ossiam
smart • sustainable • solutions

Biodiversity: A key factor in the food and agriculture sector

Carmine de Franco, PhD

Head of Research

January 2022

Abstract: We study the agriculture and food sector and the relationship between biodiversity footprints and financial performances in 2021. We compare the results with other, well-established, sustainability metrics to assess the extent to which biodiversity could be a key factor in distinguishing between opportunities and risk in this high-stake sector. We find that companies with low biodiversity impacts did better than their high-impact peers, even when we account for sector idiosyncrasies. Among the five metrics used (ESG scores, ESG risk ratings, carbon emissions and carbon intensities, biodiversity impact), biodiversity is the one that shows the largest performance gap between the best and worst players. The period considered, 2021, is too short and, under many circumstances, a very special year, if one considers economic conditions, the new Omicron variant, inflation and monetary policy. Yet, it is interesting to measure that, in the year when the COP finally acknowledges biodiversity and nature as key elements of the global climate agenda, companies with good relevant profiles in one of the most challenging sectors with respect to biodiversity are being rewarded by the market.

Experts, activists, policymakers and investors may well disagree on whether the recent COP26 has been a success or a missed opportunity to advance and accelerate the climate agenda. One element, though, has (finally, we shall say) taken the place and the attention it deserves: nature and biodiversity. In particular, one of the main messages COP26 has been able to convey is the recognition of the links between climate and biodiversity, and how the global agenda ought to integrate biodiversity preservation and restoration, in all its forms, if we want to keep the 1.5° target alive. Clearly, the link between biodiversity and climate, together with the negative feedback loops that the loss of the former has on the latter, which in turns aggravates the state of biodiversity, will have tremendous consequences on our livelihood, health and economic systems.

When it comes to economic health and resilience, investors and companies now realize how biodiversity protection and loss mitigation must be part of their agenda if their efforts to tackle global warming are genuine and serious. It is particularly crucial in the agriculture and food sector, which is one of the main contributors of greenhouse gas emissions and, by far, the business domain through which humanity exerts its most negative impact on biodiversity. For this specific sector, restoring biodiversity and mitigating its loss are necessary and key, for the planet as well as for business. However, as in other key sectors, it is a complex and challenging problem; central scenarios see world population at the end of the century in the 11bn range but, more importantly, we will be richer than we are today[1], meaning that the pressure we currently exert on nature and biodiversity will likely increase.

Companies in the agriculture and food sector follow a set of general policies available to reduce their biodiversity footprint. It starts with their product range, which should be tilted toward plant-based products and, in coming years, toward alternative and technologically advanced food. The footprint will also come down if new industrial processes, from planting to harvesting and transformation, are deployed at scale. Other opportunities include vertically-integrated agriculture firms, precision agriculture, and new fertilizers that are more efficient and less

[1] Making abstraction, of course, of dramatic events, such as war or devastating natural catastrophes.

harmful, which would in turn decrease the total land we need to grow our food[2]. Food waste and global inefficiencies in supply chains are also areas where loss mitigation bears huge potential, yet where sizeable efforts are needed.

Investors, for their part, shall integrate biodiversity risks and opportunities in their sustainability framework using, as much as possible, objective and physical measurements. Mirroring what has been done over the last five to ten years in "Low Carbon" investing, investors and financial markets could help corporates by highlighting their biodiversity risk premium, promoting best practices and disruptive businesses, engaging with laggards and shunning unsustainable companies. As we are now able to measure companies' biodiversity footprint in the agriculture and food sector, we can measure how they perform when we observe them through the prism of their biodiversity impact. Of course, such comparisons may not meet academic research's high standards from a statistical point of view. Indeed, we lack the usual decades of data with which we assess fundamental characteristics in financial markets. Furthermore, participants have only started to get a sense of what biodiversity means for investments and businesses. It is nevertheless an important exercise, especially in a year as unique as 2021 during which we experienced the combination of a strong economic recovery, a new variant of COVID that could jeopardize vaccination campaigns, and the onset of monetary policy tightening to answer growing concerns of inflation.

We simply want to achieve an unbiased description of the agriculture and food sector in 2021 through the prism of biodiversity, by comparing companies with different profiles and their performance. As reference points, we shall use other and well-established sustainability metrics, which in turn allows us to shed some light on the similarities and differences between them and the biodiversity footprint.

Methodology

Our investment universe consists of all companies whose activities are directly or indirectly involved in the agriculture and food industries, listed in developed markets, and for which we have standard data on ESG (from Sustainalytics), carbon emissions (from Trucost) and biodiversity (from Iceberg Datalab) at the beginning of 2021. The ESG rating, a metric in the 0-100 range, measures the overall ESG quality of companies based on several criteria that are relevant for the sustainability profile of the business with respect to environment, social and governance issues. Instead, the company ESG risk rating identifies and captures financially material ESG risks to its business and operations and, more broadly, from its economic environment. Contrary to the ESG rating, where a higher value is better, a high ESG risk rating points to a high level of risk. Both metrics are developed and produced by Sustainalytics. Carbon emissions (tCO_2, Scope 1+2+3) and carbon intensities ($tCO_2/mUSD$, Scope 1+2+3), both from Trucost, assess the most direct impact companies have on climate, for the former, and their industrial efficiency from a carbon perspective, for the latter. In both cases, the lower the measure, the better. Finally, the biodiversity impact ($km^2MSA/mUSD$) provides an assessment of the impact a business has on biodiversity, whether from direct operations or through its supply chain (Scope 3). The metric is usually negative, as it expresses a loss which shows how much companies reduce global biodiversity through their activities. The higher, less negative the metric, the better the company's profile from a biodiversity point of view.

For each metric, we consider the cap-weighted portfolio consisting of companies in the bottom half of the distribution (hereafter "Bottom") and the equivalent cap-weighted portfolio in the upper half (hereafter "Top"). The Bottom portfolio shall then be understood as the one with the most unattractive profile from a sustainability point of view. The table below summarizes the structure of the five pairings:

[2] Based on 2018 data for example, advanced countries such as the Netherlands can grow ~9t of wheat per hectare, while Brazil manages ~2.5t. On rice, for example, the US can grow ~8.5tons per hectares against an average slightly above 2t for South-East Asia. All else being equal, these countries may need 4x land to match the production of countries that can use advanced technologies. *Source: ourworldindata.com*

	ESG Rating	ESG Risk Rating	Carbon emissions	Carbon intensity	Biodiversity loss
Top	HIGH	LOW	LOW	LOW	HIGH
Bottom	LOW	HIGH	HIGH	HIGH	LOW

Since our metrics may be dependent on the sector companies belong to, we also consider sector-adjusted metrics, where rankings are done on a sector basis. For this analysis, we consider the following eight sectors: Agricultural, Department Stores, Food, Food Retail, Hypermarkets & Super Centres, Packaged Foods & Meats, Personal Products and Restaurants. Finally, we collect USD free-float market capitalizations and yearly total returns for our investment universe, for the year ending on December 31, 2021.

Results

We analyse the Top and Bottom portfolios for each metric (and their sector-adjusted versions), to assess how they have performed financially and what type of sustainability impact they would have delivered. We report performance as excess return over the investment universe, which delivered 15.12%[3] in 2021. Figure 1 provides a synthetic overview of how each sustainability metric has financially impacted the agriculture and food sector.

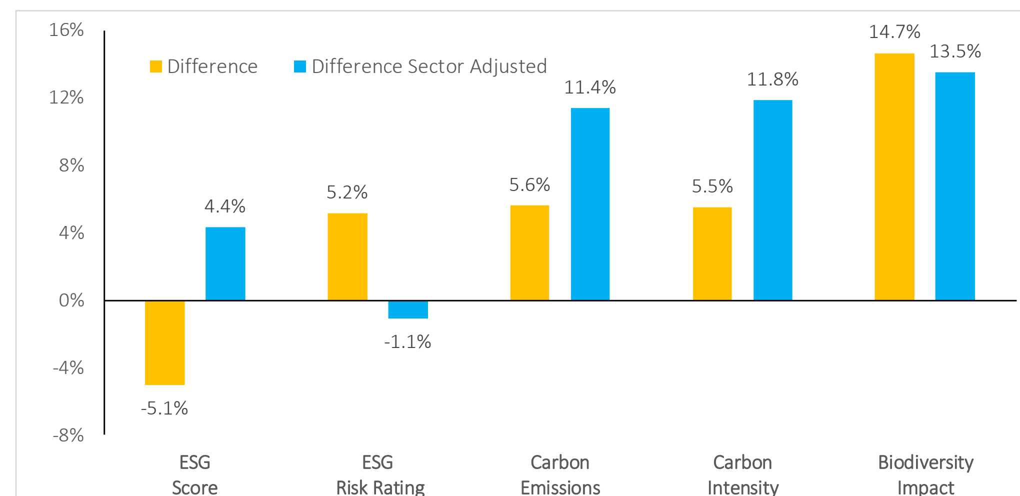

Figure 1: Differences between Top and Bottom portfolios, built with the five sustainability metrics, in both absolute and sector-adjusted versions. Data from December 31,2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

From an absolute point of view, we see that all metrics, except the ESG rating, have captured an important and material financial risk for companies in the agriculture and food sector. Companies with a low ESG risk rating have outperformed their peers with a high ESG risk rating by 5.2%, where companies with low carbon emissions outperformed by 5.6% and those with a lower carbon intensity outperformed by 5.5%. It is, however, the biodiversity impact metric that would have delivered the most substantial gap between Top and Bottom portfolios: 14.7%. The only metric for which the Top portfolio underperformed the Bottom one is the ESG rating, for which the Top portfolio was 5.1% behind the Bottom one. However, when we adjust the metrics to account for structural differences among sectors, we see how the results are mirrored between ESG rating and ESG risk rating: the Top ESG rating portfolio outperforms the Bottom one by 4.4%,

[3] The performance of the investment universe, as well as those of both Top and Bottom portfolios include gross dividends, reinvested in the paying stock themselves. There are no diversification limits nor caps on maximum weights: Given the nature of the sector, which is dominated by a limited number of large companies, the portfolios are heavily tilted towards larger companies. For example, the top 20 companies in the investment universe represent ~70% of the entire portfolio. Nevertheless, these exposures reflect the role of such companies have on sustainability key issues for the sector.

while the Top ESG risk rating portfolio underperforms the Bottom one by 1.1%. Overall, it appears that, from a pure ESG point of view, there is a risk related to specific sectors in agriculture and food, and when avoiding those sectors, we are able to generate small but positive performance. But on the other hand, there is also an ESG premium attached to companies with better-than-average ESG profiles, even in sectors that are structurally riskier. For the carbon emission metrics instead, we see a clear increase in the ability of the Top portfolios to outperform their Bottom peers: +11.4% for sector-adjusted carbon emissions and +11.8% for sector-adjusted carbon intensity. Clearly, carbon emissions and carbon intensity are key factors in the agriculture and food sector, and in 2021, the market has rewarded companies that have low emissions and low carbon intensities. This, in turn, makes the gap between the Top and the Bottom portfolios very large, especially when sector differences are factored out. It is however with biodiversity that we see the biggest gap between the Top and Bottom portfolios, whether with absolute (+14.7%) or sector-adjusted metrics (+13.5%). These results refer to 2021 only, so they may be influenced by a significant number of factors that go beyond our five sustainability metrics. It seems that biodiversity, foremost, climate and, to a lesser extent, global ESG quality have played a substantial role in the agriculture and food sector. Companies that lag in those metrics (especially biodiversity) have not been rewarded by the market.

When we compare the characteristics of the Top and Bottom portfolios built using the Biodiversity Impact metric, we notice a substantial reduction of the biodiversity footprint, whether we consider absolute or sector-adjusted metrics. This is also enough to achieve large relative carbon emissions reductions, although less so when we look at sector-adjusted numbers. But Top biodiversity portfolios do not achieve substantial improvements in their ESG ratings or ESG risk ratings. In both cases, the Top portfolios manage to outperform the investment universe (+4.9% and +4.7%), while the Bottom portfolios lag substantially (-9.8% and -8.8%), bringing the difference between the two in the 13% to 14% range.

		Excess Return	ESG Rating	ESG Risk Ratings	Carbon Emissions	Carbon Intensity	Biodiversity Impact
Absolute Metrics	Bottom	-9.8%	63.2	26.4	448.0	498.4	-385.8
	Top	4.9%	64.4	23.8	153.0	402.1	-1.4
	Difference	14.7%	2.0%	9.8%	65.8%	19.3%	99.6%
Sector-Adjusted Metrics	Bottom	-8.8%	62.8	26.0	409.4	446.9	-365.4
	Top	4.7%	64.6	24.0	165.5	427.2	-1.5
	Difference	13.5%	2.9%	7.7%	59.6%	4.4%	99.6%

Table 1: Sustainability metrics for Top and Bottom portfolios built using the biodiversity impact metric, in both absolute and sector-adjusted versions. Differences are expressed in relative terms for the sustainability metrics, and as simple differences for excess returns. Carbon emissions and biodiversity impact are expressed for a portfolio of 100m USD. Carbon intensity and both ESG rating and risk rating are calculated as weighted-average scores. Data from December 31, 2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

Biodiversity Impact vs ESG

The same analysis for Top and Bottom portfolios built with ESG Risk Ratings are shown in Table 2. Interestingly, the Top ESG risk rating portfolio achieves a substantial reduction in the biodiversity impact, as well as significant carbon emissions and intensity reductions, and exhibits of course a better profile from an ESG risk rating point of view. However, this is achieved through substantial deviations from the investment universe from a sector point of view: indeed, when we adjust for sector-specific characteristics, the reduction in biodiversity footprint almost

vanishes, the carbon intensity of the Top portfolio increases and carbon emissions match those of the Bottom portfolio.

		Excess Return	ESG Rating	ESG Risk Ratings	Carbon Emissions	Carbon Intensity	Biodiversity Impact
Absolute Metrics	Bottom	-3.2%	63.7	29.6	423.8	649.0	-328.1
	Top	2.0%	64.2	21.6	141.3	297.6	-2.9
	Difference	5.2%	0.8%	27.1%	66.7%	54.1%	99.1%
Sector-Adjusted Metrics	Bottom	0.6%	59.0	26.1	262.4	318.3	-126.5
	Top	-0.5%	67.9	23.6	242.3	524.4	-131.4
	Difference	-1.1%	15.2%	9.5%	7.7%	-64.7%	-3.8%

Table 2: Sustainability metrics for Top and Bottom portfolios built with the ESG risk ratings, in both absolute and sector-adjusted versions. Differences are expressed in relative terms for the sustainability metrics, and as simple differences for excess returns. Carbon emissions and biodiversity impact are expressed for a portfolio of 100m USD. Carbon intensity and both ESG rating and risk rating are calculated as weighted-average scores. Data from December 31,2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

Building the portfolios using the ESG rating, whose results are shown in Table 3, leads to a moderate reduction in all the other sustainability metrics, from the biodiversity footprint to carbon emissions. This is globally true when we adjust for sector idiosyncrasies, except for the carbon intensity, which remains higher in both cases for the Top portfolio.

		Excess Return	ESG Rating	ESG Risk Ratings	Carbon Emissions	Carbon Intensity	Biodiversity Impact
Absolute Metrics	Bottom	3.1%	55.9	26.6	308.7	366.6	-140.7
	Top	-2.0%	69.2	23.5	214.2	477.4	-121.9
	Difference	-5.1%	23.8%	11.8%	30.6%	-30.2%	13.4%
Sector-Adjusted Metrics	Bottom	-2.7%	58.0	26.2	304.3	370.2	-142.8
	Top	1.7%	67.8	23.7	217.4	474.5	-120.6
	Difference	4.4%	16.8%	9.4%	28.5%	-28.2%	15.5%

Table 3: Sustainability metrics for Top and Bottom portfolios built with the ESG rating, in both absolute and sector-adjusted versions. Differences are expressed in relative terms for the sustainability metrics, and as simple differences for excess returns. Carbon emissions and biodiversity impact are expressed for a portfolio of 100m USD. Carbon intensity and both ESG rating and risk rating are calculated as weighted-average scores. Data from December 31,2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

Biodiversity Impact vs carbon footprint

Portfolios built using carbon emissions and intensity are closer to those built with biodiversity, although several differences are visible. The gap in performance between Top and Bottom, both in the absolute and sector-adjusted versions, is positive and high, but not as high as in the biodiversity case (see Figure 1, Table 4 and Table 5). For the Top/Bottom pair based on carbon emissions (Table 4), we see a substantial reduction in carbon emissions and intensity, and a reduction in the biodiversity impact. Clearly, reducing the carbon footprint is an obvious way to achieve a substantial reduction in the biodiversity impact, but the result is not very robust when we consider sector-adjusted metrics. Here, the reduction in total emissions is still 71.1% (Top relative to Bottom), but the biodiversity impact is now only 49.6% better, still a decent reduction compared to the Bottom portfolio but significantly lower than in the unadjusted case. This suggests that a basic carbon reduction strategy tends to reduce to zero any exposure to sectors characterized by large emissions (typically in the upstream part of the value chain).

		Excess Return	ESG Rating	ESG Risk Ratings	Carbon Emissions	Carbon Intensity	Biodiversity Impact
Absolute Metrics	Bottom	-4.5%	62.9	27.5	781.6	884.8	-625.6
	Top	1.1%	64.3	23.9	115.7	319.1	-2.5
	Difference	5.6%	2.3%	13.0%	85.2%	63.9%	99.6%
Sector-Adjusted Metrics	Bottom	-8.3%	65.2	23.9	521.9	574.8	-202.6
	Top	3.1%	63.6	25.0	150.8	382.0	-102.1
	Difference	11.4%	-2.5%	-4.6%	71.1%	33.5%	49.6%

Table 4: Sustainability metrics for Top and Bottom portfolios built with carbon emissions, in both absolute and sector-

adjusted versions. Differences are expressed in relative terms for the sustainability metrics, and as simple differences for excess returns. Carbon emissions and biodiversity impact are expressed for a portfolio of 100m USD. Carbon intensity and both ESG rating and risk rating are calculated as weighted-average scores. Data from December 31,2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

This effect is even stronger when one considers Top/Bottom portfolios based on carbon intensity, resulting in a significantly better carbon footprint (~79% reduction) and a substantial reduction of the biodiversity impact. But when we look at sector-adjusted metrics, both intensity and biodiversity impact improvements decrease (26.5% for the carbon intensity of Top vs. Bottom and 23.2% for the biodiversity impact). Both results suggest that lowering the carbon footprint (in both absolute emissions and intensities) is only a partial way to achieve a substantial reduction in the biodiversity impact of portfolios. Furthermore, these reductions are not robust when one tries to account for the differences between sectors (for example between high-impact meat producers and downstream, low-impact, restaurants). This is true, instead, when one directly considers biodiversity as an input for portfolio construction (see Table 1, where the biodiversity impact reduction is robust to sector-adjustments). As a matter of fact, as Table 1 shows, the carbon intensity gap of the Top/Bottom portfolios built using the biodiversity metric is also very small, suggesting that the two indicators capture different characteristics at the company level, and hence should be used together as a way to address the topic from a comprehensive point of view.

		Excess Return	ESG Rating	ESG Risk Ratings	Carbon Emissions	Carbon Intensity	Biodiversity Impact
Absolute Metrics	Bottom	-3.4%	67.1	28.1	475.8	846.1	-331.6
	Top	2.1%	62.1	22.5	110.8	176.9	-2.9
	Difference	5.5%	-7.4%	19.8%	76.7%	79.1%	99.1%
Sector-Adjusted Metrics	Bottom	-7.5%	64.7	23.3	393.0	522.0	-151.6
	Top	4.3%	63.6	25.4	169.8	383.7	-116.4
	Difference	11.8%	-1.6%	-9.0%	56.8%	26.5%	23.2%

Table 5: Sustainability metrics for Top and Bottom portfolios built with carbon intensity, in both absolute and sector-adjusted versions. Differences are expressed in relative terms for the sustainability metrics, and as simple differences for excess returns. Carbon emissions and biodiversity impact are expressed for a portfolio of 100m USD. Carbon intensity and both ESG rating and risk rating are calculated as weighted-average scores. Data from December 31,2020 to December 31, 2021. Calculation in USD. Past performance is not a reliable indicator of future performance.

DISCLAIMERS

Ossiam, a subsidiary of Natixis Investment Managers, is a French asset manager authorized by the Autorité des Marchés Financiers (Agreement No. GP-10000016). Although information contained herein is from sources believed to be reliable, Ossiam makes no representation or warranty regarding the accuracy of any information of which it is not the source. The information presented in this document is based on market data at a given moment and may change from time to time. This material has been prepared solely for informational purposes only and it is not intended to be and should not be considered as an offer, or a solicitation of an offer, or an invitation or a personal recommendation to buy or sell or participating shares in any Ossiam Fund, or any security or financial instrument, or to participate in any investment strategy, directly or indirectly. It is intended for use only by those recipients to whom it is made directly available by Ossiam. Ossiam will not treat recipients of this material as its clients by virtue of their receiving this material. All performance information set forth herein is based on historical data and, in some cases, hypothetical data, and may reflect certain assumptions with respect to fees, expenses, taxes, capital charges, allocations and other factors that affect the computation of the returns. Past performance is not necessarily a guide to future performance. Any opinions expressed herein are statements of our judgment on this date and are subject to change without notice. Ossiam assume no fiduciary responsibility or liability for any consequences, financial or otherwise, arising from, an investment in any security or financial instrument described herein or in any other security, or from the implementation of any investment strategy. This information contained herein is not intended for distribution to, or use by, any person or entity in any country or jurisdiction where to do so would be contrary to law or regulation or which would subject Ossiam to any registration requirements in these jurisdictions. This material may not be distributed, published, or reproduced, in whole or in part.

Modelling or back-testing contained herein is no indication as to future performance. Backtested performance results do not represent the performance of actual trading using client assets but are achieved by means of the retroactive application of a model. Backtested performance suffers from several limitations, namely they are constructed based on hindsight, and material economic and market factors, as well as client will, may have affected investment decisions differently without such hindsight. Additionally, they do not reflect the impact of actual portfolio trading, which could have affected the price and availability of securities, as well as the transaction fees paid. Please note that if the performance of a strategy is calculated in a currency different from the currency of your area, any losses or gains generated by the strategy may be affected by exchange rate fluctuations (both upward and downward).

Copyright © 2016 Sustainalytics. All rights reserved.
No portion of this material may be reproduced in any form without the expressed, written permission of Sustainalytics.
Nothing contained in this presentation shall be construed as to make a representation or warranty, express or implied, regarding the advisability to invest in or include companies in investable universes and/or portfolios.
The performance represented is historical; past performance is not a reliable indicator of future results and results and the information provided in this brochure is not intended to be relied upon as, nor to be a substitute for specific professional advice and in particular financial advice.
The information is provided “as is” and, therefore Sustainalytics assumes no responsibility for errors or omissions. Sustainalytics accepts no liability for damage arising from the use of this brochure or information contained herein in any manner whatsoever.

Additional Notes

This material has been provided for information purposes only to investment service providers or other Professional Clients, Qualified or Institutional Investors and, when required by local regulation, only at their written request. This material must not be used with Retail Investors.

To obtain a summary of investor rights in the official language of your jurisdiction, please consult the legal documentation section of the website (im.natixis.com/intl/intl-fund-documents)

In the E.U.: Provided by Natixis Investment Managers International or one of its branch offices listed below. Natixis Investment Managers International is a portfolio management company authorized by the Autorité des Marchés Financiers (French Financial Markets Authority - AMF) under no. GP 90-009, and a public limited company (société anonyme) registered in the Paris Trade and Companies Register under no. 329 450 738. Registered office: 43 avenue Pierre Mendès France, 75013 Paris. Italy: Natixis Investment Managers International Succursale Italiana, Registered office: Via San Clemente 1, 20122 Milan, Italy. Netherlands: Natixis Investment Managers International, Nederlands (Registration number 000050438298). Registered office: Stadsplateau 7, 3521AZ Utrecht, the Netherlands. Sweden: Natixis Investment Managers International, Nordics Filial (Registration number 516412-8372- Swedish Companies Registration Office). Registered office: Kungsgatan 48 5tr, Stockholm 111 35, Sweden. Or,

Provided by Natixis Investment Managers S.A. or one of its branch offices listed below. Natixis Investment Managers S.A. is a Luxembourg management company that is authorized by the Commission de Surveillance du Secteur Financier and is incorporated under Luxembourg laws and registered under n. B 115843. Registered office of Natixis Investment Managers S.A.: 2, rue Jean Monnet, L-2180 Luxembourg, Grand Duchy of Luxembourg. Germany: Natixis Investment Managers S.A., Zweigniederlassung Deutschland (Registration number: HRB 88541). Registered office: Senckenberganlage 21, 60325 Frankfurt am Main. Belgium: Natixis Investment Managers S.A., Belgian Branch, Gare Maritime, Rue Picard 7, Bte 100, 1000 Bruxelles, Belgium. Spain: Natixis Investment Managers, Sucursal en España, Serrano n°90, 6th Floor, 28006 Madrid, Spain.

In Switzerland: Provided for information purposes only by Natixis Investment Managers, Switzerland Sàrl, Rue du Vieux Collège 10, 1204 Geneva, Switzerland or its representative office in Zurich, Schweizergasse 6, 8001 Zürich.

In the British Isles: Provided by Natixis Investment Managers UK Limited which is authorised and regulated by the UK Financial Conduct Authority (register no. 190258) - registered office: Natixis Investment Managers UK Limited, One Carter Lane, London, EC4V 5ER. When permitted, the distribution of this material is intended to be made to persons as described as follows: **in the United Kingdom:** this material is intended to be communicated to and/or directed at investment professionals and professional investors only; in Ireland: this material is intended to be communicated to and/or directed at professional investors only; **in Guernsey:** this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Guernsey Financial Services Commission; **in Jersey:** this material is intended to be communicated to and/or directed at professional investors only; **in the Isle of Man:** this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Isle of Man Financial Services Authority or insurers authorised under section 8 of the Insurance Act 2008.

In the DIFC: Provided in and from the DIFC financial district by Natixis Investment Managers Middle East (DIFC Branch) which is regulated by the DFSA. Related financial products or services are only available to persons who have sufficient financial experience and understanding to participate in financial markets within the DIFC, and qualify as Professional Clients or Market Counterparties as defined by the DFSA. No other Person should act upon this material. Registered office: Unit L10-02, Level 10 ,ICD Brookfield Place, DIFC, PO Box 506752, Dubai, United Arab Emirates

In Japan: Provided by Natixis Investment Managers Japan Co., Ltd. Registration No.: Director-General of the Kanto Local Financial Bureau (kinsho) No.425. Content of Business: The Company conducts investment management business, investment advisory and agency business and Type II Financial Instruments Business as a Financial Instruments Business Operator.

In Taiwan: Provided by Natixis Investment Managers Securities Investment Consulting (Taipei) Co., Ltd., a Securities Investment Consulting Enterprise regulated by the Financial Supervisory Commission of the R.O.C. Registered address: 34F., No. 68, Sec. 5, Zhongxiao East Road, Xinyi Dist., Taipei City 11065, Taiwan (R.O.C.), license number 2020 FSC SICE No. 025, Tel. +886 2 8789 2788.

In Singapore: Provided by Natixis Investment Managers Singapore Limited (company registration no. 199801044D) to distributors and qualified investors for information purpose only.

In Hong Kong: Provided by Natixis Investment Managers Hong Kong Limited to professional investors for information purpose only.

In Australia: Provided by Natixis Investment Managers Australia Pty Limited (ABN 60 088 786 289) (AFSL No. 246830) and is intended for the general information of financial advisers and wholesale clients only .

In New Zealand: This document is intended for the general information of New Zealand wholesale investors only and does not constitute financial advice. This is not a regulated offer for the purposes of the Financial Markets Conduct Act 2013 (FMCA) and is only available to New Zealand investors who have certified that they meet the requirements in the FMCA for wholesale investors. Natixis Investment Managers Australia Pty Limited is not a registered financial service provider in New Zealand.

In Colombia: Provided by Natixis Investment Managers International Oficina de Representación (Colombia) to professional clients for informational purposes only as permitted under Decree 2555 of 2010. Any products, services or investments referred to herein are rendered exclusively outside of Colombia. This material does not constitute a public offering in Colombia and is addressed to less than 100 specifically identified investors.

In Latin America: Provided by Natixis Investment Managers International.

In Uruguay: Provided by Natixis Investment Managers Uruguay S.A., a duly registered investment advisor, authorised and supervised by the Central Bank of Uruguay. Office: San Lucar 1491, Montevideo, Uruguay, CP 11500. The sale or offer of any units of a fund qualifies as a private placement pursuant to section 2 of Uruguayan law 18,627.

In Mexico: Provided by Natixis IM Mexico, S. de R.L. de C.V., which is not a regulated financial entity, securities intermediary, or an investment manager in terms of the Mexican Securities Market Law (Ley del Mercado de Valores) and is not registered with the Comisión Nacional Bancaria y de Valores (CNBV) or any other Mexican authority. Any products, services or investments referred to herein that require authorization or license are rendered exclusively outside of Mexico. While shares of certain ETFs may be listed in the Sistema Internacional de Cotizaciones (SIC), such listing does not represent a public offering of securities in Mexico, and therefore the accuracy of this information has not been confirmed by the CNBV. Natixis Investment Managers is an entity organized under the laws of France and is not authorized by or registered with the CNBV or any other Mexican authority. Any reference contained herein to "Investment Managers" is made to Natixis Investment Managers and/or any of its investment management subsidiaries, which are also not authorized by or registered with the CNBV or any other Mexican authority.

In Brazil: Provided to a specific identified investment professional for information purposes only by Natixis Investment Managers International. This communication cannot be distributed other than to the identified addressee. Further, this communication should not be construed as a public offer of any securities or any related financial instruments. Natixis Investment Managers International is a portfolio management company authorized by the Autorité des Marchés Financiers (French Financial Markets Authority - AMF) under no. GP 90-009, and a public limited company (société anonyme) registered in the Paris Trade and Companies Register under no. 329 450 738. Registered office: 43 avenue Pierre Mendès France, 75013 Paris.

The above referenced entities are business development units of Natixis Investment Managers, the holding company of a diverse line-up of specialised investment management and distribution entities worldwide. The investment management subsidiaries of Natixis Investment Managers conduct any regulated activities only in and from the jurisdictions in which they are licensed or authorized. Their services and the products they manage are not available to all investors in all jurisdictions. It is the responsibility of each investment service provider to ensure that the offering or sale of fund shares or third party investment services to its clients complies with the relevant national law.

The provision of this material and/or reference to specific securities, sectors, or markets within this material does not constitute investment advice, or a recommendation or an offer to buy or to sell any security, or an offer of any regulated financial activity. Investors should consider the investment objectives, risks and expenses of any investment carefully before investing. The analyses, opinions, and certain of the investment themes and processes referenced herein represent the views of the portfolio manager(s) as of the date indicated. These, as well as the portfolio holdings and characteristics shown, are subject to change. There can be no assurance that developments will transpire as may be forecasted in this material. The analyses and opinions expressed by external third parties are independent and does not necessarily reflect those of Natixis Investment Managers. Past performance information presented is not indicative of future performance.

Although Natixis Investment Managers believes the information provided in this material to be reliable, including that from third party sources, it does not guarantee the accuracy, adequacy, or completeness of such information. This material may not be distributed, published, or reproduced, in whole or in part.

All amounts shown are expressed in USD unless otherwise indicated.

Natixis Investment Managers may decide to terminate its marketing arrangements for this fund in accordance with the relevant legislation

NATIXIS
INVESTMENT MANAGERS