://thediplomat.com/2022/02/chinas-push-to-advance-rural-revitalization>

Established by the Jeremy Collier Foundation, the FAIRR Initiative is a collaborative investor network that raises awareness of the material ESG risks and opportunities caused by intensive animal production. FAIRR helps investors to identify and prioritise these factors through cutting-edge research that investors can then integrate into their investment decision-making and active stewardship processes. FAIRR also runs collaborative investor engagements with global food companies to improve performance on selected ESG issues in intensive animal production.



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