

Climate Pulse

Climate change risks and opportunities

By Mamadou-Abou Sarr



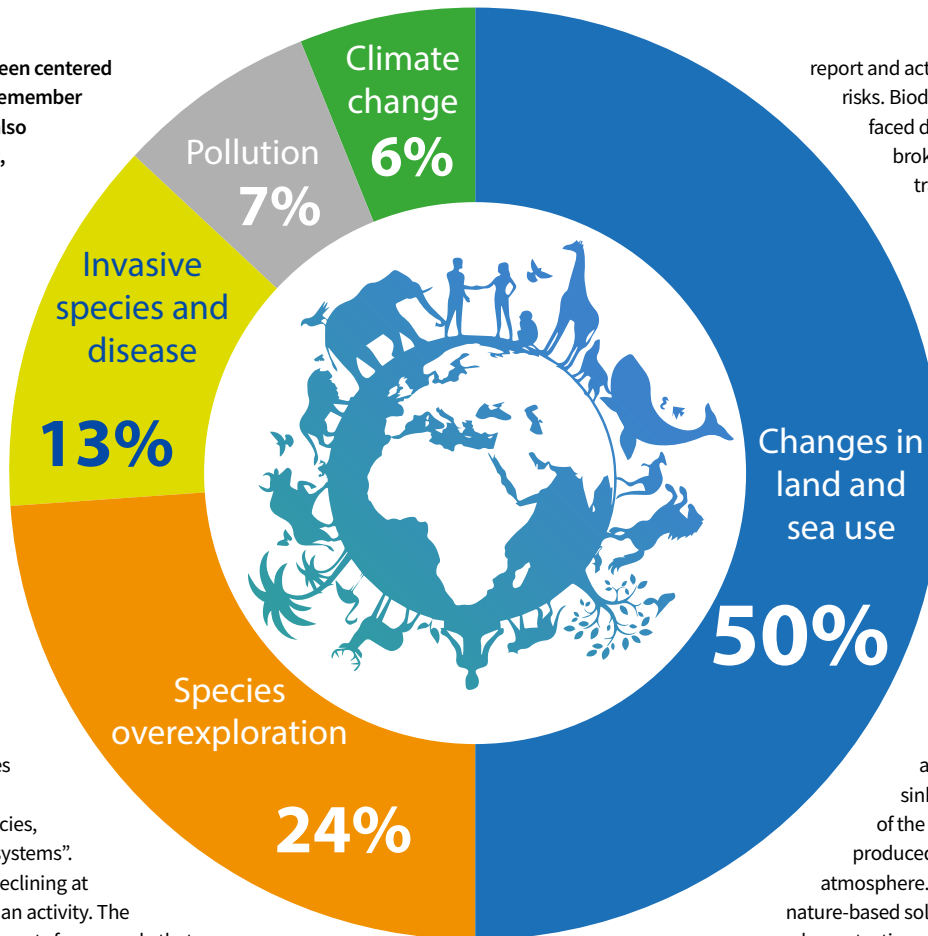
The heat

Natural Capital – Biodiversity, a material risk for investors.

Although the E of ESG has been centered on climate so far, we must remember that environmental issues also include water management, waste and pollution, and natural capital or biodiversity. Those topics, particularly the risks to the financial system posed by biodiversity loss, are making their way to investors' agenda as awareness grows.

Biodiversity is defined by the United Nations Convention on Biological Diversity as "the variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". Alas, biodiversity has been declining at an alarming rate due to human activity. The World Wildlife Fund (WWF) reports for example that the population of vertebrate species fell by 68% on average worldwide between 1970 and 2016.

Furthermore, biodiversity loss varies by region, with Latin America and the Caribbean having seen the biggest drop in diversity at 94 according to the WWF. The scientific community cites species habitat destruction, overexploitation of natural resources, invasive species, pollution (marine and land), and the emission of greenhouse gases resulting in climate change as the biggest threats to ecosystems. Changing and unstable ecosystems affect the global economy and, in turn, to investors.



© 2023 V-Square Quantitative Management LLC. Source: World Wildlife Fund

Companies are being impacted by biodiversity loss and their business behavior is being increasingly scrutinized.

Governments are issuing new regulation and investors are taking action. Analogously to the Task Force on Climate-Related Financial Disclosures (TCFD) for climate, the Task Force on Nature-related Financial Disclosures (TNFD) is developing a risk management and disclosure framework so organizations can

report and act on evolving nature-related risks. Biodiversity risks for investors – faced directly and indirectly – can be broken down into physical risks, transition risks, litigation risks, and systemic risks, in the same vein as how climate risk are approached.

Biodiversity and climate change are two interlinked emergencies: climate change causes biodiversity decline and in turn, biodiversity loss destabilizes the ecosystems and drives climate change. Addressing the biodiversity loss is essential for limiting climate change. In fact, land, forests, oceans are the largest natural carbon sinks, i.e., they help remove half of the greenhouse gas emissions produced by human activity from the atmosphere. They effectively provide nature-based solutions to climate change. For example, protecting, managing, and restoring forests that still represent 30% of the planet's land, offers roughly two-thirds of the total mitigation potential of all nature-based solutions. Improving nature's ability to absorb emissions is another welcome tool to fight climate change.

- 1 World Wildlife Fund (WWF) [Living Planet Report 2020](#).
- 2 World Wildlife Fund (WWF) Living Planet Index (LPI).
- 3 Task Force on Climate-related Disclosures.



Hydrogen – Not All Hydrogen is created Equal

Hydrogen is the most abundant chemical element on our planet and is a promising solution for reducing emissions in hard-to-abate sectors like shipping, as it does not emit any planet-warming gases when burned. However, producing hydrogen can be environmentally damaging if fossil fuels are used. To avoid this, the world rather needs “green hydrogen,” which is made by splitting water using renewable energy.

There are two other types of produced hydrogen: “grey” and “blue,” which both involve the use of fossil fuels but vary in their carbon emissions. Grey hydrogen is the least sustainable option as it only uses polluting fossil fuels,

while blue hydrogen is a transitional option that still burns fossil fuels but also reduces carbon emissions through carbon capture and storage. Green hydrogen is the most sustainable option, but it is currently more expensive to produce than the other types.

Hydrogen has great potential as a sustainable energy source, but it is still costly to produce, store, and transport, and many industries are not yet equipped to use it. Nevertheless, the situation could change with the introduction of significant subsidies for hydrogen from the US climate bill, potentially paving the way for wider adoption of hydrogen as a sustainable energy solution.

The pulse

Equity Indexes

As of 04/28/2023	Performance (Net total return)					As of 04/28/2023	Risk (Annualized Standard Deviation)			
	Year to date	3 Year	5 Year	10 Year	Since Nov 29 2013 (Annualized)		3 Year	5 Year	10 Year	Since Nov 29 2013 (Annualized)
MSCI WORLD	9.62%	13.10%	8.14%	8.71%	8.00%	MSCI WORLD	21.75%	20.12%	15.92%	16.24%
MSCI WORLD CLIMATE CHANGE	12.56%	12.92%	8.88%		8.72%	MSCI WORLD CLIMATE CHANGE	25.12%	22.23%		17.65%
MSCI WORLD LOW CARBON LEADERS	9.41%	13.02%	8.08%	8.80%	8.04%	MSCI WORLD LOW CARBON LEADERS	21.97%	20.30%	16.06%	16.37%
MSCI WORLD CLIMATE PARIS ALIGNED	10.44%	12.13%	8.30%		8.80%	MSCI WORLD CLIMATE PARIS ALIGNED	23.84%	21.34%		17.02%
MSCI EM (EMERGING MARKETS)	2.36%	3.36%	-1.18%		2.29%	MSCI EM (EMERGING MARKETS)	26.25%	23.60%		20.06%
MSCI EM (EMERGING MARKETS) CLIMATE CHANGE	3.10%	4.02%	-1.22%	1.67%	1.76%	MSCI EM (EMERGING MARKETS) CLIMATE CHANGE	36.28%	30.63%	24.05%	24.63%
MSCI EM LOW CARBON LEADERS	1.93%	4.57%	-0.70%		2.10%	MSCI EM LOW CARBON LEADERS	25.69%	23.39%		19.89%
MSCI EM CLIMATE PARIS ALIGNED	2.78%	4.33%	-1.05%	1.80%	1.95%	MSCI EM CLIMATE PARIS ALIGNED	25.11%	22.89%	19.31%	19.66%
SOLACTIVE GBS DEVELOPED MARKETS LARGE & MID CAP INDEX	9.73%	13.02%	8.07%	8.70%	8.00%	SOLACTIVE ISS ESG DEVELOPED MARKETS CLIMATE TRANSITION BENCHMARK INDEX	16.10%	17.92%	14.72%	14.96%
SOLACTIVE ISS ESG DEVELOPED MARKETS PARIS-ALIGNED BENCHMARK INDEX	10.30%	11.95%	7.63%			SOLACTIVE ISS ESG EMERGING MARKETS PARIS-ALIGNED BENCHMARK INDEX	15.70%	17.17%		
SOLACTIVE ISS ESG DEVELOPED MARKETS CLIMATE TRANSITION BENCHMARK INDEX	9.75%	12.38%	7.75%			SOLACTIVE GBS DEVELOPED MARKETS LARGE & MID CAP INDEX	15.63%	17.30%		
SOLACTIVE GBS EMERGING MARKETS LARGE & MID CAP INDEX	2.96%	4.49%	-0.77%	2.33%	2.43%	SOLACTIVE GBS EMERGING MARKETS LARGE & MID CAP INDEX	16.28%	16.98%	15.42%	15.44%
SOLACTIVE ISS ESG EMERGING MARKETS PARIS-ALIGNED BENCHMARK INDEX						SOLACTIVE ISS ESG EMERGING MARKETS CLIMATE TRANSITION BENCHMARK INDEX				
SOLACTIVE ISS ESG EMERGING MARKETS CLIMATE TRANSITION BENCHMARK INDEX						SOLACTIVE ISS ESG DEVELOPED MARKETS PARIS-ALIGNED BENCHMARK INDEX				

Fixed-Income Indexes

As of 04/28/2023	Performance (Net total return)					As of 04/28/2023	Risk (Annualized Standard Deviation)			
	Year to date	3 Year	5 Year	10 Year	Since Aug 31 2017 (Annualized)		3 Year	5 Year	10 Year	Since Aug 31 2017 (Annualized)
MSCI USD HY CORPORATE BOND	4.51%	4.39%	2.75%	3.46%	2.46%	MSCI USD HY CORPORATE BOND	8.99%	8.88%	7.73%	9.07%
MSCI USD HY CLIMATE CHANGE CORPORATE BOND	4.12%	2.81%	2.71%		2.31%	MSCI USD HY CLIMATE CHANGE CORPORATE BOND	8.49%			7.88%
MSCI USD IG CORPORATE BOND	4.00%	-1.99%	2.10%	2.18%	1.43%	MSCI USD IG CORPORATE BOND	8.40%	7.09%	5.99%	7.24%
MSCI USD IG CLIMATE CHANGE CORPORATE BOND	3.98%	-2.45%	2.08%		1.41%	MSCI USD IG CLIMATE CHANGE CORPORATE BOND	8.31%	6.87%		7.01%

Source: MSCI Inc - <https://www.msci.com/> ISS ESG - <https://www.issgovernance.com/esg/ratings/> Solactive AG - <https://www.solactive.com/indices/>

Climate Pulse

This newsletter should not be copied, distributed, published or reproduced, in whole or in part. The information contained in this newsletter was obtained from publicly available sources, may not be current and has not been independently verified by V-Square Quantitative Management LLC (“V-Square”). V-Square has no obligation to provide any updates or changes. All price references, market forecasts and index performance are correct as of the date specified. Investing involves risks. This newsletter is not a product of V-Square and the information contained in this newsletter is not financial research. The views and opinions expressed in this newsletter are the views of Mamadou-Abou Sarr, V-Square President. V-Square is not providing any financial, economic, legal, accounting, or tax advice or recommendations in this newsletter. The information contained in this newsletter does not constitute investment advice or an offer to buy or sell securities from V-Square should not be relied upon to evaluate any potential transaction. Additionally, the receipt of this newsletter by any reader is not to be taken to constitute such person a client of V-Square. Neither V-Square nor its affiliates make any representation or warranty, express or implied, as to the accuracy or completeness of the statements or any information contained in this newsletter and any liability therefore (including in respect of direct, indirect, or consequential loss or damage) is expressly disclaimed.

Performance data quoted represents past performance and does not guarantee future results. Index performance does not represent V-Square's performance. Widely followed ESG based indexes have been selected along with a broad index for comparison purposes, other indexes are available. It is not possible to invest directly in an index. Actual returns may differ and include the possibility of a loss of principal. Index returns are calculated by their respective index creators. All data as of date indicated and subject to change. V-Square accepts no responsibility or liability for any errors or for any loss from the use of this newsletter page or any of the information or data contained herein. Before investing, carefully consider the investment objectives, risks, charges, and expenses. The information contained herein has been obtained from public sources and is believed to be reliable, but no representation or warranty, express or implied, is made that such information is accurate or complete and it should not be relied upon as such.

© MSCI Inc., 2023. All Rights Reserved. MSCI Inc. and/or its content providers are the proprietors of this information; do not permit its unauthorized copying or distribution; do not warrant it to be accurate, complete, or timely; and are not responsible for damages or losses arising from its use.

© Solactive AG, 2023. All Rights Reserved. Solactive AG and/or its content providers are the proprietors of this information; do not permit its unauthorized copying or distribution; do not warrant it to be accurate, complete, or timely; and are not responsible for damages or losses arising from its use.

© 2023 V-Square Quantitative Management LLC. All rights reserved. All trademarks are those of their respective owners.