APRIL - 2020

MAPPING THE GLOBAL OPPORTUNITIES IN THE FOOD AND AGRICULTURE INVESTMENT SPACE POST COVID-19

INTRODUCTION

The rapidly evolving situation with COVID-19 continues to have a dramatic impact on our lifestyles, economic activity, monetary and fiscal policy, and financial markets. In this context, this study is intended to provide investors with a perspective about the short-term implications of the virus and the opportunities post COVID-19 for the broad food and agriculture investment space.

IN THIS STUDY WE EXAMINE FOUR KEY ASPECTS:

01. **The state of markets going into COVID-19**
02. **Resilience of the food and agriculture sector and impact across the space**
03. **The "Global Reset" and what it might mean to our sector**
04. **Investment opportunities post COVID-19**

COVID-19 is a health threat unlike any other in our lifetimes. So, first and foremost, we want to express our support to all those who may be affected by the situation and we hope you are safe and well.

As the situation evolves, we can expect that the spread of the virus will peak, and economies will eventually recover. So when we think about "the day after", we can ask ourselves: how will COVID-19 change the world?

As the COVID-19 crisis displays how much food matters, and how farmers, input and equipment suppliers, food processors, distributors and retailers all work to ensure that fresh and healthy food can reach consumers, it also raises awareness of the sector's relevance to investors.

At Valoral Advisors we believe it is a timely opportunity to revisit the attributes of the food and agriculture investment space and the role that investments in this sector can have as part of long-term diversified investment portfolios.

We hope you stay healthy and safe as we navigate our way through this pandemic, thank you.

Sincerely,

Roberto Viton
Managing Director
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01.

THE STATE OF MARKETS GOING INTO COVID-19

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Economies and the broader financial markets around the world have been under much pressure, volatility and uncertainty since the outbreak of COVID-19, a true "pandemic system shock" and "economic sudden stop" with economic, health, and societal shocks all happening at the same time.

The timing of this virus outbreak could have not been worse, as China was looking to recover from the difficulties experienced during 2019 and the first wave of trade negotiations with the U.S. were just underway.

Many economies around the world were already hovering just above a recession prior to the viral outbreak and this event is likely to push them over the edge.

The oil war launched by Saudi Arabia, the world's biggest oil exporter, to defend its market dominance against a rising tide of oil production in the U.S. and Russia has combined to send markets into a freefall.

Together, the coronavirus, oil price collapse, liquidity pressures and rising quarantines, travel bans, and business and school closures have caused widespread panic, pushing stocks into a bear market after a record breaking 11-year bull market in the U.S. In this context, investors rushed to safe haven investments, such as U.S. treasuries – where yields dropped to record low levels – gold and the U.S. Dollar.

Never before has the global economy been turned off so fast. As such, the coronavirus outbreak is set to deliver a sharp and deep economic shock, with U.S. and global recessions warranted.

The next section introduces a high-level overview of the initial economic response to the negative impacts triggered by the virus outbreak.

THE IMPACT OF COVID-19: **HISTORY NEVER REPEATS BUT IT RHYMES**

The world has never witnessed such widespread shutdowns and quarantines outside of wartime, prompting expectations of a deep global recession. However, while recent market moves are reminiscent of the 2008 crisis, it is important to recognise that this recession will be quite different from the 2007-2009 experience.

While the 2008 crisis was centered in the banking and real estate sectors, the coming recession is centered in the leisure, entertainment, food services and retail sectors, although quickly expanding to most economic sectors.

A growing concern is that the rush for liquidity - in a coordinated and unprecedented way globally – threatens to amplify the economic sudden stop. In particular, this phenomenon has a major impact on emerging economies and their currencies, as the rush for a reserve currency such as the U.S. Dollar has triggered massive capital outflows and sharp currency depreciations across emerging countries. In this context, the monetary and fiscal response to COVID-19 has been sharp. In an emergency move the Federal Reserve cut the federal funds rate by a full 1.00% to a range of 0-0.25%, following a 50 basis point cut in early March. In addition, it resumed quantitative easing, an evolving situation which might well leave the Fed as permanent lender of last resort.

Other major central banks are also in easing mode and all major developed country central banks are likely to move policy rates to near zero. We are experimenting what some analysts refer to "QE infinity and beyond".

In the U.S., on the fiscal side, the House of Representatives passed a historic stimulus package known as the Coronavirus Aid, Relief, and Economic Security or "CARES" act, which contains an unprecedented $2.2 Trillion in total financial relief for businesses, public institutions and individuals hit hard by the COVID-19 pandemic. The World Bank Group announced it would make available a package of $12 Billion, an unprecedented level of financing to help developing countries and businesses cope with the health and economic impacts caused by COVID-19.

In our sector we have seen some initial measures as well. The European Investment Bank (EIB) has announced the launch of a new financing initiative that aims to unlock close to €1.6 Billion of investment in the agriculture and bioeconomy sector. The financing aims to support private companies operating throughout the value chains of production and processing of food, bio-based materials, and bioenergy.

The work of UN Agencies and partner organisations to promote nutrition and healthy food systems during the pandemic is continually expanding and strengthening.

Looking forward, we will see whether or not the economic negativity has gotten ahead of itself, or if there are new waves of the virus coming and another stage of adjusting to a weaker global growth yet to come. But while we expect continued disruption in the global economic activity, we believe a path to recovery exists that will bring new opportunities.

02.

RESILIENCE OF THE FOOD AND AGRICULTURE SECTOR: **A ROUND-UP OF COVID-19 IMPACTS ON OUR INDUSTRY**

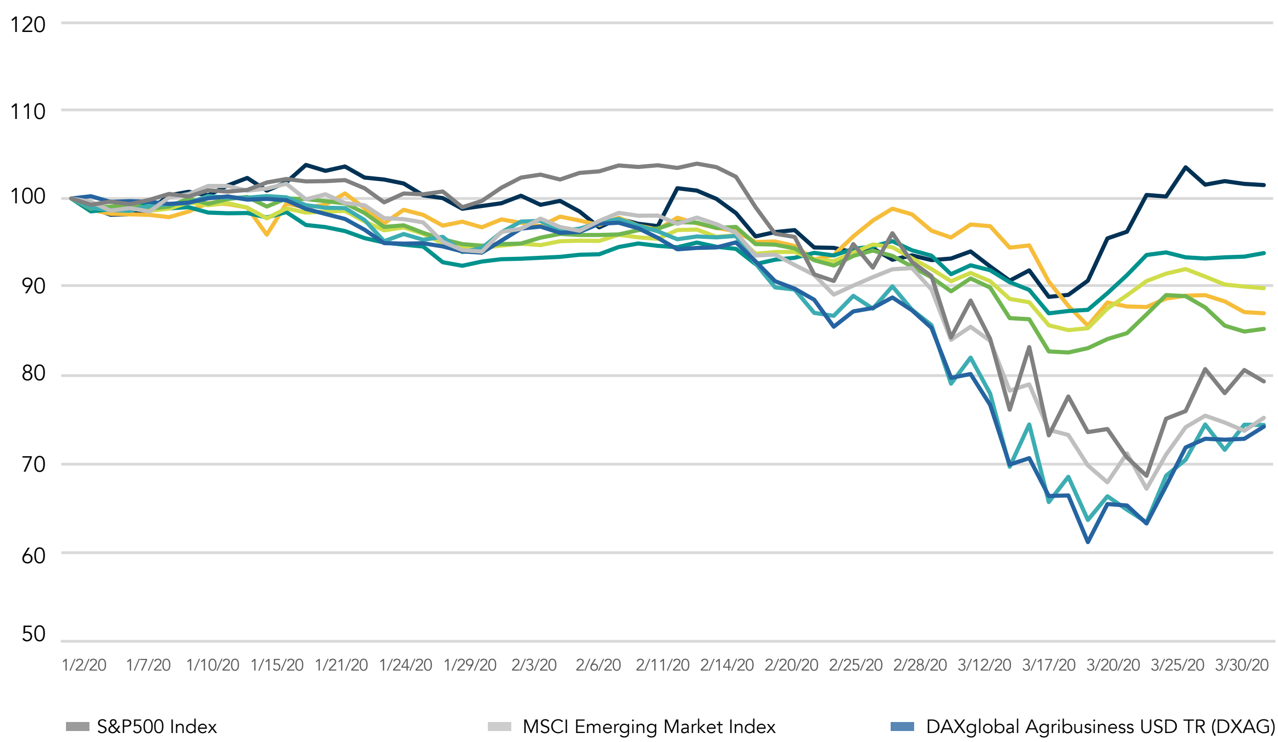
RESILIENCE OF THE FOOD AND AGRICULTURE SECTOR:
A ROUND-UP OF COVID-19 IMPACTS ON OUR INDUSTRY

The month of March has shown the full impact of COVID-19 in the global economy. The sell-off in financial markets, which has been the fastest on record, is broad across industries. Food and agricultural equities were not immune to the sharp fall in prices. Agricultural commodities, however, were more resilient (albeit starting from a lower base).

The following chart illustrates the YTD performance of selected equity indexes and commodities across the food and agricultural sectors.

Fig. 01:

Selected equities and commodities performance (Base 100 = January 1st, 2020)



Source: CME, Bloomberg.

At a first glance, the global food and agriculture investment space looked certainly resilient in light of the virus outbreak: the surging sales of food highlighted the "defensive" nature of the sector, as human beings still require food after all. As we have heard in the market, "demand is decreasing for all the goods, except for supermarket goods".

However, as the COVID-19 continued to spread, governments around the world have closed factories, stores, schools, restaurants, hotels, pretty much everything. Entire cities are currently in quarantine. Travel restrictions and the cancellation of many events hit the restaurant and food service sector.

As the pandemic expanded across the world, the agricultural sector has seen incremental damages. In the next pages, we provide a general overview of the issues that the industry is facing and the impact across the different asset strategies.

Fortunately, the panic buying of the last few weeks is settling down, and food and beverage manufacturers are working hard to make food available through the supply chain. Anecdotical evidence shows different levels of disruption across the food sector. There have been also changes in consumer behavior, which might have some long-lasting effects.

The food and agriculture supply chain is a complex network of farmers, inputs and equipment suppliers, food processors, plant workers, shipping, railcars, trucks, where disruption can happen in many different ways. The quarantine orders and the travel restrictions have affected air freight and also brought port bottlenecks. Availability of shipping containers is also limited because of the disruptions in Chinese ports earlier this year.

And while CPG companies are stepping their safety measures and taking all type of precautionary efforts, there are multiple reports of food and beverage workers contracting COVID-19.

Across countries, there is a growing number of announcements of food production being reduced or suspended, largely due to COVID-19 cases, input shortages and constraints in the supply chain. But while food processors have reduced output, they are largely still operating in most food sectors.

The seafood sector is one that has seen the global trade hit most, reducing foodservice demand and complicating supply chains. Another area of concern is the slowdown or shutdown of processing at plants, which would cause an issue for perishable food like meat products and threaten to tighten supplies of certain products.

Regarding distribution channels, it has been interesting to notice that while consumers emptied supermarket shelves, fresh produce companies have been struggling to sell food that would normally go to restaurants and hotels.

While many suppliers are trying to sell food directly to consumers, it takes time to re-arrange supply chains and deal with new storage and distribution requirements. Preparing and packaging food for retail as opposed to wholesale brings many logistic challenges and extra costs.

In this context, we face the paradox that grocery stores and supermarkets struggle to keep shelves stocked, while food in the farms is going to waste as the shutdown of the food service industry has scrambled the supply chain.

Changing consumer preferences are also a distinctive aspect of the COVID-19 impact on our sector.

Consumers reacted to quarantines and social distancing by stockpiling food in their homes. This initial boost in buying will probably eventually be balanced out by lower future consumption and reduced restaurant meals.

Evidence from retail data shows that consumers have favored storable food over highly perishable one. Demand for wheat products such as flour, bread and pasta has increased, as well as demand for processed food products. Sales of frozen fruits and vegetables are also on the rise. There has also been a major shift in demand from fresh seafood to dried and frozen products as consumers stay at home.

The COVID-19 crisis has also pushed consumers to swiftly change their shopping behavior and embrace online grocery shopping. As downloads of apps for grocery pickup and delivery services set new records, delivery companies struggle to ramp up staff to pick up goods in shops and deliver.

Food prices likely to rise amid COVID-19: the impact of COVID-19 on food prices has been mixed, depending on the food staple and also on the stage in the value chain. Paradoxically, while agricultural commodities may get a hit, the price of food on the shelves is likely to increase.

Since beginning of March 2020, the price of mainstream crops and soft commodities has dropped as agricultural commodities were not immune to the outside markets. A further review is included in the section of "Agricultural Commodities".

The horticulture sector has seen a mixed impact on prices. Restrictions on labour and transportation have combined with strong consumer demand to drive the price of certain fruits and vegetables up. At the same time, the challenges to shift supplies from the food service industry to retail channels and the issues to manage the logistics of perishable fruits and vegetables have left some farmers struggling.
Those farmers that work with contract crops (including potatoes, apples, avocados and blueberries, to mention few) in which the offtake agreements are negotiated up to a year in advance, have avoided so far the volatility caused by the virus outbreak.

Looking broadly at the agricultural commodity space, global inventories of mainstream crops such as corn, wheat, soybeans and rice are plentiful, limiting any sharp jump in prices.
Indeed, the FAO Food Price Index ("FFPI") -

which measures monthly changes for a basket of cereals, oilseeds, dairy products, meat and sugar - averaged 172.2 points in March 2020, down 4.3% from February but still 2.7% higher than in March 2019.

The sharp decline in March marked the second month-on-month drop in the value of the FFPI, largely driven by COVID-19 pandemic-demand contractions. While the latest fall in prices was most pronounced for vegetable oils and sugar, the other sub-indices also registered lower values in March.

ASSESSING THE IMPACT OF COVID-19 ACROSS THE SECTOR

The global food and agriculture value chain is both a massive production platform and a critical backbone to serve some of the most basic human needs. This value chain offers multiple opportunities for investment across asset strategies and across the capital structure.

The following figure illustrates the range of asset strategies across the liquidity and risk spectrum.

Fig. 02:
Asset strategies across the food and agricultural investment space.

SPECTRUM OF ASSET STRATEGIES ACROSS THE GLOBAL FOOD AND AGRICULTURE VALUE CHAIN

PUBLIC STRATEGIES

LISTED EQUITIES
- Developed markets
- Emerging markets

FIXED INCOME
- Investment grade
- High yield

COMMODITIES
- Agricultural
- Soft
- Livestock
- Biofuels

PRIVATE STRATEGIES

LIQUID ALTERNATIVES

HEDGE FUNDS
- Equities
- Commodities

PRIVATE DEBT
- Trade finance

ILLIQUID ALTERNATIVES & REAL ASSETS

FARMLAND
- Row crops
- Permanent crops
- Livestock

FORESTRY
- Wood
- Pulp
- Biomass

PRIVATE EQUITY
- Growth capital
- LBO/MBO

VENTURE CAPITAL
- AgTech
- FoodTech

KEY INVESTMENT DIMENSIONS

Geographies
Value chain segments and product categories
ESG considerations & impact
Investment constraints such as risk tolerance, liquidity needs and investment time horizon

Source: Valoral Advisors.

At Valoral Advisors we are active in the following investment strategies:

Listed equities:	Investments in listed companies focused on the broad food and agricultural industry.
Agricultural commodities:	Investments in grains, oilseeds and other soft commodities through futures markets and through specialized hedge funds.
Farmland:	Investments in farmland for row crops, permanent crops and livestock, investing directly and through funds and with different farming models.
Private equity:	Growth capital and leverage buyout investments in established companies operating along the food and agribusiness value chain.
Private debt:	Investments in structured trade finance and other financing solutions to companies in the sector, mainly to commodities processors and traders, both through co-investments and specialized managers.
Venture capital:	Investments in start-ups and early stage companies that are developing innovative products and services in the broad AgTech and FoodTech space (typically from Seed to Series B).
Others:	We also work on investments related to forestry and in land and water restoration, conservation & carbon offsetting. A new emerging sector is commercial real estate, linked to the ownership of retail space for both agricultural inputs, food stores and supermarkets.

In the next pages, we zoom into the main asset strategies to assess the impact that COVID-19 is having and the initial outlook going forward.

The ripple effects of the COVID-19 outbreak are already affecting the food and agriculture sector in different ways as described before. The initial impact on financial performance shows both pockets of resilience and pockets of pain, distributed across a diverse range of sectors.

The figure below illustrates the expected financial impact over the next 6 to 9 months by main asset strategy. A further assessment is included in the next pages.

Fig. 03:

COVID-19 impact across the main food and agricultural asset strategies.

Expected impact of COVID-19 on financial performance during next 3 to 6 months

FARMLAND	LOW	- No material impact seen so far. - Projected farming income might vary according to sector (row crops, permanent crops, cattle, dairy, etc.).
AGRICULTURAL COMMODITIES	MEDIUM	- Prices of main crops and soft commodities has dropped as agricultural commodities were not immune to the outside markets. - Livestock and dairy sectors look most exposed to the supply and demand disruptions. - Governments might adopt trade restrictions or stockpiling to safeguard food security, which could escalate and support grain and oilseed prices.
LISTED EQUITIES	HIGH	- Listed equities in the broad food and agricultural sector have fallen sharply, in line with the broader markets. However, the sector has winners and losers. - The dining sector faces major challenges and agricultural machinery industry will also see a drop in sales. Food companies and food retailers have fared relatively better, although there has been a wide dispersion in performance.
PRIVATE EQUITY	MEDIUM	- PE firms are turning their attention away from M&A to focus on the needs of current portfolio holdings amid the market's uncertainty. - Major focus is on liquidity. PE-backed companies are also working on aggressive working capital management, capex and hiring freeze and cost restructuring.
VENTURE CAPITAL	HIGH	- The COVID-19 outbreak has affected AgTech and FoodTech startups around the world mainly in two areas: i) funding in the VC market has suddenly vanished, and ii) business development efforts and sales have been hit due to the market impacts described before. - A healthy runway is a top priority for founders and for their investors too.
PRIVATE DEBT	MEDIUM	- As volatility in commodity prices hit both developed and emerging markets, trade finance managers have focused on increasing their liquidity position and delaying new capital disbursements. Risk management has been focused on monitoring the health of repayments, collaterals and loan-to-collateral value ratios as volatility in commodities might affect the value of the collateral and the coverage ratios.

Source: Valoral Advisor's analysis

FARMLAND

It is encouraging to see that so far rural areas across much of the world have been less impacted by COVID-19, with economic activities less affected than in more densely populated cities. From conversations with farmers around the world, we notice that daily life in most farms is continuing in a much more normal manner than in the cities.

It is also reassuring that most farmers in the Northern Hemisphere have already purchased the inputs they need and made their planting plans for this spring and summer season.

The historically low correlation of farmland assets to the economic cycle and their inherent low volatility are attributes that are well appreciated in the current context.

Looking forward, the full impact of Covid-19 on real assets has yet to become clear and while the farmland market has not seen any material impact from the pandemic until now, there is anecdotal evidence pointing towards a slowing of inquiries and transaction volumes in different farmland markets around the world.

Indeed, farmland transactions have been paralysed in recent weeks according to different brokers we spoke with in Latin America and Eastern Europe. Lower farm income, driven by lower commodity prices, and less credit available will make it harder to see fluid transactions in the coming months at least.

In the secondary market, we have seen significant drops in pricing for timber and farmland investment vehicles, of around 20% compared to 2019 levels. While these price references might not be representative, they point towards less favourable conditions in the farmland market.

AGRICULTURAL COMMODITIES

The agriculture trade was already feeling the pain from the U.S. – China trade war back in 2019, even before the COVID19 appeared. Since beginning of March 2020, the price of mainstream crops and soft commodities has dropped as agricultural commodities were not immune to the outside markets.

Amid the disruptions from the COVID-19, there have been widespread reports of bottlenecks at ports in different regions. And in a sign of the historical moment we are living, the Chicago Mercantile Exchange has shut down floor trading of all products until “further notice,” though electronic trading will continue.

Across the agricultural commodity spectrum, the livestock sector has been the most sensitive as a global recession could bring a slowdown in demand for animal protein.

Another sector that has been hit hard is the ethanol. Today, roughly 40% of the U.S. corn crop is refined into ethanol. The crash in crude oil prices and the disruptions from COVID-19 outbreak have contributed to see U.S. ethanol prices plunging to an all-time low of 85 cents a gallon. Amid negative margins, we might see ethanol plant closures.

The dairy sector is also suffering. Weaker demand and increasing supply around the world continue to affect prices, as the sector might see a gradual accumulation of inventory, with further price declines on the horizon.

While the drop in commodity prices represents a major hit to farmers around the world, the decline in prices could be offset by the depreciation of local currencies against the U.S. Dollar. The reduction in energy costs – such as fuel and possibly fertilizers - might also partially offset lower agricultural prices.

Moreover, the current market volatility is creating new opportunities among commodity hedge funds that combine their fundamental/macro view with their extensive understanding of market structure and commodity market dynamics to actively research and invest in multiple relative value strategies via direct or indirect exposure to the commodity markets.

Few commodities can shape global affairs – from geopolitics and trade wars to popular unease - the way food can, so we might see a renewed raise in food security concerns as governments are moving to secure domestic food supplies during the pandemic.

Depending on the extent – in time and depth – of the virus outbreak, we might see some countries that could adopt trade restrictions or aggressive stockpiling in a bid to safeguard food security, which could quickly escalate and support grain and oilseed prices.

And while the present outlook for agricultural and food markets is much brighter than it was during the 2007-2008 price spike, there have been some recent developments to be wary of.

Among the major crop producing countries that have implemented export restrictions are Vietnam, which has curbed rice exports and Russia, which has halted processed grain exports. Kazakhstan has also suspended exports of cereals, oilseeds and some vegetables. Romania also moved to ban exports of certain products but ultimately lifted the restrictions few days later.

We might also see some countries – especially those who rely most on imported food – to increase investments towards promoting local food production.

Singapore announced a SGD 30 Million investment in the agri-food industry to accelerate the production of main food stapes like eggs, vegetables and fish over the next six to 24 months.

The 30x30 Express grant aims to strengthen Singapore's food security, as part of its goal of meeting 30% of the country's nutritional needs with food produced locally by 2030. Currently, less than 10% of food is grown locally.

Meanwhile, in United Arab Emirates, the Abu Dhabi Investment Office (Adio) announced a $100 Million investment to bring four agriculture technology companies to the emirate as part of a government efforts to attract high-skilled talent and cutting-edge research with a focus on exploring how arid-climate countries can benefit from these technologies.

The goal of this investment is to partner with leading companies to build AgTech R&D facilities and production centres in Abu Dhabi, that can ultimately accelerate the growth of the emirate's AgTech sector and promote innovation that is relevant locally and can be exported globally.

LISTED EQUITIES

The month of March brought one of the worst bear markets in stocks we have ever had, with analysts now struggling to understand if it is over, or if there is more to come. The sharp and sudden drop was likely helped by the excessive leverage in the system, a price-insensitive buying behavior, broad indexing, and short volatility trades. Now, all that leverage is being unwound.

Listed equities in the broad food and agriculture sector have fallen sharply, in line with the broader markets. However, the sector has winners and losers: among the sectors that could be hit hardest include restaurants, while sectors that could be relatively immune include food & beverages, among others.

Agricultural machinery companies face challenges as production closures and a more cautious behaviour from farmers might drive sales volumes to drop considerably during 2020.

The dining industry is having a particularly tough time as quarantines are keeping bars, restaurants and fast-food chains close or are keeping clients away.

Food companies and food retailers have fared relatively better, although there has been a wide dispersion in performance. In principle, food companies are able to replace purchases other way done in restaurants. Still, we can imagine that consumers will prioritize basic food instead of premium priced natural and organic products.

While food retailers – specially supermarkets – have seen consumers spending record amounts as the effects of the Covid-19 lockdown take hold, they also had to incur in extra costs mainly related to payroll absence and safety measures (although mostly offset by higher sales).

Grocery delivery is likely to be one of the largest beneficiaries as it was expected to grow before COVID-19, but the outbreak will accelerate the rate of adoption.

Looking forward, one of the long-lasting effects that COVID-19 might leave on companies – and particularly listed ones – is the heightened scrutiny for the decisions that companies take and that impact employees, customers and society.

PRIVATE EQUITY

In light of the COVID-19 pandemic, private equity managers in the broad food and agriculture investment space have been activating plans for a major and widespread negative economic impact.

As we have seen in the broader private equity market, most PE firms in the food and agriculture sector are turning their attention away from M&A to focus on the needs of current portfolio holdings amid the market's uncertainty around the coronavirus pandemic.

One of the key focus for many firms is on liquidity. We have heard from multiple PE-backed food and agribusiness companies looking to draw down any available cash under their financing arrangements. As in previous crisis, companies that are financially stronger (e.g. healthy leverage ratios) are better placed to navigate the forthcoming recession.

PE-backed companies are also working on aggressive working capital management, capex and hiring freeze and cost restructuring. As we described in the previous section, not all the sectors have been hit in the same way and there are also currency aspects which play differently in emerging markets.

The silver lining is that if the global recession drives valuations lower, there is a vast pool of private capital that could quickly go to work in the M&A market. In other words, if until few months back dry powder was seen as a liability, now is seen as an asset.

At Valoral Advisors we believe a new wave of M&A looms in the food and agriculture sector, particularly in some sectors which are ripe for consolidation, but also in growth niche markets.

VENTURE CAPITAL

Innovation in the food and agriculture sector has been growing steadily in recent years in response to the supply and demand challenges that we face in the food and agriculture sector.

At the core of technology innovation is the imperative to improve global agricultural productivity in a sustainable way. By leveraging new technologies farmers can produce more while also conserving and protecting soil, water, and other natural resources.

Meanwhile consumers enjoy access to more, diverse, and better foods. This is why the key trends and themes linked to technology are centered around smart agriculture and food innovation.

The COVID-19 outbreak has affected AgTech and FoodTech startups around the world mainly in two areas: i) funding in the VC market has suddenly vanished, and ii) business development efforts and sales have been hit due to the market impacts described before.

Certainly, these conditions can be quite different from one company to another. We are aware of several companies that have managed to close funding rounds just before the crisis emerged. We also know about companies in sectors such as protected agriculture and in labour automation that have seen a spike in inquiries from prospect clients.

Despite these specific cases, we notice that suddenly a healthy runway is a top priority for founders and for their investors too. Runway and the factors influencing it are indeed the most critical things to look at because third party funding will become more difficult at least in the next couple of months. From our conversation with several VC investors, most of them are privileging extending bridge finance to portfolio companies that need to cover gaps in their funding due to the ongoing disruptions.

Looking forward, we can expect that this crisis might bring a resetting of price and terms in the AgTech and FoodTech space. The faster that founders and investors can mutually agree on this, the faster this market can recover. The COVID-19 will likely prove a major catalyst to accelerate digitalization in our sector, as there is enormous potential to harness digitalization and new technologies to make agriculture more efficient.

As a veteran VC investor told us, venture capital funds have to invest their capital and they need to put the money to work when their companies need it more. Today could be a good time to do so.

PRIVATE DEBT

In the private debt space, there are different opportunities mainly driven by the investment term, the purpose of financing and the type of collateral used, and which include trade finance, project finance, venture debt and green bonds. Trade finance is one of the private debt strategies that has been particularly hit by the COVID-19 outbreak.

Agriculture structured trade finance has expanded quietly during the 2000s as global trade grew dramatically, and further propelled by the 2008 financial crisis and new banking regulations which resulted in a reduction of capital available to the market.

Today, there are several funds specialized in agriculture trade finance, with a focus on emerging markets. These managers have seen some market price volatility across global commodity markets amid the COVID-19 outbreak. As volatility in commodity prices hit both developed and emerging markets, managers have focused on increasing their liquidity position and delaying new capital disbursements.

Risk management has been focused on monitoring the health of repayments, collaterals and loan-to-collateral value ratios as volatility in commodity prices might affect the value of the collateral and the coverage ratios.

The impact of COVID-19 on physical supply chains also means that cash cycles are being affected because of supply chain disruptions. As cash cycles extend, it might bring financial stress into some companies.

One of the initial outcomes from this crisis is that we are seeing new cash deployments focused on basic food staples such as rice, wheat, sugar and coffee, as the agricultural sector is seen as a critical component of the broader trade finance universe.

The sector faces a rocky path ahead, at least for the remainder of 2020. In its latest forecast, the World Trade Organization said global trade would fall this year by between 13% and 32%, more steeply this year than in the global financial crisis a decade ago before rebounding in 2021 as the COVID-19 pandemic recedes.

03.

THE "GLOBAL RESET"

THE "GLOBAL RESET"

According to most analysts, the global economic cycle that emerged from the 2008-2009 financial crisis is ending.

Some analysts consider that the current crisis looks set to be deeper but shorter than the financial crisis of 12 years ago, as the root cause of the crisis is not financial but it is rather a healthcare crisis that requires measures to both shut down the economy and limit the damage while doing so. The "Global Reset" refers to a larger problem that we face, and which is centered around the over indebted economy, at all levels, including consumers, companies, and local and national governments.

According to this view, the U.S. Federal Reserve's extremely loose monetary policies in the past decade - namely zero interest rate policy ("ZIRP") and quantitative easing ("QE") - pushed investors into higher risk assets.

This period has been characterized as the "Bubble Economy" or "Everything Bubble", in which there has been a belief that the economy could expand forever.

However, when a major crisis triggers a deleveraging process, it can become unstoppable and while governments and Central Banks can try to smooth the process, the "Great Reset" is due.

In this context, some analysts argue the "Global Reset" is already underway: when the massive amounts of global debt and the bubble in government promises will have to be dealt with. Accordingly, this process is likely to bring a period of great market volatility.

Some other analysts go even further and expect that the "Global Reset" also brings a new way of thinking about work, life, business, and leadership.

HISTORICAL PERSPECTIVE OF THE FOOD AND AGRICULTURE INVESTMENT SPACE

Whether we are approaching this "Global Reset" or not, it might be a timely opportunity to revisit the attributes of the food and agriculture asset class and the opportunities that lie ahead.

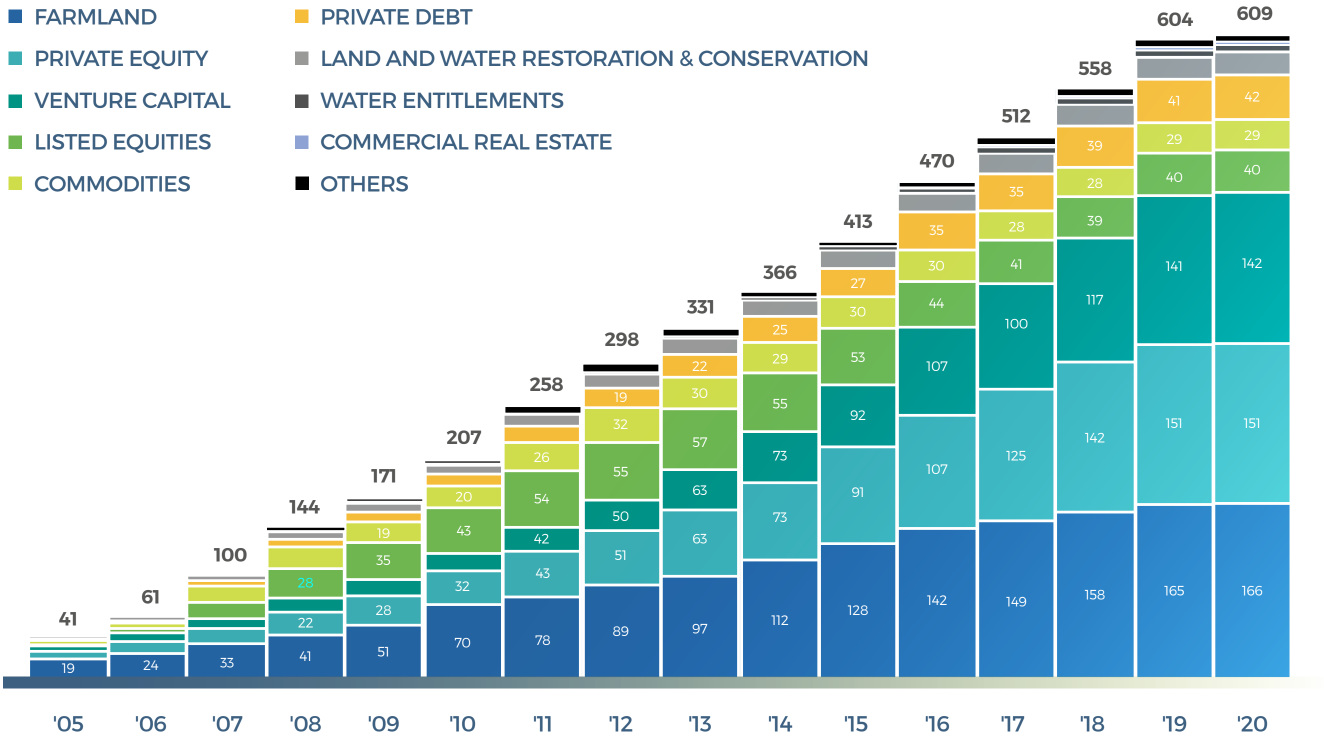
It is now well known that the broad food and agriculture sector represents a growing investment space among global investment allocations.

Over the last two decades, private and institutional investors have been deploying increasing flows of capital to the sector's different asset strategies driven by attractive, structural supply and demand trends.

Valoral Advisors tracks over 600 investment funds specialised in the broad food and agriculture sector, which collectively manage US$ 102 Billion. Investments managed by forestry funds and other forestry vehicles add over $150 Billion in AuM. The following chart shows the evolution of the number of these funds since 2005.

Fig. 04:

Investment funds specialized in the food and agriculture investment space (total number of funds).



Source: Valoral Advisor's proprietary fund database.

The broad food and agriculture sector, as an asset class, emerged during the early 2000s, and has consolidated over time, driven by the following factors:

Early 2000s: The emergence of China as a major food importer drove prices of agricultural commodities higher, which attracted investors' interest. The agricultural frontier extended, and production expanded, amid higher commodity prices, improved farm profitability and the subsequent increase in farmland prices around the world. It was a perfect example of the rising tide lifting all boats.

Late 2000s: Following the 2008-2009 crisis, investors flew to the safety of agricultural real assets and expanded their scope in the sector, investing across the value chain through different asset strategies.

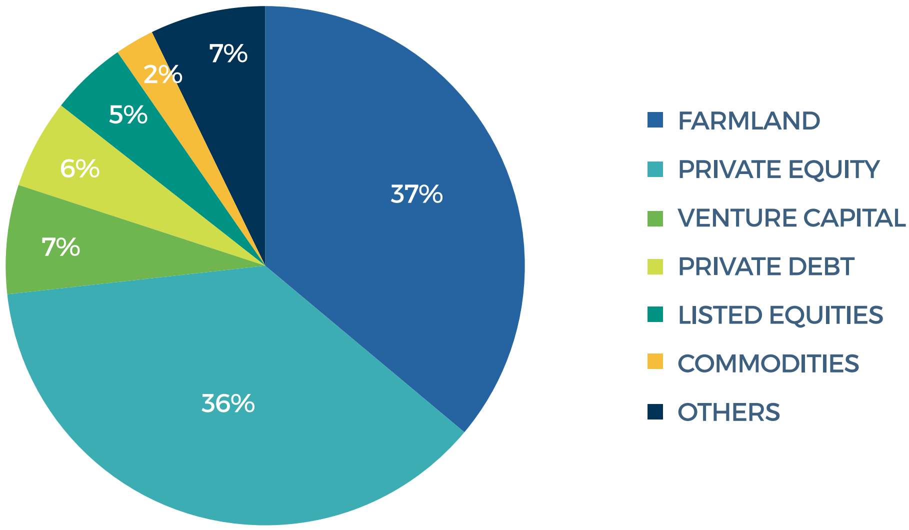
Early 2010s: The early years of 2010s saw a continuation in the expansion of the asset class across all asset strategies, given high commodity prices and improved investment conditions, across developed and emerging markets.

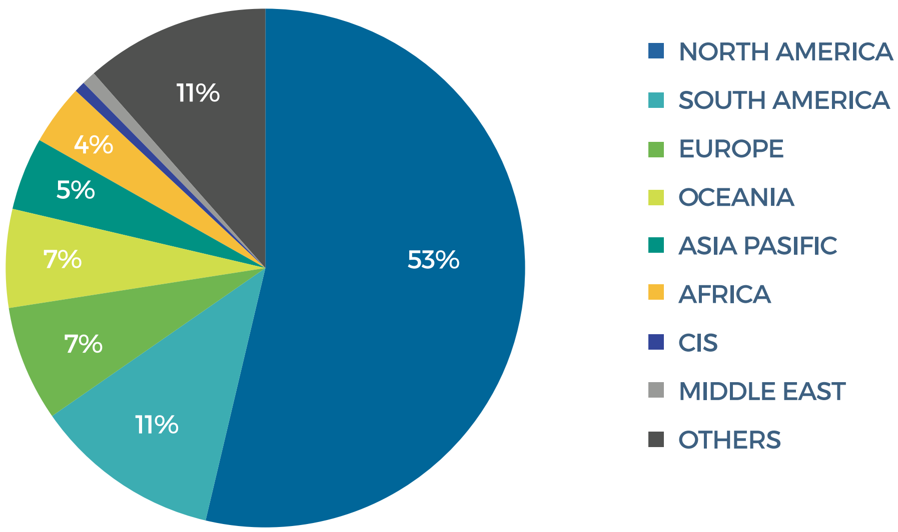
Late 2010s: Amid higher agricultural production and lower commodity prices, investors moved downstream into private equity and venture capital strategies to chase value in new food markets and in technology innovation. This period saw a multiplication of investable themes and sectors and a growing divergence in investment performance, both from a sector and geography perspective.

Today, the global food and agriculture investment space shows a more diverse and mature profile, that is reflected in its geographic and asset strategy coverage.

- **Fig. 05:**

Breakdown of AuM of investment funds specialized in the food and agriculture investment space by asset strategy and main regional focus (100% = $102 Billion).





Source: Valoral Advisor's proprietary fund database.

04.

OPPORTUNITIES POST COVID-19

OPPORTUNITIES POST COVID-19

At Valoral Advisors we recognise that most investors are doing what they should be doing when facing an uncertain outlook: build cash buffers.

At the same time, we have been recently approached by several investors – with and without sector's knowledge – that have interest in exploring the opportunities that might arise from the recent market developments linked to the virus outbreak.

A growing number of institutional investors is joining the space. The new generations in family offices also wish to increase their exposure to our sector. Generational change in family farms also offers young farmers the opportunity to join the space. Entrepreneurs are reshaping the whole food and agriculture industry. This is a massive opportunity.

And this time is not just the search for yield, diversification and return enhancement. Investors are looking for positive outcomes that come from investing in more sustainable and more efficient food and agricultural production systems.

As such, the new decade is likely to witness more institutionalization of the asset class with emphasis on sustainability, where technology is expected to drive value creation across the sector.

The next section introduces the thematic approach that we apply at Valoral Advisors and the top opportunities we are working on.

FOOD AND AG THEMES POST COVID-19

At Valoral Advisors we believe that the food and agriculture sector is particularly suitable for a thematic investment approach.

Thematic investing requires a fundamental understanding of the impact of long-term economic, political, and social trends on regions and sectors, which reveals investable opportunities.

By developing the first, second and even third-order effects of structural trends it is possible to identify hot spots or discontinuities in certain sectors and regions where value and risk will be concentrated.

The figure below illustrates the key trends that will be shaping the sector in the years ahead and some of the most relevant investment themes currently pursued by investors worldwide and also themes likely to emerge soon. This is the result of an ongoing assessment that we perform, and which is further subdivided into more than 200 sub-sectors in the global food and agricultural value chain.

Fig. 06:

Long-term structural investment trends and selected investment themes in the food and agriculture sector.

	INVESTMENT TRENDS	INVESTMENT THEMES
CLIMATE CHANGE AND SCARCE NATURAL RESOURCES	• Climate change • Loss of arable land • Land degradation • Water constrains • Pollution • Biodiversity loss • Increased policies and regulations	• Climate-smart agriculture • Climate resilience & adaptation • Soil carbon sequestration • Land, water and forest restoration & conservation • Water efficiency • Energy efficiency & bioenergy • Reduction of food loss and food waste • Circular economy
DEMOGRAPHICS AND SOCIAL CHANGE	• Informed and empowered consumers • Food globalization • Population growth and rapid urbanization in EM • Health awareness • Environmental awareness • Animal welfare concerns • Aging (consumers & farmers) • Rise of the single-person household • Digital lifestyle and busy lifestyle	• Healthy and organic food • Local, natural and safe food • Food away from home • Easy, fast, ready-made food • Food for environmentally conscious consumers • Food experience and increased • consumer's expectations • Retail disruption • Total connectivity around food
CHANGING ECONOMIC POWER & THE RISE OF EMERGING MARKETS	• The rising middle class • Growing demand for food and animal protein • The Global South China, India and Africa • Growing role of global trade in services • Opposing trade forces • Agricultural convergence	• Food production & processing in emerging markets • Global food supply chains • Service offering and solutions along the value chain • Professionalization and technification of farmers • Increase in agricultural productivity • Increase in agricultural finance needs
TECHNOLOGICAL BREAKTHROUGH	• Technology convergence • Smart agriculture • Shift from synthetics to natural inputs in agriculture and food production • Food innovation in design and manufacturing • Food safety and traceability • Next-gen technologies in the supply chain • New materials	• Improvements to crops and livestock • Big data, advanced analytics and artificial Intelligence • Robotics and automation • Novel farming and food processing systems • New proteins • Digital innovation along the food supply chain

Source: Valoral Advisor's proprietary thematic investment analysis.

THE PATH FROM TRENDS AND THEMES TO ACTIONABLE OPPORTUNITIES

It is important to note that these trends have been shaping our sector long before COVID-19 appeared. Indeed, the virus might have exacerbated many of the trends we saw before.

These trends are powerful and transformative forces that have the potential to change the global economy, business and society. They have in common that they transcend sectors, industries and countries and evolve and endure irrespective of the economic cycle.

These trends - centered around demographics, economics and technology - can be catalysts for change driven by the management of dwindling resources, the demand for better nutrition, and technology innovation, in a context where a new geopolitical balance emerges and developing markets will dominate the growth in food consumption and will attract a growing share of investments.

These trends also present a series of opposing tendencies within the food and agriculture sector, by the interaction among them. Understanding this is also critical to assess the most attractive investment opportunities. In the next section the key trends are reviewed.

With a clear investment thesis in mind, investors can start a “scan and screen” process across asset classes to find the best ways to take a position in different investment themes.

There are several investment themes included in this assessment that emerge at the intersection of the four major trends analysed. Indeed, it is usually the case that the most attractive opportunities are found when multiple themes converge and reinforce one another in a specific region or sector and when themes are expressed as discontinuities and divergences from common knowledge. In the next page the main themes are described.

BRINGING THE CLIMATE CHANGE’S INVESTMENT PERSPECTIVE

Looking past COVID-19, there is now a growing recognition across society that climate change is the number one problem mankind is facing today. The U.N. recently launched the State of the Global Climate in 2019, which documents physical signs of climate change - such as increasing land and ocean heat, accelerating sea level rise and melting ice - and the knock-on effects on socio-economic development, human health, migration and displacement, food security, and land and marine ecosystems.

Writing in the foreword to the report, UN chief António Guterres warned that the world is currently “way off track meeting either the 1.5°C or 2°C targets that the Paris Agreement calls for”, referring to the commitment made by the international community in 2015, to keep global average temperatures well below 2°C above pre-industrial levels.

During the 2020 World Economic Forum Annual Meeting, which took place in January 2020, the Global Risks Report was presented. The survey presents the major risks the world will be facing. For the first time in the survey's 10-year outlook, the top five global risks in terms of likelihood are all environmental.

Indeed, the survey shows a big shift in global risk perception from the economy to climate & nature. As the saying goes, better late than never.

By reviewing the trends and themes and bringing the climate change perspective, we have developed a guideline to navigate the sector with a selection of our top 15 investment opportunities, which are presented in the next section.

FOOD & AGRICULTURE COMPASS: **AN INVESTMENT GUIDE FOR THE SECTOR POST COVID-19**

To complement the trends and themes described in the previous section - in which climate change plays a central role - at Valoral Advisors we have created the Food & Agriculture Compass, a simple guide to contextualize the trends and themes and help prioritize actionable investment opportunities.

The goal is to provide a framework which investors can use to visualize and prioritize the opportunities that arise from the major trends and themes. Below we share a simplified version.

- **Fig. 07:**

Food & Agriculture Compass.

	INVESTMENT DIMENSION	INVESTMENT DIRECTION POST COVID-19 (SELECTED IDEAS)
WHAT?	THINK ABOUT THEMES AND ASSET STRATEGIES	– Farmland to remain a safe haven (ag real assets) – Generational renewal in family farms to create gap in required capital. – Ag commodities might benefit from multiple forces, but specifically think about shifts in production driven by plant-based demand and the need to create and integrate new supply chains (PE style). – Technology plays an increasing role, don't bet against technology (VC). Expect more digitalization and more automation.
WHERE?	THINK ABOUT GEOGRAPHY AND SEGMENTS IN THE VALUE CHAIN	– Food production is becoming more local, closer to consumers (COVID-19 can accelerate this). – Market diversification in terms of food & ag products is also key to manage a growing number of potential disruptions (vs. sales concentration). – The food & ag value chain keeps expanding and becoming more flexible, opportunities abound upstream, midstream and downstream. – The last couple of years saw a focus on developed markets. While this is likely to continue, emerging markets might offer good entry points and higher growth rates ahead. – Think about implications on China's food direction post COVID-19.
HOW?	THINK ABOUT THE INVESTMENT APPROACH	– Focus on risk management: COVID-19 is a great opportunity to learn from it and to look into the potential tail risks that our sector faces. Some of the most relevant investment opportunities lie there. – Our sector demonstrates once again that active management is not only needed, but it is critical to manage the multiple risks in food & ag. – In terms of investment approach, the sector offers an ever-growing spectrum of direct investments, co-investments, fund structures. – Think about ticket size, investment stage, investment horizon, among the key considerations to narrow the opportunity set.
WHY?	THINK ABOUT POSITIVE OUTCOMES	– No industry is as relevant to the successful implementation of the SDGs as agriculture. Almost every single SDG has some linkage to agriculture: sustainable agricultural practices, efficient use of water, biodiversity protection, reduction of food loss and food waste are among key challenges and opportunities achieving this agenda. – Impact investing in the agriculture industry can play a pivotal contributing role, unlocking private capital to invest aligned with the SDGs and in that process, providing solutions to the many challenges we face. – Food security and food health concerns are relevant topics amid COVID-19.

Source: Valoral Advisor's proprietary thematic investment analysis.

OVERVIEW OF THE TOP 15 INVESTMENT OPPORTUNITIES

Based on the thematic approach and the Food & Agriculture Compass introduced before, in this section we summarize the top 15 investment opportunities that emerge from our assessment.

The opportunities are organised according to the fundamental strategy that supports them. Different strategies have a different weight in terms of what lever leads the opportunity, as it can be seen in the qualitative assessment presented below.

- **Fig. 08:**

Selected investment opportunities grouped by main strategy.

	INVESTMENT OPPORTUNITY	INNOVATION: NEW MARKETS AND NEW BUSINESS MODELS	HIGH-GROWTH CATEGORIES	CONSOLIDATION / RATIONALIZATION	VERTICAL INTEGRATION	INFRASTRUCTURE / LOGISTICS PLAY
FARMLAND	• Climate-smart farming and carbon sequestration	✓		✓✓	✓	✓
	• Permanent crops	✓	✓✓	✓✓	✓✓	✓✓✓
INFRASTRUCTURE-BASED PLAY FOCUSED ON FRESH FOOD	• Protected agriculture	✓✓✓	✓✓✓	✓✓	✓✓	✓✓✓
	• Logistics for fresh food	✓	✓✓	✓✓	✓✓	✓✓✓
SHIFT TOWARDS SUSTAINABLE PROTEINS	• Sustainable fisheries and aquaculture	✓	✓✓✓	✓✓	✓✓	✓✓
	• Novel foods and ingredients	✓✓✓	✓✓✓			
CROP IMPROVEMENTS	• Plant breeding & propagation in high value crops	✓	✓✓	✓✓		
INDUSTRIAL PLAY TO CONSOLIDATE AND LEAD INNOVATION WAVE	• Automation and efficiency gains in AG and food processing	✓✓	✓✓	✓✓		
	• Food certification and quality assurance	✓	✓✓	✓✓		
CLIMATE-SMART & SUSTAINABLE AG TECHNOLOGIES	• Water infrastructure & water technologies	✓	✓	✓✓		✓✓✓
	• Biological products	✓✓✓	✓✓	✓✓		
	• Waste to energy & biomaterials	✓✓	✓	✓	✓✓	✓✓
COMMERCIAL & FINANCIAL SOLUTIONS	• Commercial real estate			✓✓✓		✓✓✓
	• Green finance	✓	✓	✓✓		
	• Farmland investment management	✓		✓		

Source: Valoral Advisor's analysis.

OVERVIEW OF THE 7 INVESTMENT STRATEGIES AND TOP 15 INVESTMENT OPPORTUNITIES

01. FARMLAND

Farmland is one of the most pursued assets in the broad food and agriculture investment space given its attributes, of which we can highlight the i) low correlation with traditional asset classes, that provide diversification to portfolios, ii) the potential hedge that farmland offers as its value often correlates with inflation, iii) its inelastic demand and supply which often results in hybrid-like return characteristics, and iv) its relatively low volatility, not exposed to financial market speculation.

We see two broad, complementary opportunities: First, we consider that farmland for row crops might become more attractive again, starting from low commodity prices and facing prospects of continued low interest rates and debt monetization in the U.S. and other major economies.

But as we all recognise that climate change is the number one problem mankind is facing today, we believe that investing in farmland is more than owning and farming the land. We see an opportunity to embrace climate-smart agriculture ("CSA") as a core part of the investment strategy.

CSA can be seen as an integrated approach to managing landscapes to help adapt agricultural practices, livestock and crops to climate change, and which can boost productivity, enhance resilience and reduce greenhouse gas emissions. From an investing angle, investors could start bringing this perspective into the investment process and the operational management of their agricultural real assets.

There are several geographies in which we are working, including the U.S. in North America, Uruguay in South America and Denmark and Romania in Europe.

Second, we see continued opportunities in high value orchards or permanent crops. The fruits & vegetables sector has become a hot spot for investors, supported by attractive demand growth, better cash yields than extensive agriculture and the opportunity to deploy capital in more intensive ways, including vertical integration along the fruit value chain.

Indeed, it is an area which is likely to see more institutional investment, with a focus on integrating synergistic midstream assets to create vertically integrated, sustainable farming enterprises that grow, pack and market a portfolio of fruits and vegetables.

At Valoral Advisors we are working actively in the Andean region – Chile, Peru, Ecuador and Colombia – as well as in the Iberian Peninsula – Spain and

Portugal -, looking at a broad range of crops including cherries, blueberries, table grapes, avocados, olives, almonds and pistachios.

Investors in permanent crops can take a more active operational role that offers higher upside, but they can also invest in “buy & lease” business models, to get exposure to the pure real asset and reduce the operational risk.

In light of the COVID-19 outbreak, it is worth noting that some of these crops, like nuts, are non-perishable, which reduce the potential negative impacts of disruptions in the food supply chain.

The opportunity around high-value crops is also linked to other opportunities included in this assessment, like irrigation infrastructure, plant breeding and propagation, greenhouses

02. INFRASTRUCTURE-BASED PLAY FOCUSED ON FRESH FOOD

The ongoing urbanization process around the world, the demand for fresh and healthy food, and the pressure on natural resources (land, water and energy) are driving interest in protected agriculture, which includes alternative indoor agricultural systems greenhouses, vertical farms and urban farms. The emergence of technologies specifically applicable to indoor agriculture are accelerating the expansion of these systems across the world.

Together with the cold supply chain to transport and distribute fresh produce, these two sectors are among the infrastructure-based opportunities that fit well with the long-term supply and demand trends that will shape the food and agriculture production system in the years ahead.

The cold supply chain refers to the temperature-controlled supply chain, and includes refrigerated production, storage, and distribution activities, along with the associated equipment and logistics required to maintain desired temperatures.

Looking forward, cold supply chains will become even more critical as protected agriculture and online groceries rely on them to reduce costs and ensure the quality of perishable goods. In fact, the COVID-19 outbreak has already shown that the fresh food sector is a critical infrastructure industry.

Looking forward, we might expect further investments in food logistics (a critical cost component of fresh food e-commerce companies) and also further investments in renewable energies that can be used both for greenhouses (e.g. thermal energy) and for the refrigerated and frozen foods industry. The sharp drop in the price of fossil energies that materialised in the last couple of months, if persisting, might have some implications on the energy matrix that are worth analysing.

03. **SHIFT TOWARDS SUSTAINABLE PROTEINS**

Many of the trends described in this study point to the increasing pressure on our global food system to deliver nutritious food to a growing population, including proteins which are essential to balanced diets. This is more evident in the livestock sector, given its external impacts on the environment and the demand from a growing global middle class.

In recent years consumers have been shifting towards more sustainable proteins, in what could be a major paradigm shift in consumers' preferences.

The alternative protein sector now includes i) plant-based protein sources, ii) fermented proteins, and iii) cultured meat. Plant-based products typically derive from plant sources and are optimised for taste, texture and nutrition through the use of either novel plant sources or through novel processing methods. Fermented proteins are obtained through living cells that metabolise nutrients to produce a wide range of products through fermentation. Cultured meat involves using actual animal cells to let them multiply in a nutrient-rich culture medium to create whole pieces of tissue (muscles and fat).

While there is already a large number of innovative companies developing alternative proteins, we might be just in the early innings of a protein revolution.

If we think about the impact of COVID-19 on diets and consumers' perception, we might see that the virus outbreak could bolster demand for plant-based proteins and functional foods in the longer term, which could spur new innovation across the sector.

Another protein sector with attractive growth ahead is aquaculture. Already nearly 50% of the seafood consumed in the world is from aquaculture. We expect that given the strong demand outlook for fish and the pressing challenges on natural resources, we will see more investments going towards innovative and sustainable land-based recirculating aquaculture systems to produce fresh fish.

We also see more investments across the aquaculture value chain, including sustainable feed for fish, fish breeding, aquaculture production systems, associated technology and branded fish products.

Moreover, when we think about current sources of protein for fish meal, such as meal processed from wild catch of smaller fish, we notice they are not a sustainable source of protein for a growing industry. This makes insect protein an attractive idea, and hence we also see growing capital flows into this sector.

In Europe, it is expected that the European Food Safety Authority will soon rule whole or ground mealworms, lesser mealworms, locusts, crickets and grasshoppers as being safe for human consumption. This will be a major milestone to expand opportunities for insect food across Europe for the first time.

04. CROP IMPROVEMENTS

The opportunities around permanent crops and fresh produce described before are intrinsically connected to the availability of high-quality seeds and plants.

When we think about leafy greens for greenhouses or high value orchards like stone fruits, citrus, nets, berries, olive trees and grape plants, having commercial availability of the best quality plants is critical.

This also applies to the opportunity around alternative proteins, as high protein legumes such as soybeans, peas, chickpeas, mung beans, and quinoa can be improved with crop breeding programs.

We see a growing number of companies that combine genomics and traditional breeding techniques to improve these crops. Innovation is also happening in the propagation space and in plantations as well. The high-density planting of olives and almonds in Spain and Portugal is a perfect example.

In this context, a new wave of technology innovation is happening around the concept of gene-editing technology, which involves targeting specific genes in a single organism and disrupting those linked to undesirable characteristics or altering them to make a positive change.

Traditional genetic modification, by contrast, involves transferring a gene from one kind of organism to another. CRISPR is the name of one popular type of gene-editing technology.

Gene-editing could help to increase crop yields with a wide array of desirable traits as well as improve animal health and performance. However, the regulatory landscape is still uncertain. While the USDA has so far decided not to regulate these gene-edited crops, The Court of Justice of the European Union recently ruled that gene-editing techniques are subject to regulations governing genetically modified crops.

05. INDUSTRIAL PLAY TO CONSOLIDATE AND LEAD INNOVATION WAVE

The food and agriculture sector is ripe for increased mechanization and automation. After COVID-19, we can imagine that the age of automation is going to happen faster than we thought in our sector.

An obvious area is the food processing sector. Multiple equipment categories exist, like equipment for pre-processing, processing, cleaning and sanitizing, cooling, food packaging, among others, where further automation can be developed. But the farming sector is also poised for further adoption of automation technologies across a wide range of crops and livestock activities.

Before COVID-19, there were already cost pressures to bring automation to many of these processes. The COVID-19 outbreak exposed the shortcomings of low-automation production models in the food sector around the world.

At Valoral Advisors we approach this opportunity through the assessment of innovative, early stage companies that develop new automation technologies for a variety of purposes, both in the farms and in food processing lines. We see promising teams developing new solutions across North America, Latin America, Europe and Asia.

In a similar fashion, we believe that the COVID-19 outbreak might bring stricter food safety regulations and enforcement. This virus, like SARS, MERS, Ebola and the avian and swine flus before it, have common root causes: the massive risk of pathogen transmission from animals to humans in a rapidly changing environment.

We believe that there will be a growing opportunity to invest in food certification and quality assurance across different sectors. Here, technology can play a key role, by combining smart labels, sensors and other internet of things ("IoT") components with blockchain solutions, in order to provide a real-time digital traceability and monitoring of the food supply chain.

At Valoral Advisors we actively follow this innovation space, as the opportunities to digitalize the food and agriculture sector become ever more important.

06. CLIMATE-SMART AND SUSTAINABLE AG TECHNOLOGIES

Demand and supply pressures on agriculture and food production mean that new solutions are required to make agriculture both more sustainable – to cater for the environment, the farmers and the consumers - and more efficient – to be able to supply food in a consistent and reliable way.

One clear area involves water management. Three quarters of the earth is covered by water, but only 3% is freshwater, and even this is unevenly distributed. At the same time, higher living standards and emerging market industrialization are increasing demand, while a lack of infrastructure and climate change are affecting supply.

Against this backdrop, the agriculture sector is the largest consumer of drinkable water and pressure is mounting to use water in more efficient ways, due to water demand from urbanisation and due to the depletion of water reservoirs such as glaciers and aquifers.

The use of modern irrigation technology and the adoption of innovative irrigation management tools can improve production yields and reduce the use of water. The use of technology to make water consumption more efficient is not only limited to row and permanent crops, it also covers opportunities in the growing sector of greenhouses and in aquaculture systems.

There are different ways to approach the opportunity in water infrastructure and water technologies. At Valoral Advisors we are actively looking at water infrastructure for high value crops in the Andean region and in the Iberian Peninsula, where water is increasingly priced to allow high productivities in crops that face strong demand.

Another opportunity we see is linked to biological products. The market for agricultural biologicals which are derived from natural materials such as plant extracts and naturally occurring micro-organisms faces long-term tailwinds.

Biologicals are mainly used for plant nutrition, productivity catalysts, and plant protection. There are several benefits of biologicals to farmers: they assist in reducing damage caused by fungi and pests, enhance nutrient availability and uptake, and improve the overall productivity and health of crops.

A third opportunity we see in the area of climate-smart and sustainable ag technologies is linked to waste to energy & biomaterials.

As the food and agriculture sector continues to expand, driven by the major demand trends described in this study, the sector faces mounting challenges to reduce the food waste and food losses along the value chain.

The biomass potential from agricultural waste is already huge and the growing investments in biogas production are one clear example. But the opportunity to invest in waste to energy and biomaterials is massive, with numerous innovative companies developing different concepts around circular economy to upcycle food and agricultural byproducts or waste into fertilizers, food ingredients, bioplastics and many other applications.

Public policy is important in this sector: local market regulations and market structures might determine the pockets of opportunity, especially in the bioenergy sector.

07.

COMMERCIAL AND FINANCIAL SOLUTIONS

While most of the investment opportunities identified in this study correspond either to the physical production of food or to technologies to improve the overall production, processing and distribution of food products, there is another area of opportunity which is linked to the commercial and financial solutions available to our sector.

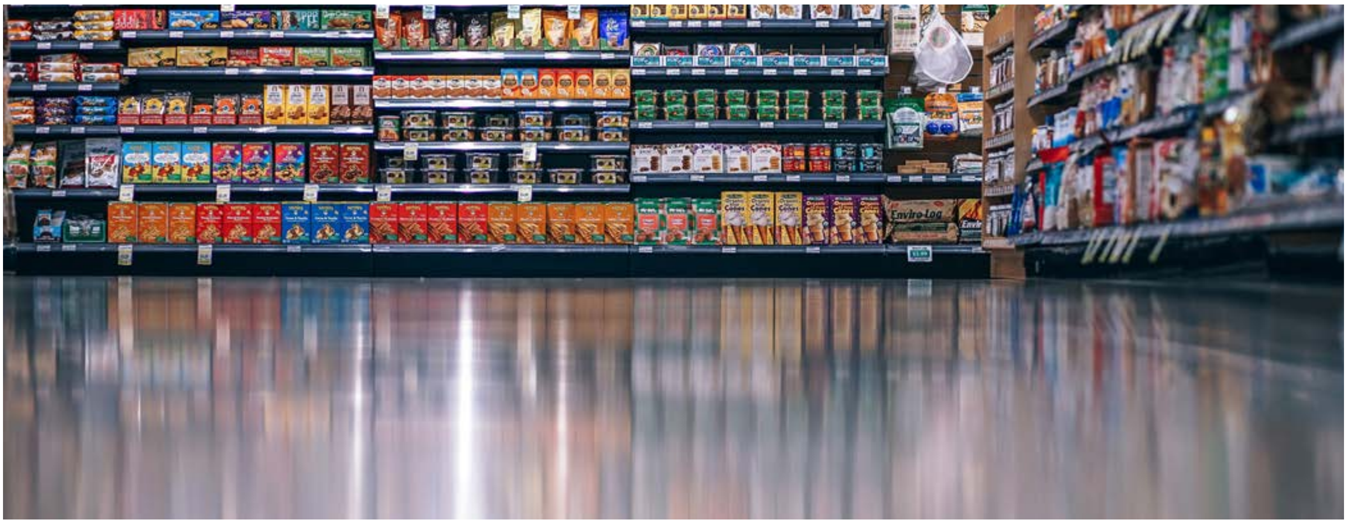
In recent years, we have seen a nascent asset strategy with the emergence of new investment funds focusing on commercial real estate such as supermarkets. These managers follow a “buy and hold” strategy which looks to provide investors with long-dated, secure, inflation-linked income with capital appreciation potential over the longer term.

Usually, these vehicles own a portfolio of properties which are let in long-term leases to full-service food retailers, food discounters and other food related activities. The U.S. is probably the world’s largest market. In Europe, United Kingdom and Germany are some of the most active markets, but we also see growing activity in France and Spain.

The opportunity in commercial real estate includes logistics assets focused on food and fast-moving consumer goods companies (“FMGC”), including supermarket chains and fast food outlets. The rise of grocery e-commerce was already driving demand for urban warehouses located close to consumers. The COVID-19 outbreak is likely to accelerate this trend.

As the COVID-19 crisis showed, groceries and supermarkets are better placed than restaurants to serve buyers, so this might have a long-lasting impact in terms of the preference for the former.

Finally, the opportunity in commercial real estate might also extend upstream in the value chain, including sectors such as the distribution networks of agricultural input retailers as well as grain storage assets of grain operators, among other investable assets.



A second opportunity linked to commercial and financial solutions is the ever-growing green bond sector.

Green bonds have been the subject of increasing government, corporate and investor interest, driven by the mainstream acceptance of sustainable investing and the prospect of matching large low-carbon investment requirements with the trillions of dollars in global bond markets held by institutional investors.

The Green Bond issuance in 2019 reached $255 Billion (+49% from ‘18) according to Climate Bonds Initiative (“CBI”), an international organisation working to mobilize the $100 Trillion bond market for climate change solutions.

Land use & marine resources, one of the eight sectors identified by CBI needed to deliver a low carbon economy, is a small fraction of the green bond universe but with huge opportunities.

Indeed, agriculture and forestry play a crucial role in achieving global decarbonisation targets. IPCC estimated that these two sectors account for approx. a quarter of anthropogenic emissions.

There are already criteria available to certify green bonds in forestry, land conservation & restoration, and protected agriculture. Criteria to certify agriculture green bonds - incl. cropland, grassland, livestock and restoration & controlled environment - is expected to be launched in the coming months.

Given the scale of today’s environmental challenges, the mobilization of private finance for sustainable land-use and nature-based solutions will be essential to preserve land and biodiversity from the effects of climate change, while contributing to a more sustainable and efficient agricultural production system.

We believe that green bonds can play a critical role to help mitigate climate change and to enable an efficient and sustainable food and agriculture production system.

This is an opportunity equally relevant and attractive to both companies and project owners as well as to the broad range of investors in the food and agriculture sector. At Valoral Advisors we are particularly active in this area as Luxembourg, where we are headquartered, is home to the Luxembourg Green Exchange (LGX), which lists around 50% of the world’s green bonds.

The third investment opportunity within commercial and financial solutions is linked to farmland investment management, or the business of managing institutional capital in farmland assets.

This is a sector almost undisrupted so far by most of the trends analysed. The growing appetite by investors to enter this space, the increasing capital required in the sector, the generational changes among farmers, and the growing efficiency pressures on farming are all factors that contribute to an increased role for farmland investment managers.

Technology is also playing a growing role to optimise the management of farmland portfolios, by speeding the farm screening and selection process and by providing new layers of due diligence and risk monitoring for farmland portfolios.

Acquiring existing managers, bringing new technologies available, and building a global platform with diverse crops and geographies can be an attractive opportunity with further angles to explore that connect to other opportunities mentioned in this study.

UNDERSTANDING THE KEY VALUE DRIVERS BY INVESTMENT OPPORTUNITY

When analysing the investment opportunities, it is worth thinking about the key value drivers that support each opportunity. The figure below highlights – on a qualitative basis – the relevance of different value drivers by investment opportunity.

- **Fig. 09:**

Key value drivers by selected investment opportunity.

	INVESTMENT OPPORTUNITY	GEOGRAPHICAL ASSET BASE	COST COMPETITIVENESS	INDUSTRIAL EFFICIENCY	VERTICAL INTEGRATION	SCALE	MARKET GROWTH	MARKET SHARE	R&D & IP	QUALITY & SUSTAINABILITY	MARKET ACCESS	BRAND
FARMLAND	• Climate-smart farming and carbon sequestration	✓	✓			✓				✓	✓	
	• Permanent crops	✓	✓		✓	✓	✓			✓	✓	
INFRASTRUCTURE-BASED PLAY FOCUSED ON FRESH FOOD	• Protected agriculture		✓		✓	✓	✓	✓		✓	✓	✓
	• Logistics for fresh food	✓			✓	✓	✓					
SHIFT TOWARDS SUSTAINABLE PROTEINS	• Sustainable fisheries and aquaculture	✓	✓			✓	✓			✓		
	• Novel foods and ingredients		✓	✓		✓	✓	✓		✓	✓	✓
CROP IMPROVEMENTS	• Plant breeding & propagation in high value crops					✓	✓		✓			
INDUSTRIAL PLAY TO CONSOLIDATE AND LEAD INNOVATION WAVE	• Automation and efficiency gains in AG and food processing		✓	✓		✓	✓		✓			
	• Food certification and quality assurance			✓		✓	✓	✓	✓	✓	✓	✓
CLIMATE-SMART & SUSTAINABLE AG TECHNOLOGIES	• Water infrastructure & water technologies	✓					✓					
	• Biological products		✓	✓		✓	✓	✓	✓	✓	✓	
	• Waste to energy & biomaterials		✓	✓	✓	✓	✓			✓		
COMMERCIAL & FINANCIAL SOLUTIONS	• Commercial real estate	✓				✓						
	• Green finance					✓	✓				✓	
	• Farmland investment management	✓				✓	✓					

Source: Valoral Advisor's analysis.

In the next page we provide some initial reflections about the relevance of different value drivers for the selected investment opportunities and for the broader sector.

THIS ASSESSMENT CAN HELP DELINEATE SOME INITIAL GUIDELINES FOR INVESTORS:

— Among the key investment opportunities, the geographical asset base – which refers to the specific location of an asset - is key for opportunities linked to real assets like farming and permanent crops, fisheries and aquaculture, and water infrastructure. For other opportunities, it might become less relevant as value is being increasingly “knowledge-driven”.

— Industrial and cost efficiencies remain critical in industrial-intensive opportunities, especially as their products become more commoditized. This is a universal value driver: cost-competitiveness has always been critical in agricultural commodities.

— Vertical integration appears to be most relevant to the opportunities centered on fresh products and permanent crops, as value can be best captured by operating or controlling a longer portion of the supply chain.

— Scale is probably the single most relevant value driver. It can be explained when thinking about the synergies obtained in most upstream agricultural sectors, from better cost base and improved efficiencies to more efficient distribution and larger market power. It also applies to opportunities in the midstream and downstream segments of the food and agriculture value chain.

— Market growth is the other major value driver, as most investment opportunities benefit from tail winds associated to the trends shaping our sector. Some of this growth might be market share to be gained by offering healthier and/or more sustainable products to traditional ones, or more efficient technologies and equipment.

— R&D and IP are relevant value drivers for specific investment opportunities, especially those linked to scientific developments. In a very competitive environment, product differentiation is a major value driver, and this can be obtained mainly through new product development. Larger amounts of capital are being required to sustain this type of R&D, in areas such as plant breeding, development of biological products and automation solutions.

— Quality and sustainability of the products and services offered go hand in hand with many of the other value drivers and is of growing importance. In the near future, this might not be just a value driver, but a mandate for farmers, food manufacturers and other players in our sector.

— Finally, market access and brand are high in importance specially for facing-consumer products, noticeably in fresh produce and novel foods and ingredients like plant-based and lab-grown foods and also insect-based food ingredients.

This is a preliminary and qualitative assessment that aims to show how investors can think about the different value drivers across investment opportunities. By zooming into a specific opportunity, it is possible to perform a detailed and quantitative-based assessment, as part of a broader investment analysis.

GAINING EXPOSURE TO DIFFERENT VERTICALS OF THE FOOD AND AGRICULTURE INVESTMENT SPACE

The investment opportunities presented in this study offer different exposure to the main verticals of the food and agriculture investment space. The figure below summarises the most relevant verticals that correspond to the different investment opportunities.

- **Fig. 10:**

Most relevant verticals by selected investment opportunity.

		BROAD FARMING				FISH PROTEIN	OTHER FIBERS & BIOMASS		FOOD & SALES CHANNELS	
	INVESTMENT OPPORTUNITY	ROW CROPS	PERMANENT CROPS	FRESH PRODUCE	LIVESTOCK	FISHERIES & AQUACULTURE	FORESTRY	BIOENERGY	FOOD & BEVERAGES	SALES CHANNELS
FARMLAND	• Climate-smart farming and carbon sequestration	✓	✓	✓	✓		✓	✓		
	• Permanent crops		✓			FOCUS ON HIGH-VALUE, FRESH FOOD CATEGORIES				
INFRASTRUCTURE-BASED PLAY FOCUSED ON FRESH FOOD	• Protected agriculture			✓						
	• Logistics for fresh food		✓	✓	✓				✓	✓
SHIFT TOWARDS SUSTAINABLE PROTEINS	• Sustainable fisheries and aquaculture					✓				
	• Novel foods and ingredients								✓	✓
CROP IMPROVEMENTS	• Plant breeding & propagation in high value crops	✓	✓	✓						
INDUSTRIAL PLAY TO CONSOLIDATE AND LEAD INNOVATION WAVE	• Automation and efficiency gains in AG and food processing	✓	✓	✓	✓	✓			✓	
	• Food certification and quality assurance	✓	✓	✓	✓	✓	✓		✓	
CLIMATE-SMART & SUSTAINABLE AG TECHNOLOGIES	• Water infrastructure & water technologies	✓	✓	✓	✓	BROAD FARMING SCOPE				
	• Biological products	✓	✓	✓	✓					
	• Waste to energy & biomaterials	✓	✓	✓	✓		✓	✓		
COMMERCIAL & FINANCIAL SOLUTIONS	• Commercial real estate	✓	✓	✓	✓		BROAD FARMING & AGRIBUSINESS SCOPE		✓	✓
	• Green finance	✓	✓	✓	✓	✓	✓	✓		
	• Farmland investment management	✓	✓	✓	✓		✓	✓		

Source: Valoral Advisor's analysis.

This perspective can be useful in prioritising investment areas. While some opportunities offer exposure to a broader base of products and activities, other opportunities are more focused on specific verticals.

Together with the assessment of value drivers, the perspective of food and agricultural verticals can help to narrow the opportunities that are most relevant to the specific investors' needs and preferences.

PREPARING "FOR THE DAY AFTER"

The COVID-19 pandemic is first and foremost a humanitarian crisis. Efforts to contain the virus and support those directly impacted are of utmost importance.

As the world unites to contain the outbreak, and as the spread of the virus peaks, we can expect that economies will eventually recover.

So, when we think about "the day after", we can ask ourselves: how will COVID-19 change the world?

As the COVID-19 crisis displays how much food matters, and how farmers, ag input and equipment suppliers, food processors, distributors and retailers all work to ensure that fresh and healthy food can get to consumers, it also raises awareness of the sector's relevance to investors.

At Valoral Advisors we believe this new decade offers a new path for sustainable food and agriculture investments, in which the COVID-19 outbreak can serve as a timely reminder of the challenges and priorities we face in our world. Indeed, the virus might have exacerbated many of the trends we saw before.

As we look past COVID-19, we are thrilled to see a growing number of institutional investors looking to enter the space and new generations in family offices who wish to increase their exposure to our sector.

We also celebrate young farmers that are entering the space as they go through generational renewal in their family farms. And we support entrepreneurs that are reshaping the whole food and agriculture industry. This is a massive opportunity and we invite you to join us.

We look forward to exploring with you the ever-growing opportunities in the global food and agriculture investment space, thank you.

Sincerely,

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Disclaimer

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About Valoral Advisors

Valoral Advisors is an internationally recognised advisory Firm specialized in the global food and agriculture investment space. We work with fund managers, private & institutional investors, and business owners to help them invest profitably whilst fostering a better agriculture – more productive, more efficient, and more sustainable.

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