

GROWING FOR PROFIT

FOOD AND AGRICULTURE EQUITY FUNDS CAN IMPROVE THEIR INVESTMENT PERFORMANCE BY ALIGNING WITH SUSTAINABLE FOOD SYSTEMS

REPORT JULY 2020



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ABOUT PLANET TRACKER

Planet Tracker is a non-profit financial think tank aligning capital markets with planetary limits. It was created to investigate the risk of market failure related to ecological limits. This investigation is primarily for the investor community where ecological limits, other than climate change, are poorly understood, even more poorly communicated and not aligned with investor capital.

Planet Tracker generates breakthrough analytics to redefine how financial and environmental data interact with the aim of changing the practices of financial decision makers to help avoid environmental collapse.

FOOD AND LAND USE TRACKER

Planet Tracker's Food and Land Use programme presents regular research analysing the diversity of natural capital related financial risks emerging from the global agricultural system, the implications for food and agriculture companies and the AgriFunds that invest in them.

This programme's first focus is highlighting the exposure of pooled investment vehicles to a sustainability shock, which might occur for example via the transition to sustainable production, regional agricultural declines or emerging global policy affecting the trade of nature-dependant goods.

The overarching goal is to align capital markets with the sustainable management of agricultural resources, land use, water and other natural capital.

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EXECUTIVE SUMMARY

Global Food and Agriculture Production is at Risk

Agriculture currently covers 50 million square kilometres of the Earth's surface, more than the combined land areas of Russia, Canada, China and the U.S.A. In 2018, agriculture contributed \$3.34 trillionⁱ to the global economy – 3.9% of global GDPⁱⁱ – a 304% increase from the \$1.1 trillion generated in 2000.ⁱⁱⁱ Of the agricultural land in use, two-thirds is currently pastureland used to produce animal-based foods which are forecast to grow 70% by 2050.

Between emissions today and forecast food and agriculture sector emissions in 2050, there is an 11 gigatonne greenhouse gas (GhG) emissions gap which must be resolved if countries and companies are going to achieve their 2015 Paris Agreement commitments and hold GhG emissions to a level which supports the 2°C limit on global warming.^{iv}

Planet Tracker's benchmark analysis of 37 listed equity funds in the food and agriculture sectors demonstrates that asset managers need to understand that for their food and agriculture equity funds to manage portfolio risks effectively, they must measure, manage and monitor the natural capital risks in their investments by aligning these with sustainable food and agriculture systems to improve investment performance.

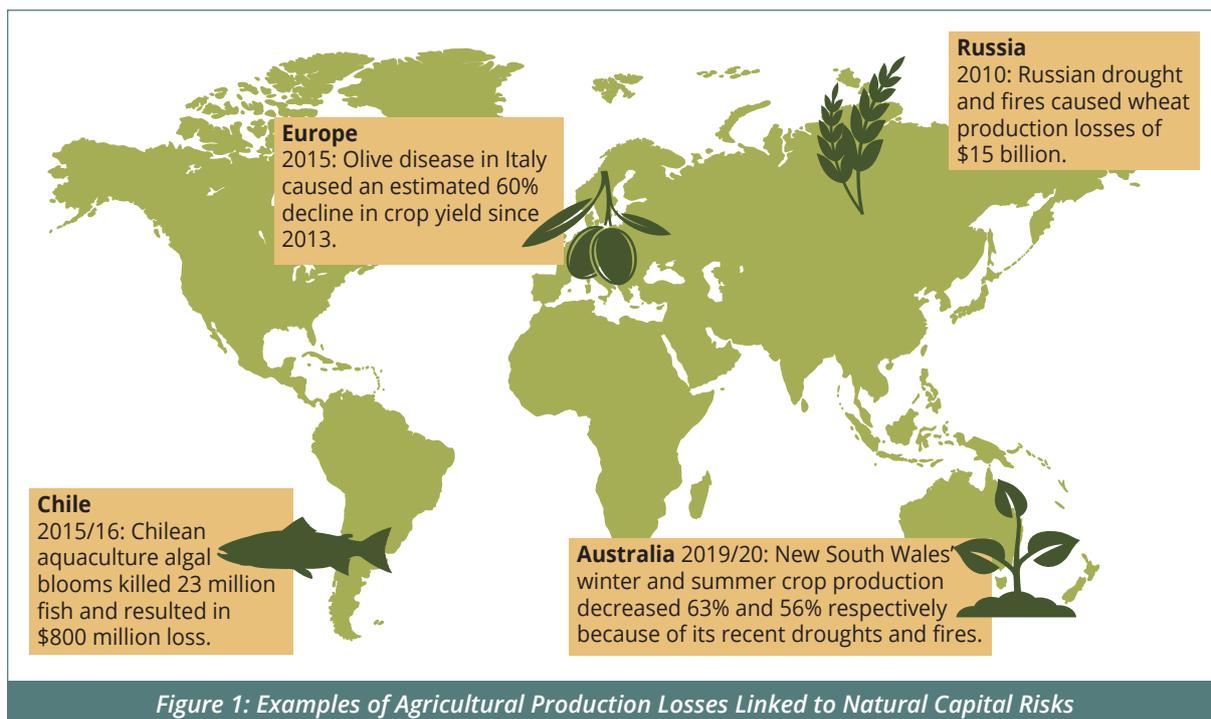
Natural capital is the *“world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive a wide range of services, often called ecosystem services, which make human life possible”*.^v

Leading commissions, coalitions and scientific organizations in this field, such as the EAT-Lancet Commission on Food, Planet, Health, the organisations who participate in the Food and Land Use Coalition (FOLU)^{vi} and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)^{vii} all share the same concerns that production risks, in the form of growing natural capital risks such as climate change, land degradation and biodiversity loss, are being ignored in food systems. Recent experience in Australia demonstrates this, as New South Wales' winter and summer crop production has decreased 63% and 56% respectively because of its recent droughts and fires. Yet, for example, the institutional investor Vanguard owns 2.7% of all New South Wales debt, leaving it exposed to natural capital risks.^{viii}

The EAT-Lancet Commission, FOLU, IPBES and others have developed a variety of approaches that investors and companies can use to forecast pathways that describe the transition to sustainable food systems based on healthy and balanced diets. Portfolio managers must invest in sustainable agriculture systems both to mitigate their portfolio's natural capital risks as well as maintain their portfolio's investment performance.

Exacerbated by the impacts of natural capital events such as the droughts and fires in New South Wales, locusts in East Africa and the Arabian peninsula and from separate human and animal health related events such as the COVID-19 and African Swine Fever pandemics, agriculture production has experienced high volatility which reveals the short-term supply and demand risks facing our global food systems. Production, processing and retail companies and their investors are clearly exposed to these material risks.^{ix}





Recognising these risks to our food systems, global initiatives such as the UN Sustainable Development Goals (SDGs), the Food and Agriculture Organisation of the United Nations (FAO), the EU Food 2030 Policy Framework, the UN Decade of Action on Nutrition 2016 to 2025 and the Global Food Summit are asking investors to take immediate action and determine investment strategies to transition global food systems and supply chains to sustainability.

Furthermore, industry investor guidelines included within the PRI Responsible Investment in Farmland, the CFS Principles for Responsible Investment in Agriculture and Food Systems and the OECD-FAO Guidance for Responsible Agricultural Supply Chains present a clear set of sector relevant investor principles aimed at eliminating unsustainable practices from food and agriculture investments.

These initiatives highlight two important dynamics:

- ❖ First, there are many global opportunities for investment which align food and agriculture systems with sustainability, depending on the ecological context and the natural capital footprint of the investment.^x For example, in Europe between 2014 and 2018 there was a 451% increase in the sales of meat substitute products.^{xi} Furthermore, the plant-based meat substitute food company Beyond Meat's initial public offering in 2019 was 30x oversubscribed, with the company achieving a valuation of \$3.8 billion. The company's high valuation is because plant-based meat substitute products, which generally have a smaller natural capital footprint than intensively grown meat products, are becoming increasingly popular.
- ❖ Second, as shown in Appendix I, the disruption to local economies and companies by not mitigating natural capital risks, such as drought, flood, biodiversity loss and land-use change, can lead to material economy-wide risks including budget shortfalls, revenue losses from declining tax receipts and asset sales and even possible credit downgrades as has happened for example in New South Wales.

Methodology: Determining Planet Tracker's AgriFund Universe

Some AgriFund managers see the investment opportunities within the food and agriculture sectors, including advances in farming technologies, regenerative agriculture, alternative meat proteins, supply chain efficiencies and evolving consumer demand, as opportunities to update their investment strategies for existing funds or to launch new investment funds targeting the emerging sectors.

To determine the overall AgriFund universe and to gain insight into these funds, Planet Tracker first identified 466 potential AgriFunds, using the Valoral Advisors' 2018 report^{xii} and then applied a rigorous and replicable selection methodology to those 466 funds, using Bloomberg data, requiring that a fund achieve all the defined criteria to qualify for inclusion in this report, as shown in Appendix II. This process yielded a sample of 37 funds to be included in the Planet Tracker AgriFund universe, referred to in this report as 'AgriFunds'. As of 17 December 2019, the aggregated market value of these 37 AgriFunds was \$21 billion.

AgriFunds Need to Disclose Their Approach to Natural Capital Risk Mitigation

Coupled with the growing institutional investor awareness of natural capital risks on the investment performance of food and agriculture equity investments, Planet Tracker found that the 37 AgriFunds examined in this report generally do not report these risks to their funds' investors.

Drawn from an exhaustive review of scientific literature describing key natural capital risks to agriculture production, Planet Tracker identified 18 key words¹, four terms and three industry responsible investor guides related to:

- 🌿 **Natural Capital Risks:** Frameworks such as the Natural Capital Protocol - Impact Drivers^{xiii}, UNEP-WCMC Natural Capital Hierarchy^{xiv}, Common International Classification of Ecosystem Services and Stockholm Resilience Centre – Planetary Boundaries highlight natural capital risks that have a material impact on agriculture production including, for example, drought, fire, flood, pollution, biodiversity risks such as pollinator decline, deforestation and land-use change.
- 🌿 **Food and Agriculture Systems Sustainability Alignment:** Global sustainability frameworks including the UN Sustainable Development Goals (SDG), the EU Action Plan on Deforestation and Imported Deforestation and the EU Sustainable Finance Taxonomy which promote actions to support the alignment of investments with food and agriculture systems' sustainability.
- 🌿 **Responsible Investment Alignment:** Investor targeted recommendations detailing stewardship actions aimed at delivering more responsible investment capital into the food and agriculture sector. Three guidelines analysed in this report include the PRI Responsible Investment in Farmland, the CFS Principles for Responsible Investment in Agriculture and Food Systems and the OECD-FAO Guidance for Responsible Agricultural Supply Chains.

¹ Explained at length later in this report in AgriFunds: Natural Capital Risk and Sustainability Alignment and described in Table 11.



For each of the 37 AgriFunds, Planet Tracker performed a high-level screen of their 2018/19 annual reports and related securities' filings for these key words and terms. This initial screen determined whether these AgriFunds are disclosing the natural capital risks embedded within their investments. The findings are:

- 🌿 **Natural Capital Risks:** Only three funds, the *DWS Global Agribusiness*, *DWS Invest Global Agribusiness* and *Janus Organics Thematic ETF – USD* (liquidated to shareholders of record on 17 March 2020), identify and describe a mitigation action for one or more of the selected natural capital risks.
- 🌿 **Food and Agriculture Systems Sustainability Alignment:** Only two funds, the *DWS Invest Global Agribusiness* and *Janus Organics Thematic ETF – USD* refer to aligning with the SDGs, the EU Action Plan on Deforestation and Imported Deforestation or the EU Sustainable Finance Taxonomy.
- 🌿 **Responsible Investment Alignment:** None of the funds refer to any of the three investor guides for responsible investment in the food and agriculture sector.

Demonstrating Fund Level Risk Analysis and Investor Stewardship

Research for this report identified that certain financial institutions and asset managers, responsible for managing the AgriFunds assessed in this report, have established strong and effective risk management processes and investor stewardship commitments at an institutional level. Websites for almost all these financial institutions include variations of at least one of the following documents: Sustainable Stewardship Policy, Climate Pledge, Corporate Social Responsibility Report, Corporate Governance Voting Guidelines, Investment Exclusion List and Environmental and Social Governance Report. Planet Tracker's engagements have also found that centrally within many of the asset managers, equity selection processes for the internal institutional 'buy' stock lists do incorporate forms of natural capital risk, investor guideline and stewardship assessments.

As described above however, evidence of these processes and commitments within most AgriFund annual reports is not apparent. AgriFund investors are therefore left unclear as to how such risk assessments and stewardship commitments are actively applied and monitored at a fund level where their capital is invested. This report therefore calls for AgriFunds to include, subject to financial regulation permissions, natural capital risk assessments together with responsible investor and sustainable food system alignment reports in their fund specific annual reports.

AgriFunds Overweight in Consumer Staples are Overexposed to Natural Capital Risks

These AgriFunds have on aggregate, as of 17 December 2019, an overweight exposure to the Consumer Staples sector relative to industry benchmarks analysed by Planet Tracker, including the S&P Global Agribusiness Index^{xv} and DAXglobal Agribusiness Hedged Index^{xvi}.

The Consumer Staples sector includes raw and processed food and agriculture products together with food and drug retailers, brewers, household and personal products. From 2010 to 2018 Consumer Staples performance within the analysed AgriFunds underperformed against the S&P 500 Consumer Staples Index. In fact, Planet Tracker has shown that theoretically, on an investment by investment basis, a company's natural capital impacts can be linked all the way to financial leverage performance and other ratios, as shown in Appendix III.



Recommendations for AgriFund Managers, Analysts and Investors

AgriFund managers, analysts and investors need to mitigate natural capital risks in their food and agriculture sector investments and align their investments with food systems' sustainability to improve their investment returns. To support this transition by 2022, Planet Tracker asks AgriFund institutions to adopt and publicly report on the following recommendations:^{xvii}

- ✔ **Commit to investing in solutions** and think beyond the spreadsheet as natural capital risks often do not appear in traditional and dated financial tools.
- ✔ **Report responsible investor alignment** in annual reviews with at least one of the PRI Responsible Investment in Farmland, the CFS Principles for Responsible Investment in Agriculture and Food Systems and the OECD-FAO Guidance for Responsible Agricultural Supply Chains or equivalent principles.
- ✔ **Measure, manage and monitor natural capital risk exposure** for investments and on an aggregated portfolio basis within pre-defined time-bound natural capital risks that can impact an investment's earnings.
- ✔ **Align Investments with Food and Agriculture Systems Sustainability:** AgriFunds need to align their investments with food and agriculture systems' sustainability including advances in farming technologies, regenerative agriculture, alternative meat proteins, supply chain efficiencies and evolving consumer demand. Growth sectors in the food and agriculture sectors are aligning with food and agriculture systems' sustainability so AgriFunds need to publicly disclose their approach to these sectors.
- ✔ **State publicly that portfolio managers are actively seeking out** and screening investments for opportunities to invest in sustainable food and agriculture systems, as food and agriculture sector companies are embracing these business opportunities by aligning reduction in impact with product branding.
- ✔ **Update their investment processes** for existing funds or to launch new investment funds targeting sustainability opportunities in the food and agriculture sectors aligned with global policy mandates.
- ✔ **Benchmark their investments** against indices aligned with the transition to a sustainable food system.
- ✔ **Adopt regenerative agriculture** as a framework for assessing their investments as regenerative agriculture describes the pathway towards food and agriculture systems' sustainability.^{xviii}



INTRODUCTION

FRAGILE FOOD AND AGRICULTURE SYSTEMS

The 2019 IPBES's Global Assessment Report on Biodiversity and Ecosystem Services^{xix} and the 2019 IPCC's Special Report on Climate Change and Land^{xx} make it impossible to ignore the clear and irrefutable evidence of degradation of natural capital assets by agriculture and disruption of the flow of ecosystem services upon which agricultural productivity depends. With a projected global population of 9.8 billion by 2050^{xxi} that will need to be fed, mitigating natural capital risks is essential to ensuring societal stability. For that, natural forests need to be conserved, freshwater systems managed and agricultural systems need to transition to a sustainable paradigm.

Natural Capital Matters to Our Existence^{xxii}

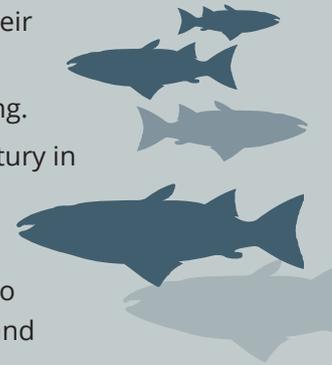


Forests, Agriculture and Land-use Change

- 5.6 gigatonnes annual CO₂ emissions sequestered in marine and terrestrial ecosystems – equal to 60% of global fossil fuel emissions.
- Greater than 33% world's land surface (and about 75% of freshwater resources) devoted to crop or livestock production.
- 290 million hectares, larger than the size of Argentina and less than the size of India, of native forest cover lost from 1990 to 2015 due to land-use change, agriculture and wood harvesting.

Oceans and Overfishing

- As of 2015, 93% of marine fish stocks were harvested at or above their sustainable limits with only 7% underfished.
- Greater than 55% of global ocean area is covered by industrial fishing.
- Up to 25% projected decrease in fish biomass by the end of the century in low and high climate warming scenarios, respectively.
- About 50% of live coral cover of reefs destroyed since 1870s.
- 400 low oxygen (hypoxic) coastal ecosystem 'dead zones', where zero or very few aquatic biota can survive, caused by fertilizers, sewage and runoff, affecting greater than 245,000 km².



Biodiversity and Extinction

- 8 million total estimated animal and plant species on Earth (including 5.5 million insect species) with 1 million species threatened with extinction, many within decades.
- Greater than 500,000 (+/-9%) share of the world's estimated 5.9 million terrestrial species with insufficient habitat for long term survival without habitat restoration.
- Greater than 40% of amphibian species threatened with extinction.
- About 10% of insect species are threatened with extinction.

Supply chains across the food and agriculture sector are typically fragmented as opposed to integrated. This means that companies rarely operate with an integrated ‘field to fork’ model but focus on a specific stage of the supply chain.

Companies normally operate across only one or two stages of the value chain.



Upstream or Production: Farming activities and the supply of production or input materials such as seed, fertilisers, farming machinery and irrigation systems.



Midstream or Processing: Processing crop and livestock products. These include processed agricultural products such as refined sugar, cereals and beverages.



Downstream or Retail: The distribution, retail sales, consumption and waste management of food and agriculture goods.

Table 1 below highlights a selection of the many natural capital risks to agriculture production described in peer-reviewed scientific literature^{xxiii,xxiv} that emphasize the economic costs from the depletion and degradation of natural capital.

Table 1: Examples of Natural Capital Risks Impacting Agriculture Production

| Natural Capital Risk | Impact on Agriculture Production |
|---------------------------------------|---|
| Deforestation and Habitat Loss | <p>Land degradation and habitat loss, such as primary forest deforestation, are the largest drivers of biodiversity loss.^{xxv} Declining soil quality on account of intensification and agrochemical overuse speeds up land degradation, motivating farmers to clear forests to access more fertile grounds, using slash and burn techniques. The most significant drivers of deforestation and land degradation are broadly categorized as:^{xxvi}</p> <ul style="list-style-type: none"> ● Grazing pasture expansion ● Industrial and subsistence agriculture (including grazing pasture expansion) ● Logging (legal and illegal) ● Transportation infrastructure expansion ● Industrialisation ● Urbanisation |
| Misapplication of Pesticides | <p>The value of global crops solely relying on insect pollinators is between \$234 billion and \$577 billion a year.^{xxvii} Some countries and regions, such as the EU, have banned the use of certain pesticides.^{xxviii}</p> |



| Natural Capital Risk | Impact on Agriculture Production |
|--------------------------------------|--|
| Soil Organic Matter Depletion | <p>Inefficient agrochemical use can be detrimental to soil biota health and composition, a core component of soil organic matter and a key factor in determining soil quality. Soil biota play a significant role in performing the following ecosystems services:</p> <ul style="list-style-type: none"> ● Carbon cycling ● Nutrient cycling ● Biotic regulation ● Maintaining soil structure/integrity – degradation of biological perturbation increases the probability of topsoil erosion ● Moisture: A reduction in soil organic matter also leads to a decrease in soil moisture content, another key factor in soil health. Soil moisture is covered in more detail in the freshwater section.^{xxx} <p>Degradation of any of these natural capital resources can drive farmers to increase inputs, thereby leading to an increase in farm operating costs. Intensive agricultural practices are responsible for one-third of the world’s degraded soils.^{xxx}</p> |

Food and agriculture companies have a responsibility to mitigate natural capital risks in their supply chains by aligning their activities with investments in sustainable food and agriculture systems. These companies’ products, such as soy, coffee, cacao, cattle and palm oil are often associated with degradation and depletion of natural capital, including land use related degradation, soil degradation, freshwater availability and biodiversity loss.^{xxxj,xxxii,xxxiii}



According to Planet Tracker's methodology, Planet Tracker's 37 AgriFunds aggregated market capitalisation 17 December 2019 was \$21 billion – see Table 2.

Table 2: Planet Tracker AgriFunds' Universe ^{xxxiv}

| Fund | AUM (USD millions) |
|---|--------------------|
| AllianceBernstein All Market Real Return Portfolio | 1,269 |
| Advisorshares Vice ETF | 13 |
| BlackRock Global Funds - Natural Resources Growth & Income Fund | 101 |
| ComStage Bloomberg Equal-weight Commodity ex-Agriculture EUR hedged UCITS ETF | 298 |
| ComStage Bloomberg Equal-weight Commodity ex Agriculture UCITS ETF | 480 |
| ComStage ETF STOXX Europe 600 Food & Beverage NR UCITS ETF | 58 |
| iShares Global Agriculture Index ETF | 170 |
| DWS Invest Global Agribusiness | 275 |
| DWS Global Agribusiness | 102 |
| Fidelity Select Consumer Staples Portfolio | 1,515 |
| Fidelity Global Commodity Stock Fund | 528 |
| Lyxor STOXX Europe 600 Food & Beverage UCITS ETF | 180 |
| First Trust Indxx Global Agriculture ETF | 4 |
| First Trust Nasdaq Food & Beverage ETF | 2 |
| NN L Food & Beverages | 256 |
| iShares Agribusiness UCITS ETF | 62 |
| Apicil AM - Strategie Alimentation | 17 |
| Market Access RIC I Agriculture Index UCITS ETF* | 19 |
| BlackRock Natural Resources Trust | 156 |
| March International Vini Catena Class I-EUR** | 187 |
| Manulife Global Fund - Global Resources | 27 |
| MIF Marine Invest Fund | 11 |
| ETFMG Alternative Harvest ETF | 1,186 |
| Janus Organics Thematic ETF – USD** | 11 |
| Panda Agriculture & Water Fund FI | 14 |
| Pictet - Nutrition | 368 |
| Sarasin Food and Agricultural Opportunities | 331 |
| Schroder Alternative Solutions - Commodity Fund | 65 |
| iShares STOXX Europe 600 Food & Beverage UCITS ETF DE | 320 |

| Fund | AUM (USD millions) |
|--|--------------------|
| iShares MSCI Global Agriculture Producers ETF | 28 |
| iShares Global Timber & Forestry UCITS ETF | 76 |
| iShares Global Timber & Forestry ETF | 227 |
| Invesco STOXX Europe 600 Optimised Food & Beverage UCITS ETF | 18 |
| Consumer Staples Select Sector SPDR Fund | 11,559 |
| VanEck Vectors Agribusiness ETF | 713 |
| Amundi Aktien Rohstoffe | 81 |
| SafePort PM Value Fund | 2 |
| Total | \$20,730 |

Source: Bloomberg, Planet Tracker, 17 December 2019.

* Ticker delisted (as of 25 May 2020). ** Liquidated to "shareholders of record" 17 March 2020.

19 of the 37 AgriFunds and 80% by financial assets under management (AUM) were selected because their portfolio allocation to the food, beverage or agriculture sectors exceeded 20%. The remaining AgriFunds were selected as they are exposed to the food and agriculture sectors according to Planet Tracker's methodology – see Table 3.

| Screen | Number | Proportion by Number | Fund AUM by Allocation and Description (USD millions) | Fund AUM by Allocation and Description as % Total AUM |
|--|-----------|----------------------|---|---|
| Allocation: Agriculture >20% | 3 | 8% | 1,216 | 6% |
| Allocation: Beverage >20% | 8 | 22% | 14,093 | 68% |
| Allocation: Food >20% | 8 | 22% | 1,180 | 6% |
| Fund Description: Agri | 3 | 8% | 797 | 4% |
| Fund Description: Agriculture | 11 | 30% | 3,104 | 15% |
| Fund Description: Aquaculture | 1 | 3% | 11 | 0% |
| Fund Description: Forest | 3 | 8% | 330 | 2% |
| Total | 37 | 100% | \$20,731 | 100% |

Source: Bloomberg, Planet Tracker, 17 December 2019. Totals may be different than 100% due to rounding.



The top 20 investors managed \$6.7 billion – or about 30% - of the total assets under management invested by the 37 AgriFunds, as shown in Table 4. These investors via their investments in these AgriFunds are exposed to investment performance risk linked to the natural capital risks facing the companies they are invested in.

Table 4: Top 20 Institutional Investors in 37 AgriFunds ^{xxxvi}

| Investor | Total Holdings (USD millions) |
|----------------------------|-------------------------------|
| Bank of America | 2,324 |
| Advisorshares Vice ETF | 456 |
| Goldman Sachs | 444 |
| Morgan Stanley | 438 |
| Citigroup | 360 |
| Wells Fargo & Co. | 300 |
| Two Sigma Investments | 292 |
| Swan Global Investments | 270 |
| UBS | 221 |
| Barclays | 216 |
| Swan Capital Management | 203 |
| Penn Mutual Life Insurance | 168 |
| Bank of Nova Scotia | 152 |
| FMR | 134 |
| Churchill Management | 131 |
| State Street | 126 |
| Richard Bernstein Advisors | 122 |
| Investnet | 115 |
| Royal Bank of Canada | 114 |
| Credit Suisse | 112 |
| Total | \$6,698 |

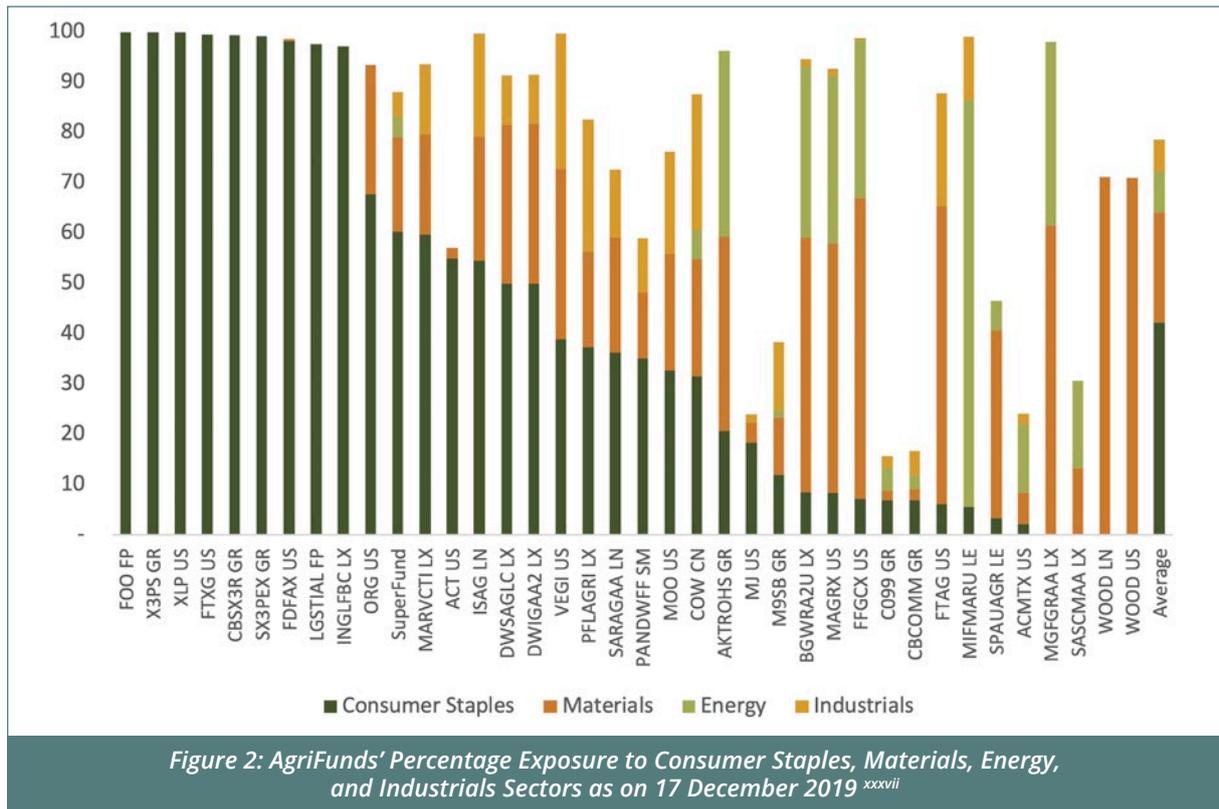
Source: Bloomberg, Planet Tracker, 17 December 2019.



AgriFunds

SECTOR WEIGHTING

Sector exposure varies substantially across the AgriFunds' universe. On an unweighted basis, an average 42% of the funds are in Consumer Staples, 22% in Materials, 8% in Energy and 6% in Industrials. The average figure for Energy is however misleading as many funds have no holdings and several have more than 30% – see Figure 2.



Largest Holdings

The largest companies by market value across all 37 AgriFunds are presented in Table 5. Of note, Coca-Cola and PepsiCo, two of the top three holdings, are beverage companies reliant for their production processes on staples such as refined sugar together with water.

Table 5: Top 25 Holdings by Value Across 37 AgriFunds ^{xxxviii}

| Company | Market Value (USD millions) |
|-----------------------------|-----------------------------|
| Procter & Gamble | 1,930 |
| Coca-Cola | 1,386 |
| PepsiCo | 1,321 |
| Walmart | 958 |
| Philip Morris International | 612 |
| Mondelez International | 597 |
| Costco | 588 |
| Altria Group | 584 |
| Colgate-Palmolive | 535 |
| Walgreens Boots Alliance | 355 |
| Kimberly-Clark | 349 |
| Sysco | 321 |
| Tyson Foods | 309 |
| Constellation Brands | 307 |
| Estee Lauder Companies | 298 |
| Archer-Daniels-Midland | 288 |
| General Mills | 282 |
| Monster Beverage | 261 |
| Nestlé | 218 |
| Kraft Heinz | 174 |
| Kroger | 167 |
| McCormick | 163 |
| Clorox | 148 |
| Nutrien | 148 |
| Hershey | 143 |
| Total | \$12,442 |

Source: Bloomberg, Planet Tracker, 17 December 2019.



Common Holdings

Across the 37 AgriFunds, the companies with the greatest investment are Archer-Daniels-Midland, Nutrien and Bunge. Thereafter the commonality of stock holdings falls sharply. Just one stock, Bunge, is held across 15 funds, another, Ingredion, across 13 funds and three different stocks are held in 12 portfolios.

Table 6: Frequency of Common Holdings Across 37 AgriFunds ^{xxxix}

| Holding | RBICS Sector | Frequency | Percentage of Funds | Average Weighting |
|-------------------------------|------------------|-----------|---------------------|-------------------|
| Archer-Daniels-Midland | Consumer Staples | 16 | 43% | 3.7% |
| Nutrien | Materials | 16 | 43% | 5.2% |
| Bunge | Consumer Staples | 15 | 41% | 1.6% |
| Ingredion | Consumer Staples | 13 | 35% | 1.0% |
| Mowi | Consumer Staples | 12 | 32% | 2.3% |
| CF Industries Holdings | Materials | 12 | 32% | 2.5% |
| Mosaic | Materials | 12 | 32% | 1.6% |
| Nestlé | Consumer Staples | 11 | 30% | 12.9% |
| Tyson Foods | Consumer Staples | 11 | 30% | 5.1% |
| AGCO | Industrials | 11 | 30% | 2.0% |
| Deere & Co | Industrials | 10 | 27% | 5.9% |
| FMC | Materials | 10 | 27% | 2.6% |
| Danone | Consumer Staples | 9 | 24% | 5.9% |
| PepsiCo | Consumer Staples | 9 | 24% | 5.2% |
| Kubota | Industrials | 9 | 24% | 3.1% |
| YARA International | Materials | 9 | 24% | 2.3% |
| Anheuser-Busch InBev | Consumer Staples | 8 | 22% | 7.3% |
| Hormel Foods | Consumer Staples | 8 | 22% | 1.9% |
| SalMar | Consumer Staples | 8 | 22% | 0.7% |
| Israel Chemicals | Materials | 8 | 22% | 1.1% |
| Altria Group | Consumer Staples | 7 | 19% | 3.5% |
| Darling Ingredients | Consumer Staples | 7 | 19% | 0.9% |
| Diageo | Consumer Staples | 7 | 19% | 11.7% |
| General Mills | Consumer Staples | 7 | 19% | 2.7% |
| Kellogg | Consumer Staples | 7 | 19% | 1.4% |
| Sanderson Farms | Consumer Staples | 7 | 19% | 2.1% |
| CNH Industrial | Industrials | 7 | 19% | 3.2% |
| K+S AG | Materials | 7 | 19% | 1.8% |

Source: Bloomberg, Planet Tracker, 17 December 2019.

Nestlé and Diageo are large investments owned by four different funds which invest only in Europe.



Outside the investments described in Table 6, there are fewer investments in common amongst the 37 AgriFunds. Another way of looking at is to consider the holdings of the funds in the S&P Consumer Staples Index – see Table 7.

Table 7: Commonality of Holdings vs. S&P Consumer Staples Index Constituents ^{xi}

| Bloomberg Fund Ticker | Fund Name | Number of Common Investments with other Funds | Aggregate Weighting ^{xii} |
|--|---|---|------------------------------------|
| XLP US Equity | Consumer Staples Select Sector SPDR Fund | 32 | 95.7 |
| FDFA US Equity | Fidelity Select Consumer Staples Portfolio | 21 | 69.8 |
| FTXG US Equity | First Trust Nasdaq Food & Beverage ETF | 19 | 76.0 |
| LGSTIAL FP Equity | Apicil AM - Strategie Alimentation | 19 | 54.9 |
| INGLFBC LX Equity | NN L Food & Beverages | 13 | 42.9 |
| ACMTX US Equity ^{xiii} | AllianceBernstein All Market Real Return Portfolio | 8 | 1.0 |
| DWIGAA LX Equity | DWS Invest Global Agribusiness | 6 | 16.6 |
| DWSAGLC LX Equity | DWS Global Agribusiness | 6 | 16.5 |
| ACT US Equity | AdvisorShares Vice ETF | 5 | 15.4 |
| AKTROHS GR Equity | Amundi Aktien Rohstoffe | 4 | 19.5 |
| CBCOMM GR Equity | ComStage Bloomberg Equal-weight Commodity ex Agriculture UCITS ETF | 4 | 7.5 |
| PFLAGRI LX Equity | Pictet - Nutrition | 4 | 10.1 |
| ISAG LN Equity | iShares Agribusiness UCITS ETF | 3 | 17.6 |
| BGWRA2U LX Equity | BlackRock Global Funds - Natural Resources Growth & Income Fund | 2 | 3.3 |
| C099 GR Equity | ComStage Bloomberg Equal-weight Commodity ex-Agriculture EUR hedged UCITS ETF | 2 | 0.6 |
| COW CN Equity | iShares Global Agriculture Index ETF | 2 | 18.1 |
| MARVCTI LX Equity | March International Vini Catena Class I-EUR* | 2 | 4.2 |
| MJ US Equity | ETFMG Alternative Harvest ETF | 2 | 3.1 |
| MOO US Equity | VanEck Vectors Agribusiness ETF | 2 | 9.8 |
| FFGCX US Equity | Fidelity Global Commodity Stock Fund | 1 | 4.0 |
| MAGR US Equity | BlackRock Natural Resources Trust | 1 | 1.5 |
| SARAGAA LN Equity | Sarasin Food and Agricultural Opportunities | 1 | 2.5 |
| VEGI US Equity | iShares MSCI Global Agriculture Producers ETF | 1 | 7.4 |

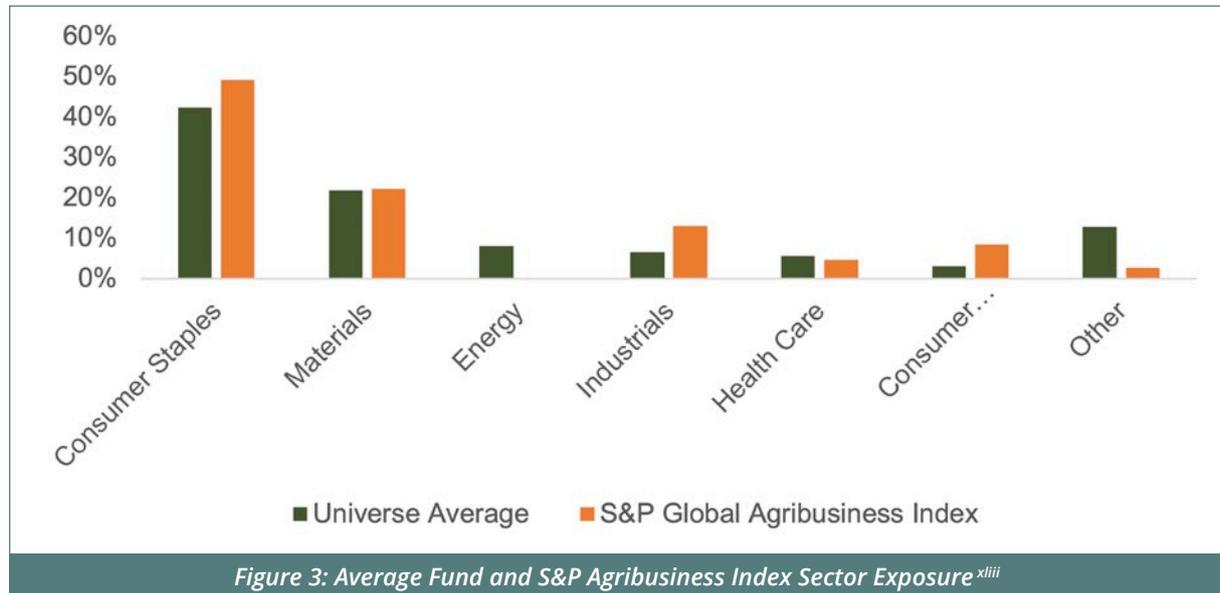
Source: Bloomberg, Planet Tracker, 17 December 2019. * Source: Financial Times.

Common shareholdings enable AgriFund managers, via investor alliances, to collectively pool their engagement recommendations and to potentially engage with companies in the way that Green Century Capital Management, Trillium Asset Management and Mercy Investment Services, alongside As You Sow, successfully collaborated in 2019 with General Mills to support General Mills in decreasing its natural capital risks associated with pollinator collapse.



Index Comparison

Comparing company holdings in the combined 37 AgriFunds, they have a similar company make up to the S&P Agribusiness Index in both Consumer Staples and Materials. Outside of these sectors, the 37 AgriFunds differ significantly from the S&P Agribusiness Index – see Figure 3.



The DAXglobal Agribusiness Hedged Index is different in both its definition of sectors and in composition. The sector weightings lean more towards the upstream value chain, specifically fertilisers, agricultural equipment and midstream food processing – see Table 8

| Morningstar Sectors | December, 2019 |
|-------------------------|----------------|
| Fertiliser | 23% |
| Food Processing | 17% |
| Agricultural Equipment | 16% |
| Supply Chain | 16% |
| Protein Producers | 11% |
| Other | 9% |
| Health and Wellness | 3% |
| Farming and Plantations | 2% |
| Agriculture Science | 2% |
| Total | 99% |

Source: Morningstar, 17 December 2019. Totals may be different than 100% due to rounding.

The two indices have different geographical exposures. The DAXglobal Agribusiness Hedged Index has a higher exposure to companies domiciled in Europe and a lower exposure to companies domiciled in North America – see Table 9.



Table 9: Geographical exposure of S&P Agribusiness Index and DAXglobal Agribusiness Hedged Index ^{xlvi}

| | S&P Global Agribusiness Index | DAXglobal Agribusiness Hedged Index |
|------------------------|-------------------------------|-------------------------------------|
| US | 54% | 44% |
| Canada | 9% | 5% |
| Europe | 9% | 37% |
| Japan | 8% | 5% |
| Australasia | 2% | 2% |
| Other ^{xlvii} | 19% | 8% |
| Total | 101% | 101% |

Source: S&P Morningstar, 17 December 2019. Totals may be different than 100% due to rounding.

Performance Between AgriFunds and Their Benchmarks

To compare performance of the AgriFunds and their benchmark indices listed above with general listed equities, Planet Tracker used the S&P Global 1200 Index. Table 10 below shows that within the S&P Global 1200 Index, Consumer Staples and Materials have underperformed in the last decade relative to sectors such as Health Care and Consumer Discretionary. The top performing sectors have been Information Technology, Consumer Discretionary and Healthcare.

Table 10: S&P Global 1200 Index ^{xlviii}

| | Consumer Discretionary | Consumer Staples | Energy | Healthcare | Industrials | Information Technology | Materials |
|--------------------------------|------------------------|------------------|-------------|-------------|-------------|------------------------|-------------|
| 2019 | 24% | 22% | 8% | 20% | 27% | 41% | 18% |
| 2018 | -6% | -10% | -14% | 4% | -14% | -5% | -15% |
| 2017 | 23% | 18% | 6% | 21% | 26% | 42% | 30% |
| 2016 | 3% | 2% | 29% | -6% | 14% | 14% | 24% |
| 2015 | 6% | 7% | -22% | 7% | -2% | 5% | -16% |
| 2014 | 4% | 7% | -11% | 19% | 2% | 16% | -7% |
| 2013 | 38% | 21% | 17% | 37% | 33% | 26% | 3% |
| 2012 | 25% | 14% | 3% | 18% | 16% | 16% | 12% |
| 2011 | -4% | 10% | 1% | 11% | -8% | -3% | -20% |
| 2010 | 24% | 14% | 12% | 3% | 24% | 12% | 21% |
| Absolute Return 2010-19 | 338% | 261% | 121% | 333% | 278% | 423% | 141% |

Source: Refinitiv, Planet Tracker, 17 December 2019.

The 37 AgriFunds have tended to underperform the S&P Global 1200 and the more closely exposed they are to upstream food and agriculture production companies, the greater the underperformance.



AgriFunds' Investment Performance

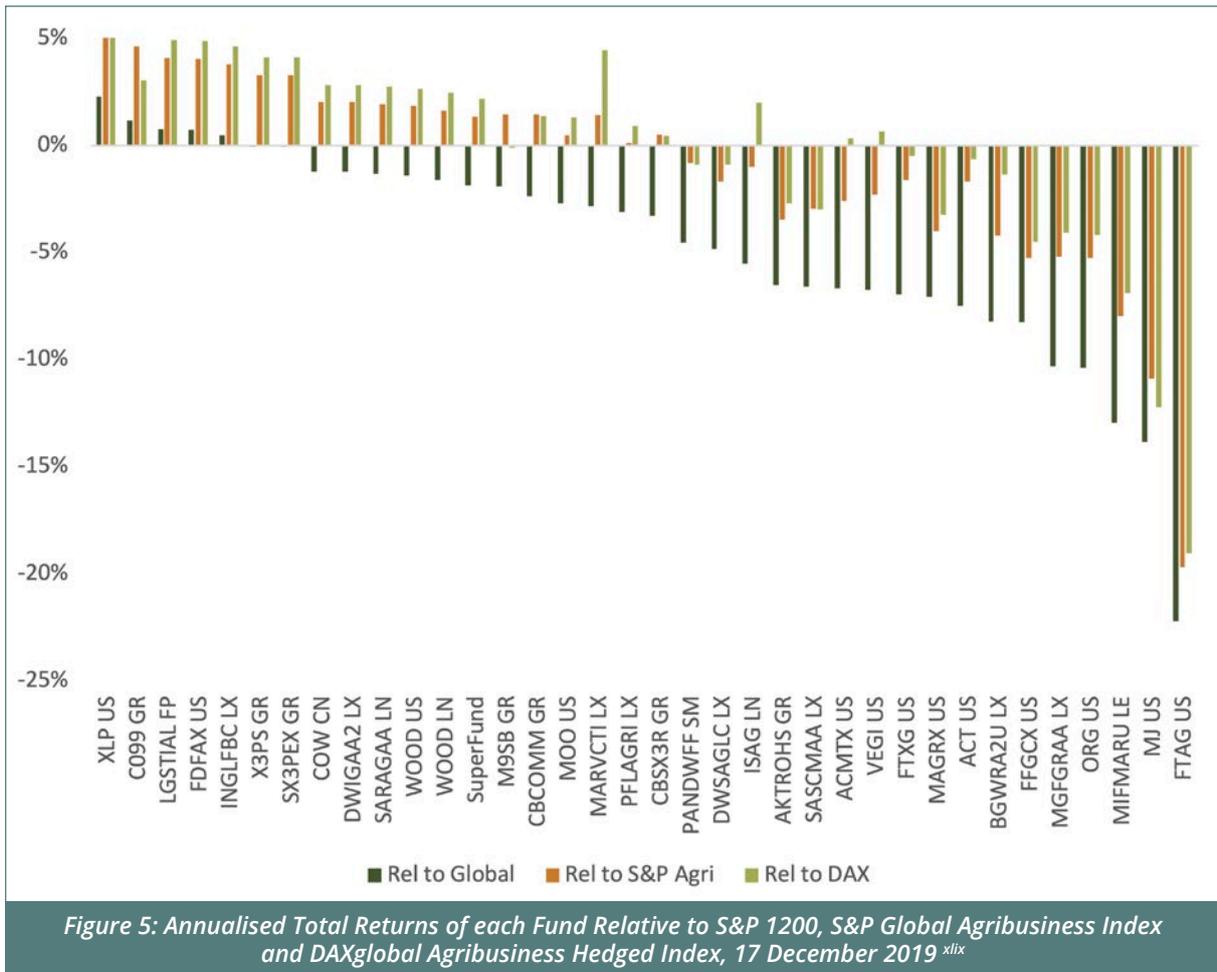


Figure 4: Annual Relative Performance of the 37 AgriFunds, 17 December 2019

From 2010 to 2019, the 37 AgriFunds have underperformed the S&P Global 1200 by 17% and outperformed the S&P Global Agribusiness Index by 14% and the DAXglobal Agribusiness Hedged Index by 24% – see Figure 5.

Planet Tracker excluded one fund from Figure 5 due to incomplete performance data. The relative underperformance of the 36 included AgriFunds against the broad S&P Global 1200 index is clear, with only a handful managing to outperform and largely because those funds are less aligned with “agriculture” and even then, by 2% or less.





In conclusion, this investment performance review highlights that AgriFunds, which were overweight in the Consumer Staples sector, where natural capital risks can materialise and impact company financial performance and fund manager investment performance, underperformed relative to their peers with less exposure to Consumer Staples.

Planet Tracker wants investment firms and the funds they manage to report accurately how natural capital risks, such as deforestation, biodiversity loss and drought impact investment performance.





Planet Tracker conducted a literature review to determine the relationships between natural capital risks, agricultural production and financial performance within the food and agriculture sectors.

This assessment identified initiatives, responsible investment guidelines and research related to the food and agriculture sectors designed explicitly, or in part, for asset managers firstly to identify and measure company level natural capital risks and secondly to align their portfolios with market-based sustainability criteria and, in certain cases, regulations. These initiatives include:

Natural Capital Risks

- 🌱 **Natural Capital Protocol - Impact Driversⁱ:** Impact drivers are inputs to, or outputs from, economic activities, which can affect nature.ⁱ
- 🌱 **UNEP-WCMC Natural Capital Hierarchyⁱⁱⁱ:** Natural capital assets are the specific elements within nature that provide the goods and services that the economy depends upon.ⁱⁱⁱ A hierarchical natural capital asset classification supports the identification of natural capital assets which underpin ecosystem services. This natural capital asset classification comprises a four-level hierarchical structure, allowing aggregation or disaggregation depending on the level of complexity required in decision making.
- 🌱 **Common International Classification of Ecosystem Services:** Ecosystem services are the links between nature and business. Each of these services represent a benefit that nature provides to enable or facilitate business production processes. This framework includes a five-level hierarchical structure defining ecosystem services by Section, Division, Group, Class and Class type.^{iv}
- 🌱 **Stockholm Resilience Centre – Planetary Boundaries:** The planetary boundaries concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes. Since then the planetary boundaries framework has generated enormous interest within science, policy and practice.^v

Food and Agriculture Systems Sustainability Alignment^{lvi}

- 🌱 **EU Sustainable Finance Taxonomy:** The EU Taxonomy is a tool to help investors, companies, issuers and project promoters navigate the transition to a low-carbon, resilient and resource-efficient economy. The performance thresholds are designed to help companies, project promoters and issuers access green financing to improve their environmental performance, as well as helping to identify which activities are already environmentally friendly. In doing so, it will help to grow low-carbon sectors and decarbonise high-carbon ones.^{lvii}

- 🌿 **EU Action Plan on Deforestation and Imported Deforestation:** Recognising the EU's imported deforestation footprint, the European Commission unveiled an action plan on deforestation in 2019.^{lviii}
- 🌿 **Sustainable Development Goals:** The Sustainable Development Goals adopted by over 178 countries globally are a blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice. The 17 Goals are all interconnected and, to leave no one behind, it is important that they all are achieved by 2030.^{lix}

From these initiatives Planet Tracker identified 18 key words and terms relevant for investors in companies operating in the food and agriculture sector - see Table 11. These key words and terms relate to one of the following:

- 🌿 **Natural Capital Risks:** Natural capital, ecosystem service and planetary boundary metrics affecting the overall quality, volume and production volatility of food and agriculture systems from the short- to long-term.
- 🌿 **Food and Agriculture Systems Sustainability Alignment:** Global initiatives aimed at transitioning companies, sectors and financial markets to operate more sustainably as measured by specific metrics – for example SDG15 Life on Land.

Responsible Investment Alignment

Technical guidelines are publicly available to help investors build responsible investment strategies and policies supporting sustainability outcomes within the food and agriculture sector. Three guidelines highlighted in this report include:

- 🌿 **PRI Responsible Investment in Farmland** is a set of guidelines within the PRI framework specifically tailored to farmland investment. The principles 'promote environmental sustainability; respect labour and human rights; respect existing land and resource rights; uphold high business and ethical standards; report on activities and progress towards implementing and promoting the PRI's general investing Principles'.
- 🌿 **CFS Principles for Responsible Investment in Agriculture and Food Systems** are a list of ten core principles to guide responsible investment in agriculture. The principles strive for investments to 'contribute to food security and nutrition; contribute to sustainable and inclusive economic development and the eradication of poverty; foster gender equality and women's empowerment; engage and empower youth; respect tenure of land, fisheries, and forests, and access to water; conserve and sustainably manage natural resources, increase resilience, and reduce disaster risks; respect cultural heritage and traditional knowledge, and support diversity and innovation; promote safe and healthy agriculture and food systems; incorporate inclusive and transparent governance structures, processes, and grievance mechanisms; assess and address impacts and promote accountability'.



 **OECD-FAO Guidance for Responsible Agricultural Supply Chains**, created with the FAO, was developed to help enterprises observe existing standards for responsible business conduct along agricultural supply chains. These standards include the OECD Guidelines for Multinational Enterprises, the Principles for Responsible Investment in Agriculture and Food Systems, and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. The guidance is made up of four sections; a model enterprise policy outlining the standards that enterprises should observe sections; a model enterprise policy outlining the standards that enterprises should observe to build responsible agricultural supply chains; a framework for risk-based due diligence describing the five steps that enterprises should follow to identify, assess, mitigate and account for how they address the adverse impacts of their activities; a description of the major risks faced by enterprises and the measures to mitigate these risks; guidance for engaging with indigenous peoples.

Table 11: Key Terms Included in Planet Tracker AgriFund Screen

| Sustainability Alignment | | |
|---|--------------------------|--------------------|
| Task Force on Climate-related Financial Disclosures / TCFD | | |
| EU Sustainable Finance Taxonomy | | |
| Imported Deforestation | | |
| Sustainable Development Goal / SDG | | |
| Responsible Investment Alignment | | |
| PRI Responsible Investment in Farmland | | |
| CFS Principles for Responsible Investment in Agriculture and Food Systems | | |
| OECD-FAO Guidance for Responsible Agricultural Supply Chains | | |
| Natural Capital Risk | | |
| Acidification | Ecosystem Services | Ozone depletion |
| Biodiversity loss | Environment ² | Planetary Boundary |
| Climate change | Flood | Pollution |
| Deforestation | Natural Capital | Soil |
| Disease (pests and invasive species) | Natural disaster | Water |
| Drought | Nitrogen | Weather |

Screening the offering prospectuses and 2018/19 annual reports from each of the AgriFunds analysed in this report for these key words and terms, Planet Tracker found that of the 37 AgriFunds:

 **Natural Capital Risks:** Only 3 funds identify and describe a mitigation action for one or more natural capital risks within 2018/19 annual reports and related securities’ filings – see Table 12:

² Used in the context of natural environment as opposed to other types of environment such as financial, legal, market or regulatory



| AgriFund | Water | Environment | Drought | Climate Change | Biodiversity Loss |
|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| DWS Global Agribusiness | No reference | No reference | Risk mitigation actioned | Risk mitigation actioned | Risk mitigation actioned |
| DWS Invest Global Agribusiness | Risk mitigation actioned | No reference | No reference | No reference | No reference |
| Janus Organics ETF* | No Reference | Risk Mitigation Actioned | No Reference | No Reference | No Reference |

* Liquidated to "shareholders of record" 17 March 2020.

 **Food and Agriculture Systems Sustainability Alignment:** Only one fund references alignment with one or more of the global initiatives within their 2018/19 annual reports and related securities' filings – see Table 13:

| AgriFund | Task Force on Climate-related Financial Disclosures / TCFD | EU Sustainable Finance Taxonomy | Imported Deforestation | Sustainable Development Goal / SDG |
|--------------------------------|--|---------------------------------|------------------------|------------------------------------|
| DWS Invest Global Agribusiness | No reference | No reference | No Reference | Supportive of this initiative |

 **Responsible Investment Alignment:** None of the 37 AgriFunds in their 2018/19 Annual Reports reference any of the three responsible investor guidelines assessed in this report. This report does not conclusively suggest that the AgriFund managers are not aware of, or indeed using, these principles in their investment strategies and policies. This report however finds the AgriFunds are simply not publicly disclosing their use of these investment principles. As such, it recommends that any use or application of these principles is formally referenced in the fund annual reports.

These findings present a risk transparency and reporting failure. Of the 37 AgriFunds assessed in this report, only 8% reference one or more of the natural capital risks which have a direct material impact on food and agriculture production. Furthermore, only a single fund communicates a commitment to one or more of the sustainability initiatives selected in this report in their 2018/19 annual reports and related securities' filings.

Investors should therefore question how AgriFunds meaningfully and consistently factor natural capital risks or sustainability commitments into their investment decision making and ongoing performance analysis.





RECOMMENDATIONS

for AgriFund Managers, Analysts and Investors

AgriFund managers, analysts and investors need to mitigate natural capital risks in their food and agriculture sector investments and align their investments with food systems sustainability to improve their investment returns. Planet Tracker asks AgriFund institutions by 2022 to adopt and publicly report on the following recommendations to support this transition:^{lx}

- 🌱 **Commit to investing in solutions** and think beyond the spreadsheet as natural capital risks often do not appear in traditional and dated financial tools.
- 🌱 **Report responsible investor alignment** in annual reviews with at least one of the PRI Responsible Investment in Farmland, the CFS Principles for Responsible Investment in Agriculture and Food Systems and the OECD-FAO Guidance for Responsible Agricultural Supply Chains or equivalent principles.
- 🌱 **Measure, manage and monitor natural capital risk exposure** for investments and on an aggregated portfolio basis within pre-defined time-bound natural capital risks such as drought, fire, flood, pollution, biodiversity risks such as pollinator decline, deforestation and land-use change that all increase agriculture production risks and thus impact an investment's earnings. Industry tools can support this process, for example using TRASE,^{lxi} Global Forest Watch-Pro,^{lxii} Forest 500^{lxiii} and SCRIPT^{lxiv} to assess deforestation risk at a portfolio level.
- 🌱 **Align Investments with Food and Agriculture Systems Sustainability:** AgriFunds need to align their investments with food and agriculture systems' sustainability including advances in farming technologies, regenerative agriculture, alternative meat proteins, supply chain efficiencies and evolving consumer demand. Growth sectors in the food and agriculture sectors are aligning with food and agriculture systems sustainability so AgriFunds need to publicly disclose how they approach these sectors.
- 🌱 **State publicly that portfolio managers are actively seeking out** and screening investments for opportunities to invest in sustainable food and agriculture systems. Food and agriculture sector companies are embracing these business opportunities by aligning reduction in impact with product branding. For example, on 3 March 2020, Danone-owned Horizon Organic, one of the largest USDA-certified organic dairy brands, committed to a carbon positive supply chain by 2025 by investing \$15 million re-equipping its 600 dairy producers,^{lxv} improving soil health, optimizing energy and using animal feed additives such as adding ocean algae or seaweed to feed to decrease methane emissions^{lxvi} while Danone itself is asking investors to vote at its next annual meeting in support of the company becoming a certified B Corp.^{lxvii}

- 🌱 **Update their investment processes** for existing funds or launch new investment funds targeting sustainability opportunities in the food and agriculture sectors aligned with the EU Farm to Fork and EU Biodiversity strategies, the UN Sustainable Development Goals (SDG), EU Action Plan on Deforestation and Imported Deforestation and EU Sustainable Finance Taxonomy which promote actions to support aligning investments with food and agriculture systems sustainability.
- 🌱 **Benchmark their investments** against indices aligned with the transition to a sustainable food system as AgriFunds are compared against their benchmarks to judge their investment performance.
- 🌱 **Adopt regenerative agriculture** as a framework for assessing their investments as regenerative agriculture describes the pathway towards food and agriculture systems sustainability. Regenerative agriculture includes start-ups and publicly traded companies investing in increasing biodiversity, improving topsoil regeneration, supporting biosequestration, decreasing food waste and loss, mitigating hydrological risks, enhancing ecosystem services and increasing resilience to climate change. For example, annual costs from food waste and loss in the EU alone are €143 billion, so better managed food, loss and waste can positively impact both earnings and GhG emissions.^{lxviii}



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Appendix I

NEW SOUTH WALES DECLINE IN AGRICULTURE PRODUCTION 2018 TO 2019

Table 14: New South Wales Primary Industries 2018 to 2019 ^{lxix}

| New South Wales Primary Industries 2018–2019 | Output (AUD millions) | Production YoY |
|---|-----------------------|----------------|
| Beef cattle | \$2,588 | 8% |
| Recreational and charter fishing | \$2,363 | 4% |
| Horticulture (fruits, nuts, nurseries, cut flowers, turf, and vegetables) | \$1,729 | 1% |
| Hunting and game management | \$1,596 | 4% |
| Wool | \$1,226 | -6% |
| Sheep meat | \$1,096 | 11% |
| Poultry | \$785 | 0% |
| Cotton | \$763 | -56% |
| Wheat | \$735 | -46% |
| Forestry | \$578 | 6% |
| Milk | \$568 | 0% |
| Eggs | \$269 | 2% |
| Barley | \$246 | -28% |
| Wine grapes | \$235 | 3% |
| Pork | \$194 | -3% |
| Commercial Fisheries (wild catch, farmed fish) | \$181 | 2% |
| Sorghum | \$98 | 12% |
| Oilseeds (canola, cotton seed, soybeans, and sunflower) | \$94 | -81% |
| Sugarcane | \$80 | -6% |
| Pulses (fava beans, field peas, lentils, lupins, and chickpeas) | \$75 | -79% |
| Rice | \$24 | -90% |
| Goatmeat | \$8 | -24% |

Note: Data from New South Wales NSW Department of Primary Industries slightly different than aggregate.

During 2018/2019, crop production in New South Wales was negatively impacted by drought, declining by 48% to AUD 2.5 billion with a 56% decrease in summer crop production and a 63% decrease in winter crop production respectively.^{lxx}

Winter crop planted area decreased by 46% to three million hectares while winter crop production decreased by 63% to 2.9 million tonnes, 74% below New South Wales' ten-year average.^{lxxi}

Summer crop planted area similarly decreased by 33% to 385,000 hectares with summer crop production decreasing by 56% to 1.3 million tonnes, 52% below New South Wales' ten-year average.^{lxxii}



Farming was hurt by soil moisture deficit, below average rainfall, and above average temperatures. The decrease in crop production resulted in higher feed costs with short supply in hay and grain for livestock.

Low water availability and high-water costs led to increases in higher water prices in New South Wales' water allocation market. General Security^{lxxiii} water entitlements increased by 32% to AUD 1,929 per share while High Security^{lxxiv} water entitlements saw their volume weighted average prices increase by 58% to average of AUD 5,564 per share.^{lxxv}



Appendix II

PLANET TRACKER'S AGRIFUND SELECTION METHODOLOGY

1 Allocation must include:

- Agriculture sector allocation greater than 20%, or
- Beverage sector allocation greater than 20%, or
- Food sector allocation greater than 20%.

2 Fund description key words, must include:

- Agriculture, or
- Aquaculture, or
- Fish, or
- Forest, or
- Livestock.

3 Fund objective key words, must include:

- Agriculture.

4 Fund strategy, must include:

- Agriculture, or
- Livestock.

5 Sector holding classifications, must include:

- Agriculture, or
- Beverages, or
- Food.

6 Multi asset funds passed through screen:

- Planet Tracker's analysis is open to multi asset funds such as the AllianceBernstein All Market Real Return Portfolio.

7 Fund investors must be accessible on Bloomberg.

8 Exclude forestry funds.

9 Fund investments must be accessible through Bloomberg.

10 Assets under management (AUM) data for 2017 and 2018 have to be available and accessible through Bloomberg.

11 Private equity funds screened out.





Appendix III

AGRIFUNDS RELY ON NATURAL CAPITAL

Agricultural systems have taken a global toll on natural capital and planetary boundaries. This is supported by science-based evidence in the 2019 IPBES Global Assessment Report on Biodiversity and Ecosystem Services^{lxxvi} and the IPCC's Special Report on Climate Change and Land.^{lxxvii}

The cost to the planet of reaching and exceeding these planetary boundaries is extreme and may in fact be irreversible with unknown consequences. For example:

- 🌿 **Biodiversity Integrity:**^{lxxviii} Of 8 million species on Earth, including 5.5 million insect species, 1 million species are threatened with extinction within decades. The unit is extinction rate measured as extinctions per million species per year.^{lxxix}
- 🌿 **Terrestrial Productivity:** More than 33% of the world's land surface and about 75% of freshwater resources are devoted to crop or livestock production while 23% of total land areas globally have seen a reduction in agriculture productivity due to land degradation. The unit is land systems change (percentage of global land cover converted to cropland).^{lxxx}
- 🌿 **Marine Productivity:** 90% of global fisheries are either harvested at unsustainable levels or at maximum sustainable levels, while about 50% of live coral reefs have been lost. For reefs, the variable is carbonate ion concentration and average global surface ocean saturation state with respect to aragonite. The aragonite saturation state describes the amount of free calcium carbonate in the water column.^{lxxxi}
- 🌿 **Agriculture Production Risk:** While there has been a 300% increase in food crop production since 1970, more than 75% of global food crop types rely on insect pollination. Due to pollinator loss, about \$570 billion annual value of global crop output is at risk.^{lxxxii}
- 🌿 **Groundwater:** 50% or more of the irrigation water used in agriculture is supplied by groundwater.^{lxxxiii} The unit is cubic kilometres per year.^{lxxxiv}

These natural capital criteria which impact agriculture production, and which accountants call "biological assets" and "agricultural produce",^{lxxxv} then impact financial analysis used by portfolio managers managing AgriFunds. These investors employ five categories of financial ratios, indirectly impacted by these natural capital inputs upstream, to support their investment decisions. These five categories of financial ratios are:

- 🌿 **Liquidity ratios** which measure a company's ability to pay debt obligations. This includes current ratio (current assets / current liabilities) which measures a firm's ability to fund its current liabilities with its current assets. By definition, current liabilities are due within the next year and, similarly, current assets include cash, cash equivalents and marketable securities that can easily be converted into cash in the short-term.
- 🌿 **Turnover ratios** which measure the amount of assets or liabilities that a company replaces in sales, which in turn determines how efficiently a company uses its assets. This includes ratios such as accounts receivable ratio (net credit sales / average accounts receivable), which measures how many times a business can turn its accounts receivables into cash in a year.



- 🌱 **Leverage ratios** which measure the amount of capital available to service debt. This includes ratios such as interest coverage ratio ($\text{EBIT} / \text{interest expense}$) which measures a firm's ability to pay the interest on its debt.
- 🌱 **Performance ratios** which measure how efficiently a company uses its resources to generate sales and convert assets to cash. This includes ratios such as net profit margin ($\text{net income} / \text{revenue}$) which measures the percentage of each dollar earned each year by a business that ends up as profit.
- 🌱 **Valuation ratios** which measure a company's value compared to its competitors enabling investment decision-making. This includes ratios such as P/E ratio ($\text{share price} / \text{earnings per share}$) which measures the market value of a stock relative to its earnings.

Regulatory pressures on agricultural production are growing, specifically around intensification and the use of pesticides and herbicides, historical land use change, waste management and emissions' accounting. Regulatory examples include the EU Green Deal, Renewable Energy Directive II and France's Article 173 Directive.

In addition to impacting production and trade, failure to meet regulations enforcing these policies can result in fines, penalties and commodity trade restrictions for agribusinesses. Complying with these regulations is therefore financially material to company earnings and valuations.

AgriFund asset managers therefore have a responsibility to recognise and price natural capital risks, specifically in relation to market regulations, which can aggregate at a portfolio level through the companies in which they invest.





Appendix IV CASE STUDIES

Bayer AG, Glyphosate and Cancer

Bayer AG acquired Monsanto for \$63 billion in 2018.^{lxxxvi} At the time, environmental campaign groups were pressuring Monsanto to stop producing and selling the pesticide Roundup. In September 2019, a meta-analysis of scientific literature on carcinogenic impacts of glyphosate, a main active ingredient in Roundup, concluded that the evidence strongly suggested that Roundup may cause cancer and a variety of other diseases.^{lxxxvii}

In a ruling by the California Supreme Court in May 2019, Bayer AG was ordered to pay more than \$2 billion in punitive damages to a U.S. couple claiming Roundup was related to their cancer.^{lxxxviii} This sum was reduced to \$69 million in July 2019.^{lxxxix} As of April 2020, Bayer is slowly moving towards settling over 45,000 cases against it for the misapplication of Roundup for causing non-Hodgkin's lymphoma.^{xc} At the time of the initial verdict, Bayer AG's shares dropped by 10% and since the Monsanto acquisition, Bayer AG has lost more than \$30 billion in market value and the stock has declined by 38%.^{xc1}

General Mills, Pesticides Over Application and Insect Die-off

In 2018, the fund manager Green Century Capital Management³ filed a proxy resolution with As You Sow, a U.S. not-for-profit, whose mission is to support investors with their corporate engagement strategies, against General Mills to eliminate toxic pesticides from its supply chain,^{xcii} stating:

“ Request(ing) that the Board disclose at regular intervals, at reasonable expense and omitting proprietary or privileged information, available quantitative metrics on pesticide use in the Company's supply chain and related impacts on pollinators, to allow investors to assess trends over time.”^{xciii} “

As You Sow made this argument because in 2016, General Mills had started its “Bring Back the Bees” campaign. This was launched and co-branded with its top selling breakfast cereal Honey Nut Cheerios. As You Sow and the investors it represented argued that General Mills was not accounting for its natural capital impacts while their competitors were, for example:

- 🌱 “Unilever has phased out World Health Organization Class 1 pesticides for tea production and intends to phase out Class 2 pesticides by 2020.
- 🌱 Sysco's IPM Program reports on the quantity of pesticides avoided, including the amount of pesticides that affect beneficial organisms such as pollinators.
- 🌱 Dozens of major food and retail companies have adopted policies to restrict the use of neonicotinoids in their supply chains, including Whole Foods Market, Lowe's, Walmart, Costco, Home Depot and BJ's Wholesale Club.”^{xciv}

³As of 30 June 2018, General Mills, Inc. comprised 0.01%, 0.24%, and 0.00% of the Green Century Balanced Fund, the Green Century Equity Fund, and the Green Century International Index Fund, respectively.



At the subsequent 2018 annual meeting, shareholders voted 31% in favour of the proxy resolution to address neonicotinoid use in the company's supply chain.^{xcv}

A similar argument was made again in 2019 when shareholders again argued that the use of neonicotinoids is potentially fatal to bees and other pollinators.^{xcvi,xcvii} This time, Green Century Capital Management⁴ was now joined by Trillium Asset Management^{xcviii} and Mercy Investment Services^{xcix} and supported by As You Sow as the asset managers again filed the proxy resolution against General Mills to eliminate toxic pesticides from its supply chain.^c

The parties negotiated a ten-year commitment from General Mills to:

- 🌱 Advance regenerative agriculture practices with farmers on a million acres of farmland by 2030.
- 🌱 Set goals to expand the acreage and crop variety of its regenerative agriculture programme.
- 🌱 Report data on the initiative publicly by the end of its first year.
- 🌱 Review ways to measure and disclose its progress toward pesticide reduction.
- 🌱 Provide continual disclosure on its regenerative agriculture and integrated pest management programs.^{ci}

In 2019, overall, General Mills reacted proactively to the shareholder resolution by substantially improving the quality of their data disclosures on neonicotinoid use throughout its supply chain and generally improving traceability across its supply chain.^{cii} As a result of taking action, General Mills has risen to the top of a 2019 ranking table assessing action on harmful pesticides, in a report compiled by As You Sow.^{ciii}

Green Century President Leslie Samuelrich described it best when she stated:

“General Mills acknowledges the urgent need to protect the bees and other wild pollinators that are essential to global food production. By indicating a willingness to take real steps to reduce the use of the toxic pesticides in its supply chain, General Mills has emerged as a leader among its peers and we look forward to working with them to protect pollinators.”^{civ}

Zoneco Group, Accounting Fraud and Scallop Fishery Collapse^{cv}

Zoneco Group was one of China's largest publicly traded seafood companies as measured by total sales. Zoneco has experienced three massive scallop die-offs on their 200,000 hectare farmed scallop ranch that had resulted in \$264 million write-offs.^{cv, cvii} According to Zoneco, “The greater volatility of water temperature... is the major reason for the losses.”^{cviii} At the time, Zoneco was

⁴As of 30 June 2019, General Mills Inc. comprised 0.25%, 0.65%, and 0.00% of the Green Century Equity Fund, Green Century Balanced Fund, and the Green Century International Index Fund, respectively.



reportedly producing 50,000 tonnes of scallops annually.^{cxix} On 12 November 2019, Zoneco's board reported that the book value of its consumable biological assets had fallen 99%^{cx}

Following an investigation by the Chinese Regulatory Securities Commission, Zoneco's CEO Wu Hougang was banned for life from Chinese securities markets and ordered to pay fines for accounting fraud and misstatements from 2014 to 2017 related to scallop die offs. Zoneco's continual write-down of its scallop stock calls into question the reliability of its application of accounting standards.^{cxii}

Noble Group Write Downs Reveal Impact of Deforestation^{cxii}

At the end of 2017, Noble Group recorded the fair value of their 70,000 hectare palm assets as \$62 million (property, plant and equipment), a decrease of \$135 million from the \$197 million reported at the end of 2016. This decrease occurred after Noble Group's creditor HSBC and others requested the review of its accounting valuation of its oil palm concessions in West Papua, Indonesia, because Noble had reported one as only 11% forested when it was actually 90% forested, a violation of RSPO's application of the High Conservation Values certification.^{cxiii}

These and other accounting irregularities led to Noble Group's shares being suspended from trading in November 2018 from the Singapore Stock Exchange. Finally, Kommunal Landspensjonskasse (KLP), Norway's largest pension fund company with \$73 billion in assets under management, recognised the natural capital risks posed by Noble Group's misstatements when KLP divested 100% from Noble Group in 2015.^{cxiv}

Noble Group's accounting misstatements directly led to degradation of natural capital and deforestation and alleged fraud of investors.

JBS Scandals Including Deforestation Hit Earnings, Delayed IPO

In March 2017, the largest global meatpacker, JBS, was hit with five consecutive scandals, two directly tied to natural capital. At the time, JBS' share price dropped 31%, eroding more than \$2.76 billion in market value.^{cxv} The scandals were a key contributing factor to the cancellation of JBS's \$500 million international IPO for JBS Foods International BV, its food processing subsidiary.^{cxvi} The case had sovereign level ramifications, with the United States, China and many other nations banning the import of Brazilian beef.^{cxvii}

JBS gets its beef from over 70,000 suppliers in Brazil, with 40,000 in the Amazon Biome. From 2007 to 2017, JBS acquired sixteen companies primarily funded through increasing its debt, as its net debt increased 20x to BRL 46.9 billion between 2007 and 2017. As a result of the JBS scandals in 2017, key corporate buyers such as Waitrose and Domino's Pizza Brazil suspended purchasing from JBS.^{cxviii}



The scandals were:

- 🌿 **Deforestation:** Illegal Cattle from Suppliers: In March 2017, Brazil's environmental protection agency, IBAMA, raided JBS meatpackers in Pará. IBAMA alleged that JBS had purchased 50,000 illegal cattle since 2013, raised on land violating Brazilian legislation and forest laws. Half of the cattle came directly from embargoed pastures. According to the IBAMA investigations, the remainder were allegedly bought via three-way laundering transactions that disguised the true origin of the animals. The deforested land allegedly linked to JBS is 200 square miles – slightly smaller than the country of Singapore.
- 🌿 **Bribery:** Brazilian Politicians and Meat Inspectors: In March 2017, Brazilian federal police released results from their two-year investigation of pork, poultry and beef meatpackers. They served hundreds of court orders and detention warrants against leading meatpacking companies. Joesley and Wesley Batista, the owners of J&F Investimentos, the controlling shareholder of JBS, admitted in testimony that they spent about \$185 million over several years to bribe nearly 1,900 politicians.
- 🌿 **Financial:** Inflating Loans to Fund Acquisitions: On May 12, 2017, the Brazilian Federal Audit Court (TCU) released an audit of alleged fraud into BNDES loans used by JBS to finance its 2007 Swift & Company acquisition. The audit revealed BNDES overpaid BLR 0.50 cents per JBS stock, so that BNDES suffered a BLR 69.7 million loss. TCU is probing another BNDES loan to JBS, and BNDES has opened a separate probe into its JBS loans.
- 🌿 **Supply Chains:** Violating Labour Standards: In June 2017, Brazilian NGO Repórter Brasil and The Guardian exposed that JBS allegedly paid GBP 2 million from 2013 to 2016 for cattle sourced from a farm in the state of Pará where Brazilian prosecutors in June 2016 uncovered men forced to work under inhumane and degrading conditions.
- 🌿 **Financial: Foreign Exchange Transactions:** On July 19, the Securities and Exchange Commission of Brazil (CVM) stated it had opened two probes into foreign exchange transactions by J&F Investimentos, alongside 12 other investigations into alleged corporate wrong-doing by J&F controlled companies, including allegations of insider trading. These probes may impact JBS.^{cxix}

Eventually, J&F Investimentos agreed to pay a \$3.2 billion fine for its role in corruption scandals.





Appendix V

AGRIFUND DESCRIPTIONS

Table 15: AgriFunds Strategy Descriptions

| Entity Name | ISIN | Strategy Description |
|--|--------------|--|
| Alliance-Bernstein All Market Real Return Portfolio | US0185284140 | Global real-asset strategy seeking to counter the impact of inflation; dynamically and opportunistically shifts portfolio exposures among real asset classes; managed by an experienced team with a disciplined process drawing on a global research platform. Primary investments include real estate, natural resource and inflation-sensitive equities and commodity futures. ^{cxv} |
| Advisorshares Vice ETF | US00768Y5454 | ACT seeks concentrated exposure to U.S. exchange listed equity securities of alcohol and tobacco companies that historically have exhibited consistent, steady growth with durable moat advantages. These areas of the market can be viewed as recession resistant as consumers traditionally spend on leisure & vices in all economic environments. ACT also seeks emerging, untapped growth opportunities by investing in cannabis-related equities that are in compliance with U.S. federal regulations across multiple industries. ACT can serve as a growth equity allocation in a diversified portfolio. ^{cxvi} |
| BlackRock Global Funds - Natural Resources Growth & Income Fund | LU0612318385 | The Natural Resources Growth & Income Fund seeks to achieve capital growth and an above average income from its equity investments. The Fund invests at least 70% of its total assets in the equity securities of companies whose predominant economic activity is in the natural resources sector, such as, but not limited to, companies engaged in mining, energy and agriculture. ^{cxvii} |
| ComStage Bloomberg Equal-weight Commodity ex-Agriculture EUR hedged UCITS ETF | LU1275255799 | The ComStage Bloomberg Equal-weight Commodity ex Agriculture Monthly EUR Hedged UCITS ETF is a UCITS compliant exchange traded fund that aims to track the Bloomberg Energy and Metals Equal-Weighted Euro Monthly Hedged Total Return Index. ^{cxviii} |
| ComStage Bloomberg Equal-weight Commodity ex Agriculture UCITS ETF | LU0419741177 | The ComStage Bloomberg Equal-weight Commodity ex Agriculture UCITS ETF is a UCITS compliant exchange traded fund that aims to track the benchmark index Bloomberg Energy and Metals Equal-Weighted Total Return Index. ^{cxix} |



| Entity Name | ISIN | Strategy Description |
|---|--------------|---|
| ComStage ETF STOXX Europe 600 Food & Beverage NR UCITS ETF | LU0378435803 | The ComStage ETF STOXX® Europe 600 Food & Beverage is an exchange-traded fund linked to the performance of the STOXX® Europe 600 Food & Beverage performance index (net return index, NR). ^{cxxv} |
| iShares Global Agriculture Index ETF | CA46433W1095 | Seeks to replicate the performance of the Manulife Asset Management Global Agriculture Index, net of expenses. ^{cxxvi} |
| DWS Invest Global Agribusiness | LU0612318385 | Agriculture has developed into a dynamic growth market across the globe, as a growing world population needs to be provided with adequate food while per capita area under cultivation is declining. The Fund management takes advantage of the opportunities of all important sectors of the agricultural industry and invests flexibly along the agricultural value chain – from seed to the supermarket. Specifically, the focus is on the following areas: fertilizer, agricultural equipment, seed and crop protection, agricultural logistics, processing and distribution. ^{cxxvii} |
| DWS Global Agribusiness | LU0264451831 | The agricultural industry has developed into a dynamic growth market worldwide, because a growing world population wants to be supplied with sufficient food with a declining acreage per capita. Fund management takes advantage of the opportunities of all important areas of agriculture and invests flexibly along the agricultural value chain - from seeds to supermarkets. In particular, it focuses on the following areas: fertilizers, agricultural equipment, seeds and crop protection, agricultural logistics, processing and distribution. ^{cxxviii} |
| Fidelity Select Consumer Staples Portfolio | US3163908482 | Seeks capital appreciation. Investing primarily in companies engaged in the manufacture, sale, or distribution of consumer staples. Normally invests at least 80% of assets in securities of companies principally engaged in these activities. Normally investing primarily in common stocks. ^{cxxix} |
| Fidelity Global Commodity Stock Fund | US31618H6062 | Seeks capital appreciation. Normally investing at least 80% of assets in stocks of companies principally engaged in the energy, metals and agriculture group of industries. Investing in securities issued anywhere in the world. Normally investing primarily in common stocks. ^{cxxx} |



| Entity Name | ISIN | Strategy Description |
|---|--------------|--|
| Lyxor STOXX Europe 600 Food & Beverage UCITS ETF | LU1834985845 | The Lyxor STOXX Europe 600 Food & Beverage UCITS ETF is a UCITS compliant exchange traded fund that aims to track the benchmark index STOXX Europe 600 Food & Beverage Net Return EUR. The STOXX Europe 600 Food & Beverage Net Return EUR is constituted with the largest stocks of the food & beverage industry in Europe. The STOXX Europe 600 supersectors are derived from the STOXX Europe 600, which comprises 600 of the largest European stocks by free float market capitalisation. They represent the largest European companies in each of the 18 Supersectors as defined by the ICB classification (Industry Classification Benchmark). ^{cxxxix} |
| First Trust Indxx Global Agriculture ETF | US33734X8121 | This exchange-traded fund seeks investment results that correspond generally to the price and yield (before the Fund's fees and expenses) of an equity index called the Indxx Global Agriculture Index. ^{cxxxix} |
| First Trust Nasdaq Food & Beverage ETF | US33738R8521 | This exchange-traded fund seeks investment results that correspond generally to the price and yield (before the fund's fees and expenses) of an equity index called the Nasdaq US Smart Food & Beverage Index. ^{cxxxix} |
| NN L Food & Beverages | LU0121192677 | The fund invests in food & beverage companies worldwide. This includes companies carrying out their business activity in the following industries: producers and distributors of food, beverages and tobacco; manufacturers of non-durable household goods and personal products; food & pharmaceutical retailers. Measured over a period of several years, we aim to beat the performance of the benchmark MSCI World Consumer Staples (Net) hedged (EUR). For this specific hedged share class we apply a currency hedging strategy. By hedging our currencies we aim to avoid currency risks for euro investors. We hedge all currency risks in the portfolio of the sub-fund to the reference currency of this share class (euro). A currency hedge consists of taking an offsetting position in another currency. We strive to add value to the fund by stock selection based on a thorough company analysis. We consciously weigh the upside potential from the current share price against the risks involved before including a stock in the fund. ^{cxxxix} |
| iShares Agribusiness UCITS ETF | IE00B6R52143 | The Fund seeks to track the performance of an index composed of companies related to global agriculture businesses. ^{cxxxix} |



| Entity Name | ISIN | Strategy Description |
|--|--------------|--|
| Apicil AM - Strategie Alimentation | FR0000973455 | The management objective of the FCP aims to obtain, over the long term (5 years minimum), a performance superior to that of the MSCI World Food, Beverage & Tobacco world index in Euro (closing price, net dividends reinvested) net of fees. ^{cxxxvi} |
| Market Access RICI Agriculture Index UCITS ETF | LU0259321452 | The RICI® Agriculture Index UCITS ETF tracks the performance of the RICI®-ASM Index, a total return index which consists of 21 agricultural components providing exposure to a wide range of underlying raw resources such as wheat, cotton and corn. ^{cxxxvii} |
| BlackRock Natural Resources Trust | US09252H4056 | The fund invests primarily in equity securities of companies with substantial natural resource assets. It will invest at least 80% of its assets in companies with substantial natural resource assets or in securities the value of which is related to the market value of some natural resource asset. The fund normally invests in a portfolio consisting of companies in a variety of natural resource related sectors, such as energy, chemicals, oil, gas, paper, mining, steel or agricultural products. ^{cxxxviii} |
| March International Vini Catena Class I-EUR** | LU0566417779 | The aim of the Sub-Fund is to provide investors with an opportunity to invest mainly in transferable securities listed or quoted in Europe, United States of America and other countries, including emerging countries, focused in the wine and liquor industry, but extended to the value chain of the wine industry (distribution companies; wine cellars; producers; agricultural companies; auxiliary industry of wine). It is not constrained by market capitalisation and geography. Its benchmark is Morgan Stanley Capital International World Index. Notwithstanding the foregoing, the Sub-Fund also invests in fixed-income securities (bonds) and bank deposits in order to limit equity-risk. ^{cxxxix} |
| Manulife Global Fund - Global Resources | LU0278409577 | Global Resources Fund has, as its primary objective, the provision of long term capital growth for those who hold a long term investment view and who are prepared to accept significant fluctuations in the value of their investments in order to achieve long term returns. It is intended that the investments will be made on a diversified basis. The underlying investment portfolio will mainly consist of equity and equity-related securities of companies involved in global resources such as gas, oil, coffee, sugar and related industries throughout the world and which are listed on any stock exchange. The Sub-Fund may invest in companies which derive a significant portion of their earnings from business activities in global resources sectors. ^{cxl} |

** Fund no longer active as at 2020.



| Entity Name | ISIN | Strategy Description |
|--|--------------|--|
| MIF Marine Invest Fund | LI0293937186 | The main objective of the sub-fund is to achieve a medium to long-term capital gain. The sub-fund is actively managed and is not based on any benchmark. To achieve this, the sub-fund invests its assets predominantly (at least 51%) in equity securities and equity rights of companies worldwide that are active in the maritime economy, i.e. the sub-fund invests in one or more branches of industry, directly or indirectly have to do with the sea. In addition to shipping, this also includes shipbuilding, the maritime supply industry, shipyards, port operations, global aquaculture, the fish processing industry and, in the energy sector, oil and gas extraction. ^{cxli} |
| ETFMG Alternative Harvest ETF | US26924G5080 | MJ tracks the Prime Alternative Harvest Index, designed to measure the performance of companies within the cannabis ecosystem benefitting from global medicinal and recreational cannabis legalisation initiatives. ^{cxlii} |
| Janus Organics Thematic ETF – USD** | US47103U6055 | The Organics ETF is an exchange-traded fund incorporated in the USA. The Fund seeks to track the performance of the Solactive Organics Index. It invests in companies globally that are positioned to profit from increasing demand for organic products, including companies which service, produce, distribute, market or sell organic foods, beverages, cosmetics, supplements or packaging. ^{cxliii} |
| Panda Agriculture & Water Fund FI | ES0114633003 | A Variable Income Fund that invests exclusively in companies in the agricultural and water sector. The portfolio will be diversified in companies producing, processing and marketing agricultural products, as well as suppliers of machinery, equipment and fertilizers, and, up to 20%, in any company related to the water sector, with the exception of those that operate under the utility model, that is, companies that provide a service of general interest, in this case the water supply, which are regulated and which normally operate under a public concession contract. ^{cxliv} |
| Pictet - Nutrition | LU0366533882 | The fund applies a strategy for capital growth by investing primarily in shares issued by companies contributing to, and/or profiting from, the value chain of the agricultural sector. The Compartment's investment universe is not limited to a specific geographic region. ^{cxlv} |
| Sarasin Food and Agricultural Opportunities | GB00B2Q8L643 | The Fund seeks to provide growth (through increases in investment value and income) over a rolling five-year period through investment in companies from around the world which have exposure to food and agriculture sectors. ^{cxlvi} |

** Fund no longer active as at 2020.



| Entity Name | ISIN | Strategy Description |
|---|--------------|---|
| Schroder Alternative Solutions - Commodity Fund | LU0232504117 | The fund will invest in commodity related instruments worldwide. The fund will have exposure to a broad range of commodities, across the energy, metals and agriculture sectors. The fund is designed to give investors exposure to commodities. The investment team aim to identify investment opportunities across these sectors, conducting in-depth research to select the best investments. The fund will predominantly gain its exposure to commodities through investment in financial derivative instruments and, to a lesser extent, shares of companies, bonds, foreign currency, money market instruments and hold cash on deposit. The fund will not acquire any physical commodities directly. ^{cxlvii} |
| iShares STOXX Europe 600 Food & Beverage UCITS ETF DE | DE000A0H08H3 | The sub-fund iShares STOXX Europe 600 Food & Beverage UCITS ETF (DE) (the Fund) is a passively managed exchange traded fund (ETF) that aims to track the performance of the STOXX® Europe 600 Food & Beverage (Price Index) as closely as possible. In this regard, it aims to replicate the benchmark (Index). ^{cxlviii} |
| iShares MSCI Global Agriculture Producers ETF | US4642863504 | The iShares MSCI Global Agriculture Producers ETF seeks to track the investment results of an index composed of global equities of companies primarily engaged in the business of agriculture. ^{cxlix} |
| iShares Global Timber & Forestry UCITS ETF | IE00B27YCF74 | The Fund seeks to track the performance of an index composed of 25 of the largest global companies engaged in Timber & Forestry businesses. ^{cl} |
| iShares Global Timber & Forestry ETF | US4642881746 | The iShares Global Timber & Forestry ETF seeks to track the investment results of an index composed of global equities in or related to the timber or forestry industry. ^{cli} |
| Invesco STOXX Europe 600 Optimised Food & Beverage UCITS ETF | IE00B5MTYL84 | The Invesco STOXX Europe 600 Optimised Food & Beverage UCITS ETF aims to provide the performance of the STOXX Europe 600 Optimised Food & Beverage Total Return Index, less fees. ^{clii} |



| Entity Name | ISIN | Strategy Description |
|---|--------------|--|
| Consumer Staples Select Sector SPDR Fund | US81369Y3080 | The investment seeks to provide investment results that, before expenses, correspond generally to the price and yield performance of publicly traded equity securities of companies in the Consumer Staples Select Sector Index. In seeking to track the performance of the index, the fund employs a replication strategy. It generally invests substantially all, but at least 95%, of its total assets in the securities comprising the index. The index includes securities of companies from the following industries: food and staples retailing; household products; food products; beverages; tobacco; and personal products. ^{cliii} |
| VanEck Vectors Agribusiness ETF | US92189F7006 | VanEck Vectors Agribusiness ETF (MOO) seeks to replicate as closely as possible, before fees and expenses, the price and yield performance of the MVIS Global Agribusiness Index (MVMOOTR), which is intended to track the overall performance of companies involved in: (i) agri chemicals, animal health and fertilizers, seeds and traits, from farm/irrigation equipment and farm machinery, aquaculture and fishing, livestock, cultivation and plantations (including grain, oil palms, sugar cane, tobacco leaves, grapevines, etc.) and trading of agricultural products. ^{cliv} |
| Amundi Aktien Rohstoffe | DE0009779884 | The aim of fund management is to achieve an appropriate performance taking into account the risks taken and the development of the capital and commodity markets. In order to achieve its goal, at least 51% of the fund's value is invested in company shares whose main business area is the production, extraction, trading or further processing of Raw materials, energy sources or agricultural products, which is in the indices MSCI USA Metals & Mining, MSCI UA Energy and MSCI USA Food Products are included or incorporated into them as part of index changes. ^{clv} |
| SafePort PM Value Fund | LI0103770116 | The investment goal is to achieve a long-term substantial real increase in value. The Fund offers the investors an investment possibility with which the invested capital is effectively protected against inflationary devaluation and can be increased. This investment goal is achieved by investments in sustainable real assets and commodities. ^{clvi} |





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- xvi The Index provides exposure to publicly traded companies worldwide that derive at least 50% of their revenues from the business of agriculture. As such, the Fund is subject to the risks of investing in this sector. Source: <https://etfdb.com/index/daxglobal-agribusiness-index/>
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37% of total net anthropogenic GhG emissions (medium confidence). {2.3, Table 2.2, 5.4}. Global food system in this report is defined as 'all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socioeconomic and environmental outcomes at the global level'. These emissions data are not directly comparable to the national inventories prepared according to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

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 - PSMA: The Agreement on Port State Measures (PSMA) is the first binding international agreement to specifically target illegal, unreported and unregulated (IUU) fishing. IUU fish landings decrease port fees, impact port revenue. Fines and insurance costs increase for ports, shipping, and fishing companies as a result of IUU events occurring. The PSMA reduces the incentive of vessels engaged in IUU fishing to continue while it blocks seafood products derived from IUU fishing from being transacted. It can lead to investigation, prosecution, license revocation and inclusion on a Regional Fisheries Management Organisations (RFMO) IUU vessel list.
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