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# Observatorio de Divulgación Financiera



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# Making Biodiversity Material in Financial Decision-Making

Mark Halle

# Abstract

Until recently, it was possible for financial and commercial actors to ignore the impact of their activities on nature and on ecosystems. These were regarded as an externality, available mostly without cost. Though efforts were made to work out what nature and its services might be worth if the cost of nature damage ever had to be incorporated in the financial calculations of risks and returns, this exercise was largely academic. This has changed dramatically in the past few years. The cost of ignoring nature risk is growing apace, as is demand from consumers and governments to move towards a world where all financial activity leads to equitable and nature positive outcomes. And, luckily, the pieces that could allow this to happen are rapidly being put in place, as evidenced by the publication in September 2023 of the Framework from the Task Force on Nature-related Financial Disclosures (TNFD). It is now no longer a question of whether nature, like climate before it, will become material in financial decision-making, but just how quickly that change can occur.

This paper explores the different facets of the emerging field of Nature Finance, points to recent developments, and posits that, far more quickly than was the case for climate finance, nature finance is becoming a topic of central importance in both the commercial and financial worlds.

# 1. The Biodiversity Crisis

The global economy is entirely dependent on nature and ecosystem services. While many studies have demonstrated the percentage of production that is at high or very high risk from biodiversity loss<sup>1</sup>, the reality is that, directly or indirectly, the entire economy is vulnerable to the loss of species and the degradation of ecosystems. It should follow that strong action is being taken to mitigate this risk, but the sad truth is that the effective level of action is a small fraction of what is needed.

*“Biodiversity is being lost and nature’s contributions to people are being degraded faster now than at any other point in human history”,* according to Ana María Hernández Salgar, Chair of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The numbers are astonishing, even in a world overwhelmed by fear-inducing data<sup>2</sup>:

The world has already lost 80% of its forests and we continue to lose them at a rate of 375 km<sup>2</sup> per day.

- We have a garbage island floating in our ocean - mostly composed of plastics - the size of India, Europe and Mexico combined.
- Every hour, 685 hectares of productive dry land become desert.
- US\$58 trillion of global GDP (55%) is highly or moderately dependent on nature.
- More than half of the market capitalization listed on 19 of the world’s largest stock exchanges is exposed to material nature risks.
- 5 industries’ direct operations are 100% highly depended on inputs and services provided by nature<sup>3</sup>.

The problem has been recognized for some time. At the Earth Summit in Rio in 1992, the Convention on Biological Diversity (CBD) was adopted and opened for signature. Agenda 21, also adopted at the Summit, laid out the action needed to reverse the degradation of the planet, including action on reversing biodiversity loss.

At the 2000 Millennium Summit, it was conceded that essentially none of the action had been taken and that biodiversity was disappearing at an accelerating pace. The Millennium Development Goals adopted targets including one on significantly slowing biodiversity loss by 2010<sup>4</sup>. At that checkpoint, biodiversity loss had further accelerated. So, the CBD Conference of the Parties in 2010 adopted the “Aichi Targets” – 20 specific targets to be reached by 2020<sup>5</sup>. Ten years later, not a single one of these targets had been fully met and both biodiversity loss and ecosystem deterioration have further speeded up<sup>6</sup>.

We now have the Kunming-Montreal Global Biodiversity Framework, adopted by the CBD in December 2022, to be implemented by 2030<sup>7</sup>. Have we now finally understood the seriousness of our predicament and are we prepared to take serious action to reverse present trends? The answer may lie in the action taken within the financial system, together with action taken by governments to reform and regulate financial activity.

<sup>1</sup> <https://www.ngfs.net/en/communique-de-presse/ngfs-acknowledges-nature-related-risks-could-have-significant-macroeconomic-and-financial>

<sup>2</sup> <https://www.theworldcounts.com/stories/environmental-degradation-facts>

<sup>3</sup> Source for the last three bullets: <https://www.pwc.com/gx/en/strategy-and-business/content/sbpwc-2023-04-19-Managing-nature-risks-v2.pdf>

<sup>4</sup> Target 7B: “Reduce biodiversity loss, achieving by 2010 a significant reduction in the rate of loss.”

<sup>5</sup> <https://www.cbd.int/sp/targets/>

<sup>6</sup> <https://www.cbd.int/gbo/gbo5/publication/gbo-5-spm-en.pdf>

<sup>7</sup> <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

## 2. The Role of Finance in respect of Biodiversity

It is not an exaggeration to state that the way the financial system works will be the key determinant of whether we can reverse the present loss of biodiversity and ecosystem services and start the process of regeneration and recovery, or whether we will push on past catastrophic tipping points into the irreversible breakdown of the natural systems that support, enable, and feed our economic activity. In speaking of the financial system, it is important not to think of it simply in terms of banks and investors, but to understand the wide range of institutions and actors that underpin its functioning – from central banks and financial regulators, through insurance companies and pension funds, to stock markets, capital market traders right through to the data providers and standard setters, and the wide variety of financial service actors.

All of these actors have become highly professional in calculating most forms of risk attached to their activity and taking steps to manage this risk. **And yet nature risk is routinely undervalued, natural capital regarded as an endless supply to which no material danger is attached, and an externality to which no price is attributed.**

# 3. Laying the Foundation – the Science

As with all transformative change, several elements make up the mix of success. Some are fundamental. When society began to turn against smoking in public places, the first requirement for the overturning of an established pattern of social habits – not to mention a highly profitable industry – was to have science on the side of change. Had there been any serious doubts about the science linking smoking to ill health, it is highly unlikely that the campaign would have succeeded. The fact that science could link smoking with cancer and heart disease beyond any reasonable doubt, and that recent scientific evidence indicated that the impact of passive smoking was also seriously harmful laid a foundation for the concerted campaign that finally prevailed in most parts of the world.

In that respect, the science underlying not only biodiversity loss but also the impact of that loss on the economy, on society and on our planetary future is beyond a reasonable doubt. Indeed, unlike tobacco, there is no serious industry contesting the evidence. For decades, IPBES has been tracking and collating data, research and analysis concerning the state of nature and ecosystems. While, sadly, this has been a chronicle of steep decline and ever more dire future predictions, at least there is no genuine, respectable, and widespread doubt about what the science is telling us.

So, the scientific foundation for transformational change is robust.

## 4. Strengthening the Foundation - the Tools

In the last few years attitudes have begun to shift. Nature first came on the radar of financial actors and companies as an important component of climate mitigation and adaptation<sup>8</sup>. Nature loss and land conversion are the single biggest source of climate change, and regeneration of degraded land is a major component of any climate strategy. Carbon markets give great importance to “carbon plus” activities – namely those where climate objectives are pursued through action on nature.

From this start, nature and ecosystem services have made their way rapidly onto the radars of financial institutions, who are casting around for ways to introduce new notions of nature risk into their financial decision-making. Central to this is the work of the Task Force on Nature-related Financial Disclosures (TNFD)<sup>9</sup>. Modelled on the earlier climate-focused Task Force on Climate-related Financial Disclosures (TCFD)<sup>10</sup>, the TNFD published its framework in September 2023 in New York. This is expected permanently to change the way in which nature is considered in financial and business decision-making.

To begin with, TNFD encourages measurement and disclosure of three, related forms of risk:

- Risk to investments from the continued degradation of the natural resources and ecosystem services on which the investments may depend.
- The risks related to the impact on nature of the activities supported by the investment; and
- The dependency of value chains on assumptions made in relation to continued availability of natural resources and ecosystem services.

<sup>8</sup> [https://climate.ec.europa.eu/system/files/2016-11/nature\\_and\\_climate\\_change\\_en.pdf](https://climate.ec.europa.eu/system/files/2016-11/nature_and_climate_change_en.pdf)

<sup>9</sup> [https://tnfd.global/wp-content/uploads/2023/08/Recommendations\\_of\\_the\\_Taskforce\\_on\\_Nature-related\\_Financial\\_Disclosures\\_September\\_2023.pdf?v=1695118661](https://tnfd.global/wp-content/uploads/2023/08/Recommendations_of_the_Taskforce_on_Nature-related_Financial_Disclosures_September_2023.pdf?v=1695118661)

As TNFD is adopted and applied, there will be a rapid acceleration of the means available to financial actors and corporations to assess and incorporate consideration of these three risks, and thereby of their ability to price these risks and render them material in their financial and corporate decisions.

For one thing, the transparency and disclosure generated by applying the TNFD framework will lead to an avalanche of data, producing a virtuous circle as concern for nature risk is matched by ever-better means to address it. Already a raft of new data providers is popping up to manage and channel this demand.

Data on its own is not sufficient – at least not in raw form. Needed also are tools and methodologies that enable the data to be translated into sound measurement of risk and enable strategies to reduce or mitigate them. Ironically, unlike much climate data, data about biodiversity parameters is mostly in the public domain, readily accessible to those wishing to incorporate it into financial risk assessment. Unfortunately, much of the data are still in rough form and far from the quality required on, say, a Bloomberg terminal. Missing is an open-source data platform that converts the data into “investment-grade” outputs.

<sup>10</sup> <https://www.fsb-tcfd.org/>

One promising development is a tool to measure the alignment of investment portfolios (e.g. an investment fund or a public budget) with the requirements of the Global Biodiversity Framework or the Sustainable Development Goals. Other tools include indices that measure impact of financial or corporate activity in real time as it is incurred, often down to a resolution of a few square metres. The SEED Biocomplexity Index developed at the ETH in Zurich is an advanced example of what is possible<sup>11</sup>.

Measurements, however, must be made against an agreed standard, and few of these are yet available and broadly accepted. Certainly the EU has advanced with its taxonomy on sustainable finance, including biodiversity finance and, within the International Financial Reporting Standards (IFRS), the International Sustainability Standards Board (ISSB) is seeking to put some order in the field. Yet anything like a globally-accepted standard for biodiversity finance is still far off. The EU, for example, rightly believes that its standards are higher than those applied elsewhere<sup>12</sup>, and the TNFD framework implies more rigour than the “lowest common denominator” that ISSB is likely to call for.

<sup>11</sup> <https://seed-index.com/>

<sup>12</sup> See: [ESRS E4 Biodiversity and Ecosystems: https://ec.europa.eu/finance/docs/level-2-measures/csrd-delegated-act-2023-5303-annex-1en.pdf](https://ec.europa.eu/finance/docs/level-2-measures/csrd-delegated-act-2023-5303-annex-1en.pdf)

## 5. Strengthening the Foundation - the Goal

In the end, nothing less than a universal “Nature Positive” standard<sup>13</sup> will be required. The equivalent of the “Net Zero” standard in the climate space, a Nature Positive standard must require all financial and corporate activity not only to do no harm to nature, natural resources, and ecosystems but actively to seek improved biodiversity as a result of that financial or corporate activity. Nature and biodiversity have been so badly harmed that foregoing any future harm is simply not enough.

While such a standard – much less one that is universally accepted – is not yet available, it is possible to imagine how one could rapidly become a new norm of behaviour. Just as slavery or child labour were – after years of common use – not only banned but universally reviled, so it is not hard to imagine a world in which serious harm to natural resources and ecosystems could be regarded as pariah behavior, with enterprises guilty of doing so rapidly losing their customer base and their social “license to operate”.

One could imagine, for example, that front-runners such as the European Union and its members might make the application of a Nature Positive standard a requirement for access to grants and subsidies, or for participation in competition for public procurement contracts. One can imagine enlightened banks requiring certification against a Nature Positive standard as a requirement for extending credit. Very soon, the cost of complying with such a high bar might fall below the cost of persisting with the earlier, lower standard. Indeed, the implications of implementing the Global Biodiversity Framework are that such a standard might become the new norm.

<sup>13</sup> <https://www.naturepositive.org/>



## 6. How to Build Materiality of Nature in Financial Decision-Making

The section above outlines features of a new reality that might lead to the integration of nature capital with financial decision-making. However, as noted above, while doing so may make logical sense, it is not yet regarded as a requirement of doing business. Expressed another way, biodiversity is not yet seen to be material in financial decision-making. Ignoring nature, nature impact and nature dependence still by and large exacts no real consequences on business and financial success. In the short term, it is still too easy and too convenient to ignore it or to relegate nature-related action to the margins of business or financial activity.

In the words of Ralph Chami<sup>14</sup>, a senior official of the International Monetary Fund (IMF): “Making or recognizing that nature is central to our economy involves making living nature visible. In a market system, this involves reflecting the market value of its services through positive market prices. Four things are needed – accounting for ecosystem services; market valuation of these services; establishing their legal status; and developing a market for these services. We have all four for extractive nature, but not for regenerative nature.” It is this void that we now need to fill.

What means, then, are available to change this reality? What tools are available to elevate nature risk to the other classes of risk that business and finance take seriously? How can we reach the point where nature risk takes its place alongside other, more familiar forms of risk – financial risk, political or security risk, reputational risk?

The next section will review a range of tools and approaches available to generate strong market interest in regenerative nature and to move markets to the tipping point beyond which nature positive forms of production become the norm.

<sup>14</sup> <https://www.frontiersin.org/articles/10.3389/fclim.2022.855803/full>

## 7. Perception of the Risk

For decades, the irrefutable science underlying biodiversity and nature risk was the domain of the specialist and the converted, largely ignored by business and the market economy. The alternative to paying a fair price for the “externality” of nature and ecosystem services was to go on benefitting from it for free. The default for nature risk was to ignore it – it was not deemed material in any real sense.

This has a great deal to do with the business culture in a neo-liberal economy, with its strong focus on short-term earnings and quarterly financial reporting. In the short-term, nature risk is often deemed to be manageable even where it points to issues in the longer term. However, with the accelerating loss of biodiversity, nature risk has come onto the radar of business and finance. For several years, the World Economic Forum’s Global Risks report<sup>15</sup> has listed biodiversity loss (alongside the closely related climate change) as foremost in perceived risk facing business. The business sector increasingly has access to excellent advice on how to address the topic in their business models.<sup>16</sup> At the WEF meeting in Davos in January 2023, some 100 meetings were devoted to nature and biodiversity, fully a third of the sessions formally scheduled during the Forum. Over 400 finance professionals attended the Conference of the Parties of the Biodiversity Convention in Montreal in December 2022, a vastly greater number than ever in the past, and many of the formal sessions on the programme addressed finance.

While this heightened interest on the part of the financial community is welcome, it is also driven by a change in expectations. Two recent developments have showed that claims of environmental virtue will increasingly be examined closely. A series of articles in late 2022 accused a large part of the ESG measures to which corporations and financial actors have proudly signed up as being devoid or substance

and adding up in many cases to little more than greenwashing. The subsequent revelations that a disturbingly high proportion of carbon credits do not begin to fulfil their claims of fixing atmospheric carbon, has led to enormous upheavals both in carbon markets and in the verification industry. Again, the EU is reacting, with a new norm on green claims.<sup>17</sup>

All of this suggests a prelude to deep change, but many obstacles lie in the way.

<sup>15</sup> <https://www.weforum.org/reports/global-risks-report-2023/>

<sup>16</sup> See: “Directors’ duties of loyalty and care”: <https://hub.climate-governance.org/article/biodiversity> as a material financial risk

<sup>17</sup> [https://environment.ec.europa.eu/topics/circular-economy/green-claims\\_en](https://environment.ec.europa.eu/topics/circular-economy/green-claims_en)

## 8. Perverse Incentives

Like human behaviour, corporate and financial decision-making is influenced by patterns of incentives and disincentives built into the economy, society, and culture. Perhaps the most powerful of these are financial incentives – direct rewards that benefit individuals or groups in society. Where these incentives influence behaviour in a positive direction, they can be very powerful motors of change. Where, on the other hand, they incentivise destructive behaviour, they can make positive change very difficult if not impossible.

The Global Biodiversity Framework calculates that the funding gap – the difference between the funding currently allocated to reversing biodiversity loss and the total calculated as required fully to implement the GBF is on the order of \$824 billion per year. Surprisingly, relatively little of that total represents new funds that need to be generated.

**The great majority of the funding gap could be met by ceasing to spend public funds in ways that undermine nature and climate!**

To take an example from the climate world, by subsidizing fossil fuels, we are spending considerably more taxpayer money to accelerate climate destruction than we are spending from all sources to combat it. Indeed, in 2022 (in large part due to high oil prices) fossil fuel subsidies represented twice as much in volume as the total global expenditure on climate change mitigation and adaptation. It is worth pausing to reflect on this for a moment. At a time when the world has woken to the imminent catastrophes linked to climate change, when we are awakening to the need to move off fossil fuels as quickly as possible, we are offering consumers a massive financial incentive to give preference to carbon-based energy over the alternatives. And we are doing so with genuine public funding, gathered from taxpayers and that could – absent the subsidies – be used not only to meet funding gaps like that mentioned above for biodiversity, but to cover the full costs of arresting catastrophic climate change.

So, the first line of action with climate and nature is to stop doing harm – to dismantle or redirect the vast sums of public money that offers strong incentives to behave in ways that are the contrary of those that science and good common sense tell us are needed.

That said, it is also true that the world of biodiversity professionals is still stuck in the mentality of “resource mobilization” as if the priority were to gather funds to spend on conservation priorities. As noted above, the actions to be funded should such resources be gathered pale before the massively greater funds still wreaking destruction. But even ignoring this, conservation cannot continue as a rear-guard action, seeking to slow the inevitable defeat. Nothing short of the reform of the financial system will enable us to stem and reverse the flood of biodiversity loss.

The same is true in the corporate world. Increasingly, as a younger generation moves into positions of power and authority in financial institutions and corporations, there is a strengthening of demand for their employers to address global issues seriously. At the same time, little has been done to address the culture whereby career success is linked to quarterly earnings, however these are achieved. Thus, there is a strong misalignment between behaviour that addresses planetary issues and behaviour that leads to career success.

## 9. Legal Approaches

To make biodiversity material in financial decision-making, it is necessary to deploy the full range of legal measures and approaches. This is beginning to happen.

A movement is afoot to include the crime of **Ecocide**<sup>18</sup> in the Rome Statute which sets out the mandate to the International Criminal Court. If successful, this would mean that serious destruction of nature and biodiversity could be considered a crime receivable in this court, allowing one country to sue another for complicity in environmental destruction. While this would be very powerful, it is still a long way from realization.

More promising are the many initiatives aimed at giving standing and voice to nature in national courts of law. Countries like Peru, Ecuador and Bolivia have enshrined **Rights of Nature** in their constitutions and a jurisprudence is developing of extractive projects blocked because they would harm nature<sup>19</sup>. In addition to the mine project whose blocking is mentioned in the footnote, Ecuador more recently cancelled an oil drilling license in the Yasuní area of the Amazon basin, a first large-scale victory for climate democracy.<sup>20</sup> Famously, countries like New Zealand have given legal rights to natural features such as rivers, offering them (or their legal representatives) recourse in case of harm<sup>21</sup>. In Spain, the example of the Mar Menor is telling. In September 2022, it became the first ecosystem in Europe with legal rights of its own, through the adoption of a relevant law.<sup>22</sup> Many countries – and increasing quickly – have given recognition to nature rights in national and local laws and the jurisprudence is building. Allowing legal recourse on behalf of nature is in its infancy but could offer strong tools if it becomes a routine part of the legal panoply.

<sup>18</sup> <https://www.stopecocide.earth/>

<sup>19</sup> <https://news.mongabay.com/2023/03/ecuador-court-upholds-rights-of-nature-blocks-intag-valley-copper-mine/>

<sup>20</sup> See: Ecuador Becomes the First Country in the World to Halt Oil Drilling Through Direct Climate Democracy: <https://amazonfrontlines.org/chronicles/ecuador-becomes-the-first-country-in-the-world-to-halt-oil-drilling-through-direct-climate-democracy/>

In many countries, **litigation on behalf of nature** or climate has anticipated the adoption of specific laws protecting nature or climate. In a famous recent case, the Dutch NGO Urgenda sued the government, claiming that their proposed climate programme failed to meet the requirements of the law passed by the parliament. They won the case, forcing the government to return with a more robust programme<sup>23</sup>.

Some legal action specifically targets financial players. Experiments with the **extension of legal liability to financial actors** is taking place in countries like Brazil<sup>24</sup>. In line with present practice, the lender (banks or investors) is not liable for environmental damage done by the lendee. Efforts are being made to ensure that the liability is to some extent shared by the source of the funding. If successful, this would sharply increase the attention paid to environmental risk in the calculus used by financial players in their credit or investment decisions.

Related are efforts to extend the reach of **Anti Money Laundering (AML)** legislation to address the growing concern for involvement of respectable financial institutions in environmental crimes. Funding from creditors and investors too often makes its way (mostly unbeknownst to them) through many stages of onward lending to activities outside the law. And proceeds from illegal activity that harms nature (logging, wildlife trade, illegal fisheries, etc.) have ways to reintegrate respectable financial institutions. With illegal trade running at around \$280 billion annually, fuelling extensive damage to nature, it is inevitable that the reach of AML will need to be extended<sup>25</sup>.

<sup>21</sup> <https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being>

<sup>22</sup> [https://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2022-16019](https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-16019)

<sup>23</sup> <http://climatecasechart.com/non-us-case/urgenda-foundation-v-kingdom-of-the-netherlands/>

<sup>24</sup> <https://transformativeprivatelaw.com/lessons-about-lender-liability-from-brazil/>

<sup>25</sup> <https://www.fatf-gafi.org/en/publications/Environmentalcrime/Money-laundering-from-environmental-crime.html>

Finally, a range of softer policy instruments is available or being developed. These include **due diligence requirements**, such as those in the UK that obligate corporations to certify that there is no deforestation resulting from their value chains<sup>26</sup>, the recent EU norm on deforestation<sup>27</sup> as well as the EU Directive on due diligence linking these new norms to biodiversity<sup>28</sup>.

While much of the action described in this section of the paper is new and experimental, their prevalence and rhythm are growing quickly.

<sup>26</sup> <https://www.iisd.org/articles/policy-analysis/deforestation-overview-eu-british-proposals>

<sup>27</sup> [https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products\\_en?prefLang=es](https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en?prefLang=es)

<sup>28</sup> [https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence\\_en?prefLang=es](https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en?prefLang=es)

# 10. Nature Markets – A new opportunity

Nature should not simply be regarded as a risk to business and finance. It is also – and increasingly – an opportunity. Recent years have witnessed a shift towards nature being explicitly counted in markets rather than under-valued or simply ignored. Four main drivers are catalysing the rise of such 'nature markets' where nature is explicitly valued and traded:

- Public awareness and experience of the visible collapse of nature.
- Impacts of nature's fragile condition on food security, livelihoods, and social stability.
- Understanding of the key role of nature in our efforts to address climate challenges.
- Appreciation of the dependency of economic assets on nature and associated risk.

The drivers of this renewed interest in the nature economy have been the explosion of cheap and timely data about nature (which will swell further as TNFD is applied), and the development of nature-specific standards and regulatory requirements.

The focus has tended to be placed on four market archetypes<sup>29</sup>:

- Soft commodities: the largest and arguably the single most important set of nature markets, trading food valued at upwards of \$4 trillion annually.
- Illegal nature: covering the trading of the results of nature crimes, the fourth largest source of illegal financial flows estimated at up to \$280 billion.

- Nature credits: especially focused on carbon and emerging biodiversity credit markets, with current annual value of less than 5 billion.
- Nature finance: more broadly the trading of financial representations of nature beyond credit markets, valued through financial risk and upside opportunities.

In the area of food alone, we are in all likelihood at the beginning of a major transformation of how food is produced and marketed with massive transition risks for market players. The global food system is estimated to cost \$12 trillion in nature externalities, a multiple of its global traded value<sup>30</sup>.

As the future of this dependency looks increasingly shaky, markets for nature-friendly products – including those produced in ways that either do not harm or actually benefit nature – are rising fast. Vertical farming operations are expected to grow by 22% by 2030, as is the market for alternative meat, dairy, and protein<sup>31</sup>. Plant-based textiles and packaging materials are not far behind.

Growing demand for nature-positive products will accelerate nascent markets in biofuels and biodiesel, in regenerative agriculture technologies and processes, in nature-based credits and offsets, and in the whole service industry of spatial data, analytics and information.

Technology is already permitting a shift from current, destructive food production systems to introduce, for example, water trading using a blockchain-based ledger, and sharp reduction in requirements for irrigation water using smart contracts and technologies<sup>32</sup>.

<sup>29</sup> <https://www.naturemarkets.net/>

<sup>30</sup> <https://www.naturefinance.net/wp-content/uploads/2022/09/TNMDNatureInAnEraOfCrises.pdf>

<sup>31</sup> <https://www.fortunebusinessinsights.com/industry-reports/vertical-farming-market-101958>

<sup>32</sup> For a telling example, see the work of Civic Ledger in Australia: <https://www.civiclegger.com/>.

Traceability in supply chains is also growing more sophisticated. It is now growing increasingly difficult to sell illegally mined gold at the price of heavy destruction of natural forest and the abuse of indigenous rights. Ending illegal gold trade could prove to be a major factor in slowing deforestation of vital areas like the Amazon and the Congo Basin, thereby also improving respect for human rights, and operating more through community-based resource management approaches.

The same is true for illegal fisheries, the source of massive nature destruction in the oceans and seas around the world. The technology now exists to track fishing vessels and fleets and monitor what they land, leading ideally to the loss of markets, subsidies, and credits for those fishing beyond what is legally permitted.

As we transition to nature markets, technology now largely permits better enforcement of rules, better traceability within value chains, and better control over how finance either supports or challenges illegal trade. The rest is just public and political will.



# 11. Financial Innovation

Innovation is also evident in financial instrument design and the rapid development of digital financial technology. Cellphone-based fintech has permitted a massive rise in financial inclusion of the poorer sections of the population. Beginning with cash transfer systems (such as M-PESA in Kenya or B-Cash in Bangladesh), cellphone-based finance now extends to instant credit, credit risk pooling, insurance inclusion, rural renewable energy systems, and the basic identity systems for refugees that allow them to enter the formal financial system. Applied to nature, these developments are revolutionary.

We have also seen the revival of interest in transactions that advance nature goals in exchange for lowering sovereign debt burdens. Debt-for-Nature Swaps, a popular tool in the 1990s, are now back, with deals running to the hundreds of millions of dollars, for example in Belize, Barbados and the Seychelles<sup>33</sup>. Green “use of proceeds” bonds have also exploded, and now run at over \$500 billion annually<sup>34</sup>. Bloomberg estimates that the size of the sustainable bond market could soon exceed \$1 trillion per year.<sup>35</sup>

More promising still are Sustainability-linked Sovereign Debt transactions<sup>36</sup>. Here the coupon on a sovereign bond is linked to the debtor country meeting agreed and certified performance requirements, such as reforesting degraded land or installing renewable energy capacity. If the performance requirements are met, the agreed coupon is applied. If they are exceeded, the coupon rate may fall further.

This not only has an immediate positive effect on an indebted country’s interest payments, it also has positive secondary effects. By investing in nature or climate action, the debtor country increases its natural capital, thereby lowering the perceived risk levels applied to the country’s debt and lowering its cost of capital.

Sustainability-linked sovereign bonds have recently been issued in Chile (for renewable energy)<sup>37</sup> and in Uruguay (for forestry)<sup>38</sup>. Both were sold out within minutes of the market opening. Both were oversubscribed many times over, and both raised well over \$1 billion for the respective countries (\$1.5 billion for Uruguay, \$2 billion for Chile). Each also represents an incentive for good behaviour; since failure to achieve the performance indicators has a direct cost impact, the incentives are in place to ensure the countries meet their commitments, even if there is a change of government.

And yet, the risk and return-based expectations of investors continue strongly to limit the expansion of nature-positive investment. This remains the key challenge in nature finance, despite the development of blended finance mechanisms, first-loss guarantees and credit enhancements. One promising initiative in this respect is described in the publication “Accelerating Finance for Nature: Barriers and recommendations for scaling private sector investment – the case for a Nature Finance Accelerator”<sup>39</sup>.

<sup>33</sup> <https://whc.unesco.org/en/news/2524>

<sup>34</sup> <https://theqiin.org/assets/2022-Market%20Sizing%20Report-Final.pdf>

<sup>35</sup> <https://www.bloomberg.com/professional/blog/sustainable-debt-issuance-could-exceed-1-trillion-in-2022/>

<sup>36</sup> <https://www.ssdh.net/>

<sup>37</sup> <https://www.environmental-finance.com/content/awards/environmental-finance-bond-awards-2023/winners/sustainability-linked-bond-of-the-year-republic-of-chile.html#:~:text=In%20March%202022%2C%20the%20Republic.SLB%20issued%20by%20a%20sovereign.>

<sup>38</sup> <https://www.iadb.org/en/news/uruguay-issues-global-sustainability-linked-bond-idb-support>

<sup>39</sup> <https://www.pwc.com/qx/en/nature-and-biodiversity/nature-fin-accelerator-mode.pdf>



## 12. A Word on Impact Investing

Where it is not focused on raising funds for conservation action, the debate on sustainable finance tends to focus sharply on impact investment – a global term that covers a broad range of approaches but that, in general, refers to investments that aim at generating a clear and measurable social or environmental impact while generating a satisfactory return on investment. The field is tracked closely by the Global Impact Investing Network (GIIN)<sup>40</sup>. Their report on Sizing the Impact Investment Market in 2022<sup>41</sup> proudly announced that impact investing, at some \$1.164 trillion, is moving into a zone where it is increasingly mainstream. It is approaching a third of global investment markets.

While this, sadly, means that two thirds of global investment follow no impact-related criteria whatsoever, it also needs to be unpacked, especially in terms of nature investment. Years of effort by the Credit Suisse Conservation Finance Conferences and the Coalition for Private Investment in Conservation (CPIC)<sup>42</sup> have done little more than underline the complications of investing in nature, linked to several factors – the very local particularities of nature projects, the often-unjustified perception of risk linked to nature projects, the slower pace at which returns are generated, etc.

So, if impact investing has grown, very little of it has found its way into the nature space, despite the efforts of market leaders like TNC's NatureVest.<sup>43</sup> Further, most large-scale nature projects that do attract investment tend to be in developed countries, where many of the risk factors are deemed to be low, the policy and regulatory framework more solid, and the institutions more dependable.

This is beginning to change with the shifts in food production, the emergence of nature markets and, especially, of biodiversity credit markets. But for the moment, while the growth of impact investment is to be lauded, it is not yet the immediate solution for Nature Finance.

<sup>40</sup> <https://thegiin.org/>

<sup>41</sup> <https://thegiin.org/research/publication/impact-investing-market-size-2022/>

<sup>42</sup> <https://cpicfinance.com/>

<sup>43</sup> <https://www.nature.org/en-us/about-us/who-we-are/how-we-work/finance-investing/naturevest/>

# 13. Conclusion

While public concern at the consequences of biodiversity loss have been mounting over the past decades, the corporate and financial world have been slow to respond by adequately valuing biodiversity-related risks and incorporating these into their financial decision-making. The pressure to do so has not been high. Indeed, until recently, biodiversity considerations were not commonly regarded as material.

The speed and extent to which this is now changing are impressive and it is highly likely that biodiversity will make its way into business and finance calculus, just as climate has increasingly done. The foundations to do so are rapidly being laid – especially through the launch of the TNFD framework. The other pieces – on data, taxonomy, methodologies, alignment tools, and standards are following rapidly. Reform of the policy and regulatory frameworks is also beginning to come, pushed in part by growing consumer demand, but also by the opportunities emerging in the field of new nature markets.

As with all such transformative changes, those who step forward and occupy the high ground are likely to benefit from first-mover advantages. The laggards are likely to lose out. Though there are dangers ahead, obstacles to be navigated and push-back to be expected, the hope is that we will soon reach a tipping point beyond which destruction of nature and ecosystems in the pursuit of profit will be regarded as we might use of child labour today.

It is not impossible that this day is closer than we think.

# About the Author

Mark grew up in Geneva, Switzerland, took his first degree from Tufts University in the US and a post-graduate degree in history from the University of Cambridge. Following two years with the Diplomatic Secretariat of the Conference on Security and Cooperation in Europe (CSCE) he has devoted his entire career to environment and sustainable development, beginning with five years in the United Nations Environment Programme's Policy Planning Division. He then spent four years in WWF-International's Conservation Division, with responsibility for building its programmes in China and as conservation advisor to HRH The Prince Phillip, Duke of Edinburgh. There followed fourteen years at IUCN, first in the Conservation for Development Centre (integrated into IUCN as the Field Operations Division), then as Director of Development and, finally, as Director of Policy and Partnerships. He left IUCN to establish the International Institute for Sustainable Development (Europe) which he directed until retirement in 2016 and where he remains a Senior Fellow.

Mark was a Senior Advisor to the UNEP Inquiry into the Design of a Sustainable Financial System for the four years of its mandate, taking special responsibility for developing countries. He helped establish and is Senior Advisor to the international network of Financial Centres for Sustainability (FC4S), where he led on development of the FC4S programme for Africa and the emerging programme on biodiversity finance. He is also a Senior Advisor to NatureFinance, a Geneva-based NGO. He is a co-founder of Better Nature, a partnership that focuses on narrative development.

Mark is Chairman of the Board of TRAFFIC International, the world's leading wildlife trade organization. He sits on the board of Sustainable Finance Geneva. Mark writes and lectures on the subject of sustainable development. He is a founder of the Geneva 2030 Ecosystem, a platform for dialogue and cooperation about the challenge of implementing the Sustainable Development Goals.

# Other ODF Publications

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May	2023	DT	<b>El <i>direct lending</i>: Una alternativa creciente en la financiación a empresas</b>	Albert Gumà, Ramiro Lama y Eloi Noya
Abr	2023	DT	<b>Los mercados energéticos en España y Europa</b>	Roger Medina Juidías
Mar	2023	DT	<b>La tecnología cuantitativa de los roboadvisors</b>	Gerard Albà Soler y Amau Vía Martínez-Seara
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Feb	2010	NT	<b>Diferencias internacionales de valoración de activos financieros</b>	Margarita Torrent
Ene	2010	DT	<b>Heterodoxia Monetaria: la gestión del balance de los bancos centrales en tiempos de crisis</b>	David Martínez Turégano
Ene	2010	DT	<b>La morosidad de banco y cajas: tasa de morosidad y canje de créditos por activos inmobiliarios</b>	Margarita Torrent
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**Barcelona European Financial Centre (BCFE)** is an association of public and private entities created in 1991 whose objective is to consolidate Barcelona as a reference Financial Centre promoting all kinds of financial services and activities that support the economic activity of the city and its business hinterland.

The main objective of the Barcelona European Financial Centre (BCFE) is to promote the city as a relevant centre of financial services, contributing to economic progress and evolution, supporting innovation and development of services and professionals through technical forums and providing direct access to experts, academics, researchers and state-of-the-art regulators both nationally and internationally.

In addition, the growth of sustainable finance, in accordance with the 2030 Agenda and the Sustainable Development Goals, has become a crucial objective for the financial ecosystem of the Barcelona city area. In this sense, the Barcelona European Financial Centre (BCFE) aims to promote Barcelona as a relevant centre for sustainable finance, investment and financing under ESG criteria, as well as contributing to the purposes of Europe and the United Nations for an ecological transition and the fight against climate change through its flagship project **Barcelona European Financial Centre for Sustainability (BCFE4S)**.

Barcelona European Financial Centre for Sustainability (BCFE4S), which acts under the legal personality of the association, is a member of the international network **Financial Centres for Sustainability (FC4S)** of the United Nations Development Program (UNDP) since the end of 2018, and acts as a centre to facilitate access, both nationally and internationally, to information related to sustainable finance, organize events on relevant topics and promote sustainable financing initiatives and projects developed in the region.

With this objective, the Barcelona European Financial Centre for Sustainability (BCFE4S) undertakes a new project at the end of 2022 to promote the dissemination of sustainable finance nationally and internationally as a collaborator of the **Financial Disclosure Observatory (FDO)** of the **Institute of Financial Studies (IEF)**, together with the **Fundación Caja de Ingenieros**.

Other FDO publications in which BCFE4S collaborates:

1	Dic	2022	NT	El papel del Sistema de Derechos de Emisión en la transición a la Neutralidad climática
2	Jul	2023	DT	Particularidades en las operaciones de M&A de las entidades de capital riesgo que aplican criterios ASG
3	Dec	2023	DT	Making Biodiversity Material in Financial Decision-Making