

About the Coller FAIRR Protein Producer Index

2022/23



INTRODUCTION

This is the fifth edition of the Collier FAIRR Protein Producer Index, which assesses 60 of the largest, listed global meat, dairy and aquaculture companies on ten environmental, social and governance themes aligned with the Sustainable Development Goals (SDGs). The Index is designed to provide financial institutions with best-in-class data, analytics and trends on the protein sector to integrate into their investment decisions and engagement strategies.

60
global companies

10
risk & opportunity factors

33
KPIs

SUSTAINABLE DEVELOPMENT GOALS ▼

1  **GREENHOUSE GAS EMISSIONS**
Animal agriculture, responsible for 14.5% of all global anthropogenic greenhouse gas (GHG) emissions, is key to preventing global temperatures from rising above 1.5°C.



- KPIs
- SCOPE 1, 2 AND 3 TARGET
 - QUALITY OF GHG INVENTORY
 - EMISSIONS PERFORMANCE
 - CLIMATE-RELATED SCENARIO ANALYSIS
 - *INNOVATION IN GHG EMISSION REDUCTION

2  **DEFORESTATION & BIODIVERSITY**
Livestock farming is the single largest driver of deforestation. The loss of critical habitats due to the ongoing intensification of cattle ranching and land-conversion activities are rapidly accelerating the rate of global warming and biodiversity loss.



- KPIs
- ECOSYSTEM IMPACTS
 - DEFORESTATION-FREE TARGET – SOY
 - DEFORESTATION-FREE TARGET – CATTLE
 - MONITORING, TRACEABILITY AND PERFORMANCE – SOY
 - MONITORING, TRACEABILITY AND PERFORMANCE – CATTLE
 - FEED INGREDIENTS & CONVERSION RATIOS
 - FEED INNOVATION
 - AQUACULTURE CERTIFICATION
 - SEA LICE MANAGEMENT
 - DISEASE MANAGEMENT – SHRIMP
 - DISEASE MANAGEMENT – FISH

3  **WATER USE & SCARCITY**
The animal agriculture sector accounts for the use of 30% of all freshwater resources in the planet. The production of animal protein can demand up to six times the amount of water than the production of plant-based proteins.



- KPIs
- WATER USE & SCARCITY IN FACILITIES
 - WATER USE & SCARCITY IN FEED FARMING
 - WATER USE & SCARCITY IN ANIMAL FARMING

4  **WASTE AND POLLUTION**
Farming 70 billion animals each year creates localised pollution hotspots and this is often due to the improper handling of manure, the use of synthetic fertilisers for livestock feed as well as poor management of wastewater discharge.



- KPIs
- WASTEWATER AT FACILITIES
 - MANURE MANAGEMENT IN ANIMAL FARMING
 - NUTRIENT MANAGEMENT IN FEED FARMING
 - *NUTRIENT MANAGEMENT IN AQUACULTURE



5 ANTIBIOTICS

The misuse of antibiotics in livestock is also a significant contributor to growing antimicrobial resistance. Global meat production accounts for 73% of global antibiotic use.



- KPIs **POLICY ON ANTIBIOTICS USE** **DISCLOSURE OF QUANTITY OF ANTIBIOTICS USED**



6 ANIMAL WELFARE

Farm animal welfare is becoming an increasingly important issue for food companies along the supply chain. Regulation, consumer awareness, pressure from the media and labelling requirements are all key factors for change.



- KPIs **ANIMAL WELFARE POLICY** **ASSURANCE & CERTIFICATION** **PERFORMANCE ON KEY MATERIAL RISKS** **AQUATIC ANIMAL WELFARE**



7 WORKING CONDITIONS

Poor and unsafe working conditions present a major risk to companies within the animal farming sector. Failure to address issues such as human rights and safety of workers can result in serious operational and reputational risks.



- KPIs **HUMAN RIGHTS POLICY & DUE DILIGENCE** **FAIR WORKING CONDITIONS** **SAFETY & TURNOVER DATA** **FREEDOM OF ASSOCIATION**



8 FOOD SAFETY

The ability to provide safe, good quality food is fundamental to the business of food production, and a critical component to ensuring global food security.



- KPIs **FOOD SAFETY SYSTEM** **PRODUCT RECALLS AND MARKET BANS**



9 SUSTAINABLE GOVERNANCE

Sustainability Governance is an all-encompassing factor reflecting awareness of the materiality of ESG risks at executive and oversight levels.

- KPI **ASSESSMENT OF A COMPANY'S SUSTAINABILITY GOVERNANCE**



10 ALTERNATIVE PROTEINS

Animal protein producers face a range of sustainability risks. Reduced reliance on animal protein sources is key to mitigating operational risks while building agility to respond to market and technological disruptions.



- KPI **DIVERSIFICATION OF PRODUCTS TO ALTERNATIVE PROTEIN SOURCES**



ABOUT THE INDEX

Index constituents

The scope of the Collier FAIRR Protein Producer Index focuses on listed companies primarily involved in breeding, processing, distributing and selling meat, dairy or aquaculture products. The 60 Index constituents have a combined revenue of over \$413 billion.^{i,ii} The companies were identified using the Bloomberg Industry Classification System (BICS) and

were selected due to their market capitalisation and material exposure to the five main animal protein categories (i.e., Beef, Dairy, Pork, Poultry & Eggs and Aquaculture). Companies assessed in the Index might be replaced if their core revenue-generating activities shift from animal protein production and/or they are delisted.

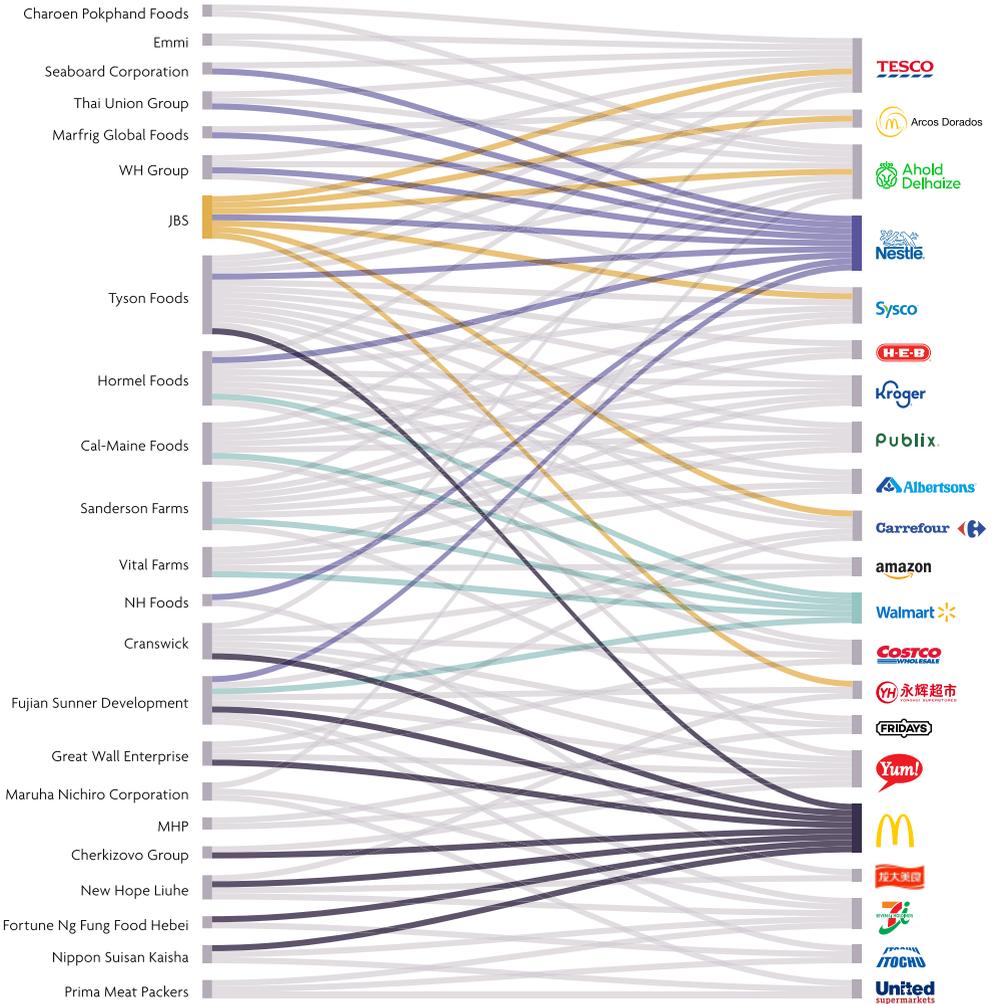
BEEF	PORK	POULTRY & EGGS	DAIRY	AQUACULTURE	MULTIPLE PROTEINS
Australian Agricultural Co	Beijing Shunxin Agriculture	Astral Foods	Almarai	Bakkafrost	Bell Food Group
Fortune Ng Fung Food Hebei	COFCO Joycome Foods	BRF	Beijing Sanyuan Foods	Grieg Seafood	Charoen Pokphand Foods
JBS	Cranswick	Cal-Maine Foods	China Mengniu Dairy	Lerøy Seafood	Grupo Bafar
Marfrig Global Foods	Hormel Foods	Cherkizovo Group	China Modern Dairy	Maruha Nichiro	Maple Leaf Foods
Minerva	Muyuan Foodstuff	Fujian Sunner Development	Emmi	Mowi	New Hope Liuhe
	Prima Meat Packers	GFPT	Fonterra	Multi X	NH Foods
	Seaboard Corporation	Great Wall Enterprise	Inner Mongolia Yili	Nippon Suisan Kaisha	San Miguel
	WH Group	Industrias Bachoco	Vietnam Dairy	SalMar	Tyson Foods
		Inghams		Salmones Camanchaca	Wens Foodstuff
		Japfa		Tassal Group	
		LDC		Thai Union	
		MHP			
		QL Resources Berhad			
		RCL Foods			
		Sanderson Farms			
		Scandi Standard			
		Thaifoods Group			
		Venky's			
		Vital Farms			



i All currency is in US dollar unless otherwise stated.

ii All market capitalisation figures in this report are from Bloomberg as per the latest financial year unless otherwise stated.

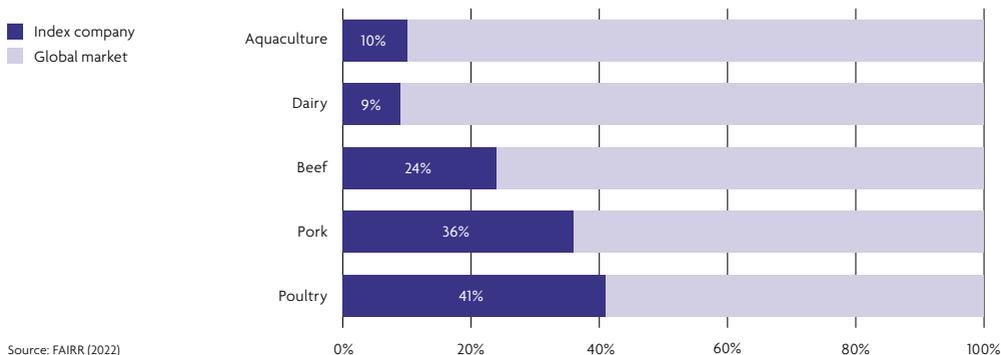
Index constituents supply the largest global food manufacturers, retailers and restaurant chains, reaching billions of customers annually.



There are no clear estimates of the economic value of the global protein market. For this report, we value the global protein market at \$1.79 trillion. This is based on FAIRR's estimate of data based on the United Nations Food and Agriculture Organisation (FAO) (see Appendix for the methodology). The consolidated revenues of the 60

Index constituents cover approximately 23% of the global livestock and aquaculture market. As some of the largest protein suppliers globally and regionally, these companies play a significant role in meeting – and building – global consumer demand for animal proteins. See Appendix 1 for details on the calculation of global animal protein markets.

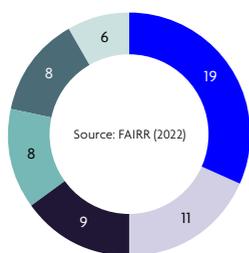
Figure 1: Revenues of Index companies as a proportion of global protein markets



Source: FAIRR (2022)

Figure 2: Protein distribution of the 60 Index constituents by main protein categoryⁱⁱⁱ

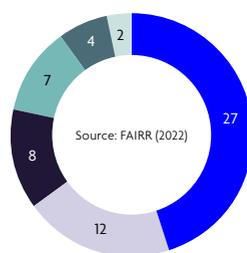
The 60 companies have material exposure to five main animal protein categories: beef, dairy, pork, poultry and eggs, and farmed fish. Companies with poultry supply chains continue to have the largest representation, reflecting the growing global popularity of chicken, which overtook pork in 2009.¹



- Poultry & eggs
- Aquaculture
- Multiple
- Dairy
- Pork
- Beef

Figure 3: Regional distribution of 60 constituents^{iv}

Nearly half (45%) of companies in the Index are based in Asia, including 12 companies in China. The concentration in Asia is significant given the forecasted growth in the consumption of animal protein in the region. Meat consumption is expected to increase by 18% in the Asia² and Pacific region between 2021-2030.³



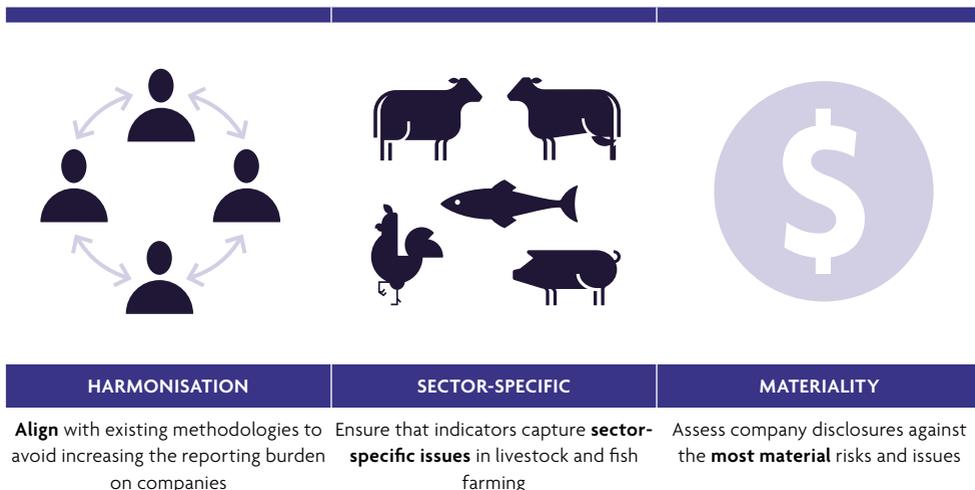
- Asia
- Europe & Russia
- Latin America
- North America
- Oceania
- Africa

iii We assigned companies a 'main protein category' where a company derives most of its revenues from a particular protein. 'Multiple' companies derive revenues from more than one protein source (none of the sources particularly dominates).

iv Region is determined by the location of the company's headquarters. Many companies have operations and sales across multiple geographies.

ABOUT THE METHODOLOGY

The Collier FAIRR Protein Producer Index helps to identify the most material ESG issues currently affecting the livestock industry. It seeks to reduce the associated risks to companies and investors while encouraging a transition to a more sustainable food system.



Wherever possible, we have aligned FAIRR’s methodologies with existing methodologies and standards. This is to align with best practice and avoid increasing the reporting burden on companies. FAIRR’s methodology aligns with over 54 standards across themes and sub-sectors. These included the Sustainability Accounting Standards Board’s (SASB’s) materiality matrix for the sector. To ensure that indicators capture sector-specific issues against the most material risks, some risk factors and indicators are only applicable to individual protein sources.

The SASB is an independent standard-setting board that produces disclosure standards that connect businesses and investors on the financial impacts of sustainability. It identifies sustainability issues that are likely to materially affect the financial condition or operating performance of companies within an industry. For the food and beverage sector, SASB has developed eight separate standards, including the Meat, Poultry and Dairy Standard. As of August 2022, SASB Standards are part of the International Financial Reporting Standards (IFRS).

FAIRR collaborated with SASB in 2019 to integrate and apply SASB metrics to the 60 companies for the Index methodology.

Methodology Review

The methodology is an annual consultative process, and FAIRR engages with multiple stakeholders, such as Index companies, investors and subject-matter experts so the Index framework continues to reflect the most material issues and best practice. We have worked with more than 60 companies, investors and issue experts since the Index was created in 2018.

The Index methodology is designed to assess how livestock and aquaculture companies manage and report on material environmental, social and

governance (ESG) risks (and opportunities). We acknowledge that disclosure on its own is not entirely reflective of whether companies manage ESG risks and, if they do, whether their management systems are effective.

To provide a more comprehensive view, we have started to integrate limited performance-based indicators where available and relevant: for example, on emissions performance, aquaculture feed conversion ratios and antibiotics usage.

Aquaculture Stewardship Council (ASC)	Compassion in World Farming (CIWF)	Global G.A.P	Mattilsynet	Sustainability Accounting Standards Board (SASB)
The Beijer Institute of Ecological Economics	The Consumer Goods Forum (CGF)	The Good Food Institute (GFI)	The National Wildlife Federation	The Sustainability Consortium
Best Aquaculture Practices (BAP)	Dyreveralliansen	Greenhouse Gas Protocol	New York University (NYU)	Task Force o Climate-Related Financial Disclosures (TCFD)
BRC Global Standards (BRCS)	Enterprise Risk Management (ERM)	Humane Society International (HSI)	Ocean Disclosure Project (ODP)	United Food and Commercial Workers (UFCW)
Carbon Disclosure Project (CDP)	Ethical Trading Initiative (ETI)	Institute of Marine Research (IMR)	The Organisation for Economic Co-operation and Development (OECD)	United Nations Guiding Principles on Business & Human Rights
Ceres	Farm Sustainability Assessment (FSA)	Interfaith Center on Corporate Responsibility (ICCR)	Proforest Initiative	Waterkeeper Alliance
Certificated Responsible Antibiotic Use (CRAU)	Forest 500	International Finance Corporation (IFC)	Rainforest Foundation Norway	World Animal Protection
China Water Risk (CWR)	Global Food Security Initiative (GFSI)	International Labour Organization (ILO)	SAI Platform	World Business Council for Sustainable Development (WBCSD)
Climate Action 100+	Global Reporting Initiative (GRI)	International Union for Conservation of Nature (IUCN)	Science-Based Targets Initiative (SBTi)	World Resources Institute (WRI)
Community Financial Services Association of America (CFSA)	Global Salmon Initiative	International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Worker's Associations (IUF)	Stockholm Resilience Centre	World Wildlife Fund (WWF)

How we calculate the final company risk score

The FAIRR Initiative conducts company assessments using **publicly available information**. This includes annual and sustainability reports, company websites and (where available) CDP disclosures.

The final company rankings are based on the final **Risk Factor Scores**. This is a simple average of scores across the nine individual risk factors (GHG Emissions; Deforestation & Biodiversity; Water Use and Scarcity; Water Pollution; Antibiotics; Animal Welfare; Working

Conditions; Food Safety; Governance). All risk factors and KPIs within an individual risk factor are weighted equally. Each KPI is made of several questions. Where relevant, companies will be awarded partial points on questions if the policies and programmes are only applicable to certain geographies or to certain proteins. The Risk Factor Score is then converted to a percentage (out of 100).

Based on the final risk factor, companies are assessed in one of the following categories:

HIGH RISK	MEDIUM RISK	LOW RISK	BEST PRACTICE*
Significantly exposed to material ESG risks (score under 31%)	Moderately exposed to material ESG risks (score 31% to 60%)	Less exposed to material ESG risks (score 60% to 91%)	Minimally exposed to material ESG risks and exemplify sufficient mitigation pathways (score 91% or higher)
No or limited disclosure and commitments	Some steps taken towards basic management of the risk	Basic management of risk with more detail	Strong management of risk with more detail
Poor performance	Some disclosure of performance metrics	High levels of disclosure on performance metrics	High levels of disclosure on performance metrics
	Limited performance targets	Moderate performance targets	Strong performance targets
	Limited geographical application	Near global application	Global application
			Improving performance



OPPORTUNITY SCORE

This is a separate score and captures the company's performance on the opportunity factor of 'alternative proteins'.

Limitations

The ten factors and 37 indicators reflect the sector's material impacts. However, this is not an exhaustive list. A key risk for the industry is growing awareness of the causal link between high meat consumption and non-communicable diseases such as cancer, diabetes and obesity. However, the Index does not consider health and nutrition issues as part of its current risk framework, beyond an assessment of company exposure to alternative proteins. This is primarily because health and nutrition issues are complex and dependent on local culture and social contexts. There is currently no standardised framework for assessing animal protein consumption in the context of health.

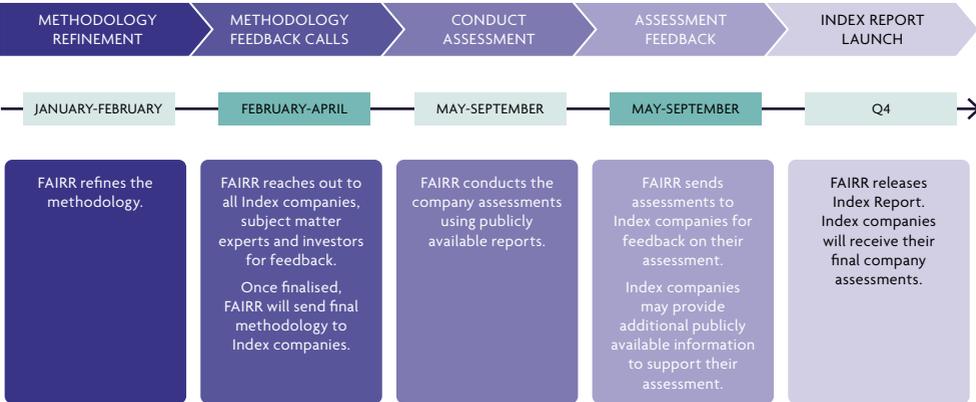
Another key risk for the industry is food waste. According to the FAO, approximately one-third of all food produced

in the world is lost or wasted. The impacts and risks associated with food waste have strong relationships with other risk factors included in the Index: GHG Emissions, Water Use & Scarcity, Deforestation & Biodiversity (through land-use change), and Waste & Pollution (through fertiliser and pesticide applications). Similarly, food packaging and the use of plastics are emerging issues for the industry. These are linked to other risks covered by the Index. However, since these risks are not specific to the animal protein sector, the Index does not currently assess them within the risk factor framework.

Our aim is to work with stakeholders to ensure that the framework continues to evolve with time. This will ensure it remains both comprehensive and meaningful for investors and sector companies.

Index Process: a timeframe

We invite companies to give feedback on the assessment methodology and on their assessment. Finally, once the Index is launched, we offer companies individual meetings to discuss their performance.



- Index company participation
- FAIRR

APPENDIX

Limitations in estimating the size of the global and regional protein market

Using the OECD-FAO Agricultural Outlook 2022-2031¹, and Aquaculture Production statistics datasets² FAIRR looked at actual country, regional and total world meat (beef, veal, lamb, pork, poultry), dairy (milk and dairy products), fish from aquaculture and the associated market value prices to estimate the global size of the animal protein and dairy market. Our estimates are based on the latest actual figures, which are for the 2021 period for meat and dairy and 2020 for aquaculture. We multiplied production data (volume in tonnes) for each animal protein category by the respective average world market price. The world price data for beef, veal, pork, poultry and lamb and certain dairy products (cheese, butter, skim and whole milk powder, whey powder, casein) are based on the average world prices for 2021 as provided by the OECD- FAO dataset. The world price for milk was calculated independently using the year-average spot price for raw milk in 2021.

This is the first step towards estimating the global size of the animal protein market using publicly available production data. There are however several limitations to this approach. These figures should be considered estimates due to data inconsistency and availability issues.

The production data for aquaculture covers a subset of countries only (OECD and certain non-OECD countries). Though this does not capture the total world market, the most prominent producers are represented in the dataset (including China and Indonesia).

The production data for meat does not capture processed animal-derived products, and it is based on carcass weight equivalent, which does not include heads, feet, entrails and gut fill (e.g., kidneys, livers, hearts etc.). Moreover, this approach does not include the egg industry or trade data and is, therefore, an underestimate of the true size and value of the market. Furthermore, our estimate excludes sheep meat from the estimate for the global livestock and aquaculture markets since no Index company is involved in sheep meat production.

A company's revenue derived from different animal proteins are estimates based on calculations by FAIRR. The company revenues by proteins are calculated from 2021/22 company financial reports. Where available, we disaggregate revenues to specific proteins as assigned by the company. In cases where revenue distribution by protein is not provided, and the company derives revenue from multiple proteins, we disaggregate revenues based on our best understanding of the company's business model.

Nonetheless, it does provide useful insight and demonstrates that the meat industry alone (excluding aquaculture and dairy) is a billion-dollar market. Combined, these industries represent a powerful trillion-dollar business that is dependent upon the intensive farming of animals.

Based on this methodology, our estimates indicate that the global production of meat has a market value of approximately \$892 billion and dairy of \$641 billion. Asia, North America and Latin America are the largest regional producers of beef, veal, lamb and poultry. Asia is also the largest producer of pork, followed by Europe.

ENDNOTES

1 OECD and FAO (2021) OECD-FAO Agricultural Outlook 2021-2030. Available from: <https://www.oecd-ilibrary.org/sites/cf68bf79-en/index.html?itemId=content/component/cf68bf79-en>

2 OECD and FAO (2021) OECD-FAO Agricultural Outlook 2021-2030. Available from: <https://www.oecd-ilibrary.org/sites/cf68bf79-en/index.html?itemId=content/component/cf68bf79-en>

3 OECD and FAO (2022). OECD-FAO Agricultural Outlook 2022-2031. Available from: https://stats.oecd.org/index.aspx?r=132451&errorCode=403&lastaction=login_submit

4 OECD and FAO (2022). Aquaculture production. Available from: https://stats.oecd.org/index.aspx?r=132451&errorCode=403&lastaction=login_submit

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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About this report

The Collier FAIRR Protein Producer Index was launched in 2018 to address the knowledge gap in the environmental, social and governance (ESG) risks associated with the food sector. The Index assesses 60 of the largest listed global meat, dairy and aquaculture companies on ten ESG factors. This report presents the latest company performance on areas assessed, and highlights the evolution of ESG practices since 2019.

