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Boards and biodiversity

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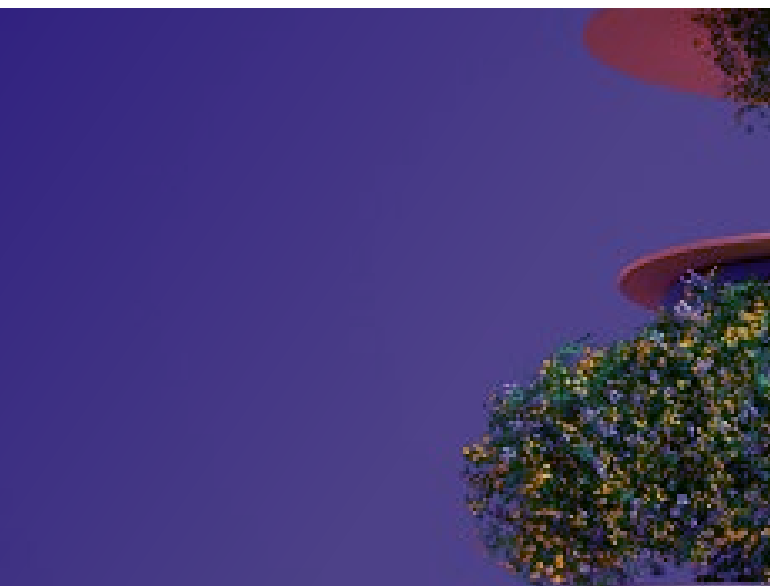
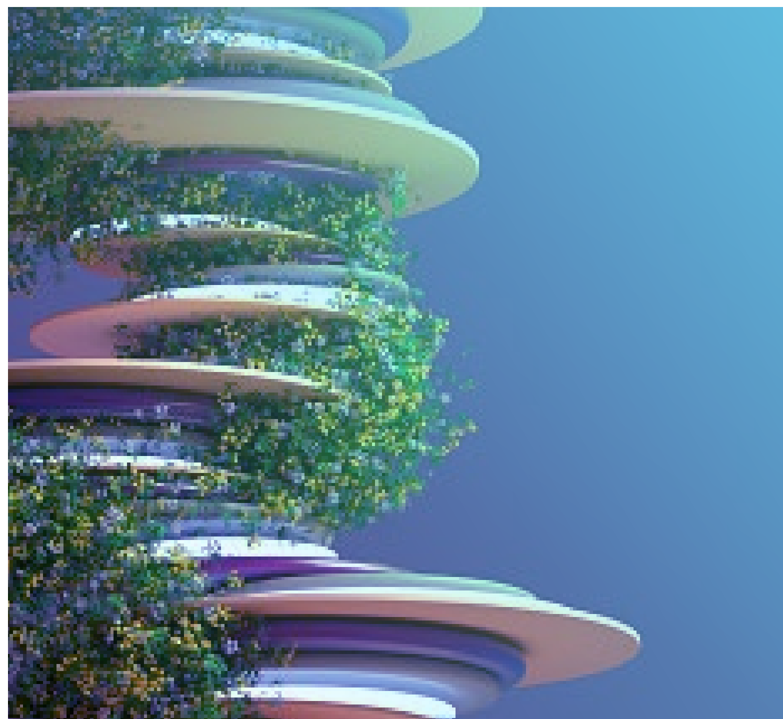
How regulatory developments and market responses are shaping boardroom attitudes to this important global issue.

Over the years, boards have grown used to dealing with the issue of diversity: in gender, in ethnicity, in expertise, in background. But it is another kind of diversity that has recently come into the foreground of investors' minds: biodiversity.

Some boards and executives may think that biodiversity is only an issue for a handful of industries. Others believe that because of the failure – over many years – of regulation and global agreements to make tangible progress, there is little biodiversity risk exposure anyway. Such views can cost companies dearly. Equity markets are beginning to show that they strongly care for the issue of biodiversity and board members should be aware of the fundamental changes that are happening.

This short article begins by summarizing the definition and current state of biodiversity. It also briefly highlights some recent regulatory developments and agreements among major players. Most importantly, it then shares some new empirical insights into the measurement of individual companies' biodiversity impact, and how the stock market processes this information. To facilitate readability of this article, it does not provide detailed references, but the interested reader can refer to the author's academic work (together with Garel, Petit-Romec, and Sautner) that is freely available for download here.





What is biodiversity and why does it matter?

Biodiversity is the variety of living organisms in all habitats that combine to yield a flow of benefits to people. The term "natural capital" is sometimes also used in this context. This is defined as the stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, or minerals.) Biodiversity is deteriorating at an unprecedented and alarming level. Between 1970 and 2016, the world has seen a 68% loss of vertebrate species and an 84% loss of freshwater species. The "planetary boundary" of biodiversity was breached many years ago; transgressing such boundaries may be deleterious or catastrophic due to non-linear, abrupt environmental changes within continental to planetary-scale systems. Global biodiversity collapse jeopardizes the goods and services humans obtain from ecosystems to ensure their well-being, including food, air and water quality, and landscape, with potentially far-reaching economic implications. In addition, biodiversity loss may bring about more pandemics.

Like with many environmental issues, the concept of double materiality is helpful to keep in mind. On the one hand, firms affect biodiversity, and this may be relevant to firms' value because of potential regulation, litigation or reputational risks. On the other hand, firms are affected by biodiversity in terms of their ability to source materials they need.

Recent regulatory developments and globally relevant agreements

While the United Nations Convention on Biological Diversity (CBD) entered into force in 1993 and several Conferences of the Parties (COPs) to the CBD have adopted various plans to protect biodiversity, most goals have not been achieved. However, a number of developments are under way. This only summarizes a few such developments.

First, recent globally coordinated steps toward protecting biodiversity include the Kunming Declaration of 2021 and the Montreal Agreement of 2022. These two agreements recognize the critical role that the financial sector can play in halting and reversing biodiversity loss and require the alignment of private and public financial flows with both the 2030 targets and the 2050 vision of the framework. Boards need to be aware of these targets, and of the fact that business and financial institutions are asked to regularly monitor, assess and transparently disclose their risks, dependencies, and impacts on biodiversity along their operations, supply and value chains, and portfolios; provide information needed to consumers to promote sustainable consumption patterns; and report on compliance with access and benefit-sharing regulations and measures.

Second, modelled on the Taskforce for Climate-Related Financial Disclosures (TCFD), but adjusted for the unique challenges of reporting on risks and opportunities associated with biodiversity and nature, the Taskforce for Nature-Related Financial Disclosures (TNFD) aims to develop and deliver a risk management and disclosure framework for organizations. At the moment, version 0.4 is out for consultation, and the release of the full framework is expected in September 2023. It advocates the use of the LEAP Nature Risk Assessment. This calls for reporting organizations to: "Locate" their interface with nature (business foot-printing, nature interface, priority location identification, sector identification); "Evaluate" their dependencies and impacts (identification of relevant ecosystem services, identification of dependencies and impacts, dependency analysis, impact analysis); "Assess" their risks and opportunities (risk and opportunity identification, existing and additional risk and opportunity mitigation management, risk and opportunity materiality assessment); and "Prepare" to respond and report (strategy and resource allocation, performance

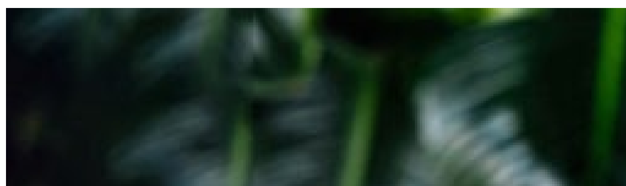
management, reporting, and presentation). In all four dimensions, boards should ensure that their companies are up to speed.

Third, the International Sustainability Standards Board (ISSB) -- a standard-setting body established in 2021-2022 under the International Financial Reporting Standards Foundation (IFRS) – highlighted in early May 2023 that as it seeks to outline the roadmap for the next two years, it has identified four potential projects, one of which is on biodiversity, ecosystems and ecosystem services. Moreover, the Global Reporting Initiative promulgated a biodiversity standard in 2016. The standard is undergoing revision for 2023.

Finally, movements such as the Finance for Biodiversity Pledge – which commits financial institutions to call on global leaders to protect and restore biodiversity through their financial activities and investments and which in May 2023 includes 140 financial institutions in 23 countries representing 19.7 trillion euros – and Nature Action 100, a new global engagement initiative created to drive urgent investor action on the nature-related risks and dependencies in the companies they own – will be important for boards to be mindful of as these players' actions are likely to influence engagement by major investors in the upcoming proxy seasons.

Which firms have large biodiversity footprints?

All of these developments are interesting on a macro level, but what do they mean for a specific company and for an individual board? Clearly, if a company's biodiversity footprint is more harmful, it will be affected more by these developments. But how can we even measure that footprint? Intuitively, one would like to have some quantitative measure of the extent to which ecosystems affected by the business operations of a firm are being degraded from their pristine natural state. The simple "ESG" scores that are widely used are unlikely to be sufficient as a measure because they do not actually quantify a firm's impact. One important notion in this space is the concept of Mean Species Abundance, and the loss thereof. A firm's relevant annual activities with a very detailed analysis of these activities and their link with scientifically established damage functions, can be expressed as leading to a loss in terms of km^2MSA (Mean Species Abundance). A score of 100km^2MSA then corresponds to either the loss of all the original biodiversity over an area of 100km^2, or a reduction of 10% over 1,000km^2. In our research, we have used such a measure of the Corporate Biodiversity Footprint (CBF) that quantifies a firm's direct and indirect impacts on biodiversity from four sources: land use (overall the greatest impact), greenhouse gas emissions, water pollution, and air pollution.



A few highlights from analyzing such data are as follows. First, scope 3 CBF – that is, the biodiversity footprint in the supply chain or through customers – is by far the most important component. This means that boards of companies that do not directly affect biodiversity (through so-called scope 1 impact) have to be aware that their companies, too, are affected by the recent regulatory developments and investor attention. Thus, while retail and wholesale, agriculture, and food have large direct impacts, asset management actually has one of the largest negative biodiversity footprints. Second, the CBF has a very large firm-specific component. More than 50% of the variation in a firm's impact is not explained by industry, country or time aspects, but is due to the specific activities of a firm. This suggests that boards have a significant responsibility to know their own company's concrete activities in this space.

Equity investors are beginning to care

Whether the biodiversity footprint is an issue deserving board attention ultimately depends on whether if affects firm value. Indeed, both short-term responses to recent events, and longer-term developments paint a clear picture. First, consider what happened to stock prices after the two parts of the COP15. Because the outcomes of these negotiations were not determined beforehand, they qualify as plausible shocks to investors' expectations regarding the transition and regulatory risks faced by firms with large biodiversity footprints. If the COP15 raised their awareness of biodiversity issues and the prospect of regulations aimed at preserving it, we would expect investors to revise downward their valuation of firms with larger biodiversity footprints. Indeed, in the

three days following the announcement of the Kunming Declaration, relative to the three days before, large-CBF stocks experienced a cumulative stock price decline of -1.14%, relative to small-CBF stocks. For the Montreal Declaration, we find a negative stock price reaction for firms located in countries with low current levels of biodiversity protection, and this effect is particularly strong for firms with a large land use biodiversity footprint. This result is plausible given that the Montreal Agreement's key 30×30 target is most relevant for firms with large land-use related biodiversity impacts and for countries that require relatively more regulation to achieve the 30x30 target.

What about longer-run stock returns? Here, it is important to keep in mind, first, that (expected) returns and prices have an inverse relationship, that is, low valuations occur when investors expect (require) higher returns. Second, some observers tend to get confused about the relation of returns and "greenness" of companies. They believe that green companies should be expected to yield higher stock returns (intuitively they are "better"). But if these companies are perceived as less risky, or if they can attract particularly "green" investor clienteles, then they will offer lower, not higher returns in equilibrium. Applied to the case of biodiversity, this means that the downward-valuation of high-CBF firms after the Kunming declaration should, if it is due to a widened risk perception of such companies, go hand in hand with higher returns of these firms. And this is indeed what has happened: While until COP15, there was no discernible long-term relation between a firm's stock returns and its biodiversity footprint, since COP15, there is a strong, positive relation. Such a return "premium" for firms that do more biodiversity harm is not an anomaly, but is exactly what theory predicts will happen when investors demand a risk premium. In other words, the cost of equity capital of high-negative-footprint firms has recently gone up.

Implications for boards

These market developments imply that boards of Swiss and global companies in all industries have to consider the issue of biodiversity. It is relevant to the value of companies either because of their direct impact or because of their role in the value chain as suppliers or customers or because society grants a license to operate only to companies that responsibly deal with issues of public interest. Important questions boards should ask themselves include: Does the board have enough biodiversity expertise or plans to recruit such talent? Can boards apply climate governance experience to biodiversity issues, but do they also consider how biodiversity, climate and human rights strategies intersect to anticipate potential conflicts? Is the company benchmarking its reporting and performance against peers, that is, does it even know its own biodiversity footprint, and does it keep abreast of developments by external observers that track a company's footprint? Is it up to date with developments in biodiversity measurement tools and considering their strategic implementation? Is the board prepare to engage on this issue in the next proxy season? Finally, does the board ensure that itself – and management – participate in relevant networks for continuing learning on this fast-moving issue? Boards that answer "yes" on more of these questions are likely to be more successful in the coming years.

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