Blind Spots on the Balance Sheet

Uncovering financial implications of deforestation

November 2025

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Executive summary

The problem: A US$279 billion blind spot

Deforestation poses mounting financial risks to the global economy—yet most of these risks remain hidden. CDP's 2024 analysis of corporate and financial institution forests disclosures reveals a critical gap: while 827 companies identified over 1, 200 substantive forest-related risks to their businesses, **less than half of those risks have quantified financial impacts**. This leaves investors, regulators, and businesses flying blind as commodity-driven deforestation threatens supply chains, amplifies climate risks and destabilizes the ecosystems underpinning global economic activity.

Financial institutions face a stark challenge. Despite managing trillions in assets, **129 institutions reported not knowing** whether they finance or insure companies operating in commodity value chains most tied to deforestation. Together, this lack of visibility combined with the value at risk from deforestation creates a significant blind spot in global portfolios.

This report provides the **first estimation of forest-related risks identified by businesses but left unquantified in their disclosures**. By analyzing patterns in reported data and matching comparable risk profiles, CDP uncovers what companies know but haven't quantified, pointing to systemic vulnerabilities that demand urgent attention from financial institutions and regulators alike.

The findings: Hidden risks across industries

CDP estimates reveal **US$279 billion in potential financial effects** from forest-related risks—**3.6 times reported values and averaging US$338 million per company**. Critically, this figure only captures risks that disclosing companies already identified, meaning total exposure across the global economy is substantially larger.

Industries with high revenue dependence on commodities face the greatest exposure to deforestation and already expect substantial risks to arise: Food, Beverage & Agriculture companies report a median 76% revenue dependence on forest-risk commodities, while Manufacturing, Materials, and Retail sectors also show significant vulnerability.

The solution: Action underpinned by comprehensive dependency, impact, risk, and opportunity assessments

The transition to deforestation and conversion-free supply chains and safeguarding financial stability requires multi-actor action and investment. Data and transparency, particularly on risks and the processes through which they were identified, provide the evidence base needed to support the transition.

Key takeaways

Forest-related risks are both material and systematically underreported. 49% of substantive forest-related risks reported by companies have quantified financial effects, despite clear financial dependence on commodities known to drive deforestation.

Estimated financial impacts reveal substantial hidden risk. CDP finds US$279 billion in total potential financial effects from forest-related risks—**3.6x reported values and an average of US$338 million per company**. This only accounts for risks that disclosing companies already self-identified.

Financial institutions have limited visibility of portfolio exposure to deforestation. 129 financial institutions managing **US$30 trillion** in assets reported not knowing whether they finance or insure companies with operations in commodity value chains.

Improvements in DIRO assessments could help close visibility gaps. Comprehensive dependency, impact, risk, and opportunity (DIRO) assessments, when coupled with risk transparency, can provide crucial signals to the financial sector and policymakers regarding corporate risk management, and catalyze coordinated multi-actor action.

Introduction

Forests are complex ecosystems that are indispensable to economic stability, planetary health and social well-being.

Standing and intact forests absorb an average 14.4 gigatons of CO_2e each year, slowing the pace of climate change and buying the world time for the low-carbon transition.[1] Moreover, forests harbor most of the world's terrestrial species and support the livelihoods of 1.6 billion people.[2] They underpin Earth's water cycle, create buffers against hazards (critical for climate adaptation), protect against the spread of disease and provide society with timber and other vital products. Overall, the global economic value of forests has been estimated at US$150 trillion, underscoring their significance to the global economy.[3]

These benefits are threatened by deforestation—the human-induced permanent loss of natural forest—and disturbances that degrade natural forests. These pervasive forms of forest loss are major drivers of the interconnected climate and biodiversity crises.

> 6.7 million hectares of primary rainforest alone were lost in 2024, or roughly 26,000 football fields per day.[4] Not only was this loss a staggering 80% increase from 2023, but it also caused the release of 3.1 gigatons of GHGs—triple the emissions from Europe's entire transport sector.[5]

1 World Resources Institute, Global Forest Review - Greenhouse Gas Fluxes from Forests
2 United Nations, UN Forum on Forests: 5 things you need to know
3 BCG, The Staggering Value of Forests—and How to Save Them
4 World Resources Institute, Global Forest Review - Fires Drove Record-breaking Tropical Forest Loss in 2024
5 IAE, What are the main sources of CO2 emissions in Europe?

The largest share (33%) of deforestation and forest degradation worldwide from 2001-2024 was directly driven by agricultural expansion to grow crops and raise livestock, followed by wildfires and logging.[6] This loss of natural forests comes with grave and compounding ramifications for the biosphere. For example, the environmental effects of climate change and forest loss exacerbate one another, creating a vicious cycle that harms the delivery of the benefits we derive from functioning forest ecosystems (i.e., ecosystem services) upon which economies are based.

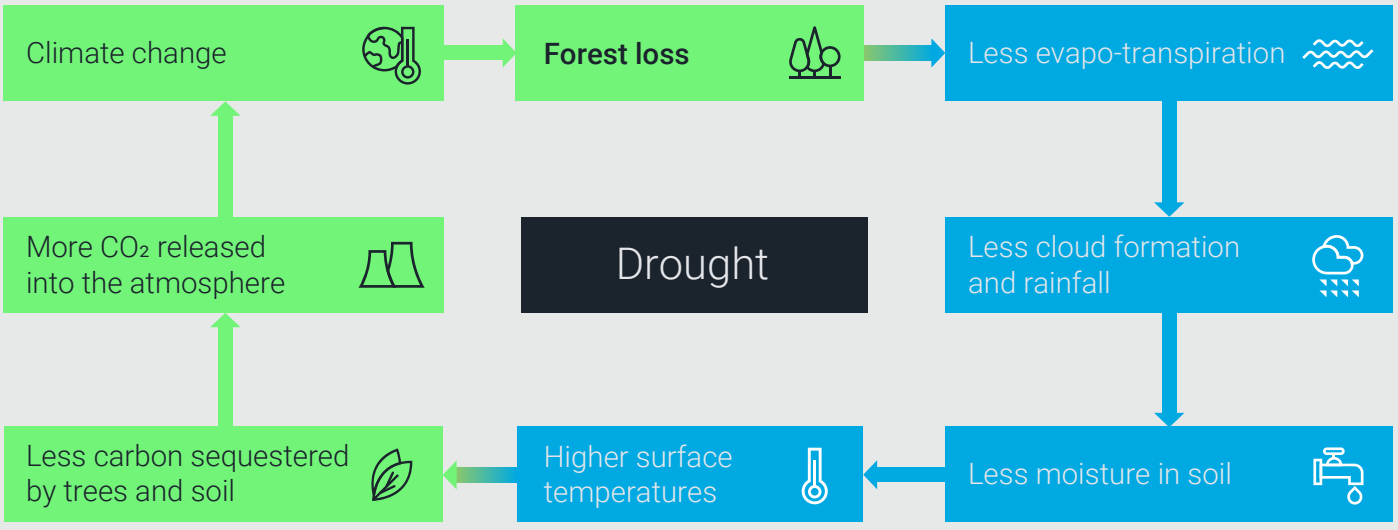
The feedback loop between climate change and forest loss has several serious consequences, one of which is drought. Clearing trees releases the carbon they once stored and, particularly in tropical forests, prevents release of water into the atmosphere that generates rainfall, reducing precipitation at local and regional scales.[7] Such disruptions have been found to have economic, financial and social ramifications thousands of kilometers away from deforested areas.[8] At the same time, climate change also increases the incidence of extreme weather events, disrupting the delicate balance of healthy forest ecosystems and damaging those we have left.

Agricultural expansion drove

33%

of deforestation and forest degradation worldwide.

Figure 1. Ways in which forest loss disrupts ecosystem services and leads to drought.



Note: this diagram is not intended to capture all interactions.

6 World Resources Institute, New Data Shows What's Driving Forest Loss Around the World
7 Nature.com, Tropical deforestation causes large reductions in observed precipitation
8 Climate Policy Initiative, Cutting Down the (Hydropower) Plants: How the Amazon Deforestation is Jeopardizing Electricity Generation in Brazil

These ecological effects do not occur in a vacuum. Many industries both depend on and negatively impact forests, largely stemming from their production, extraction, and use of soft commodities (e.g., coffee, cocoa, soybeans) and hard commodities (e.g., copper, gold, cobalt). Further, these dependencies and impacts cascade to the global economy and financial system. Given the deeply rooted interconnections between ecosystems, economies and businesses, many have warned that the loss of healthy forests is already leading to serious economic and financial consequences, such as crop failures, reduced hydropower output and even excess deaths.[9, 10, 11]

Table 1. Impacts from the loss of forest ecosystem services

Example ecosystem services	Ecological impacts from their loss	Economic impacts from their loss
Water capture and filtration	Decline in water quality	Increased mortality; healthcare costs
Protection from hazards – storms, floods and landslides	Rising impacts from hazards	Human fatalities; capital destruction
Regulating temperatures	Rising temperatures	Increased mortality; healthcare costs; lost production
Regulating the carbon cycle	Rising carbon emissions	Capital destruction; reduced agricultural output; lost production
Regulating diseases	Disease outbreaks	Increased mortality; healthcare costs; lost production; school absenteeism
Air quality	Rise in air pollution	Increased mortality; healthcare costs; lost production
Provisions – timber, biomass, food, non-timber forest products	Decline in provision of valuable resources and materials, including pollination services	Loss of livelihoods; reduced output for timber, agriculture and forest product industries
Soil quality conservation	Decline in soil quality	Reduced output for agriculture and hydropower generation
Precipitation and hydrological cycle	Changes in precipitation patterns	Reduced output for agriculture and hydropower generation; reduced tourism
Habitat, species and biodiversity intactness	Loss of biodiversity	Weakened forest resilience and exacerbated risk of ecosystem service losses

Source: Almeida E, Lagoa D and Vasudhevan T (2024) Hidden harms: the economic and financial consequences of deforestation and its underlying drivers. London: CETEx and Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science.

9 CETEX, Hidden harms: the economic and financial consequences of deforestation and its underlying drivers
10 Climate Policy Initiative, Cutting Down the (Hydropower) Plants: How the Amazon Deforestation is Jeopardizing Electricity Generation in Brazil
11 Nature.com, Tropical deforestation is associated with considerable heat-related mortality

Industries unprepared for the transition to deforestation and conversion-free supply chains also face consequences.

A 2022 report by the Race to Zero found that investors could face an equivalent of US$150 billion in losses by 2030 due to land use transition risks in the global food supply system.[12]

Results from over a decade of forests disclosures through CDP show that some organizations are already aware of these issues and their financial consequences. Across the globe, companies consistently identify substantive forest-related risks with tens of billions of dollars in potential financial effects.[13]

Whilst these disclosures have provided a valuable in-depth look into the types of risks individual companies may face, the total financial effect of reported risks only paints a partial picture of their scale. This is because half of companies identify but do not quantify the financial implications of their forest-related risks. The consequences of this disclosure gap are not hypothetical—they are already materializing across financial portfolios.

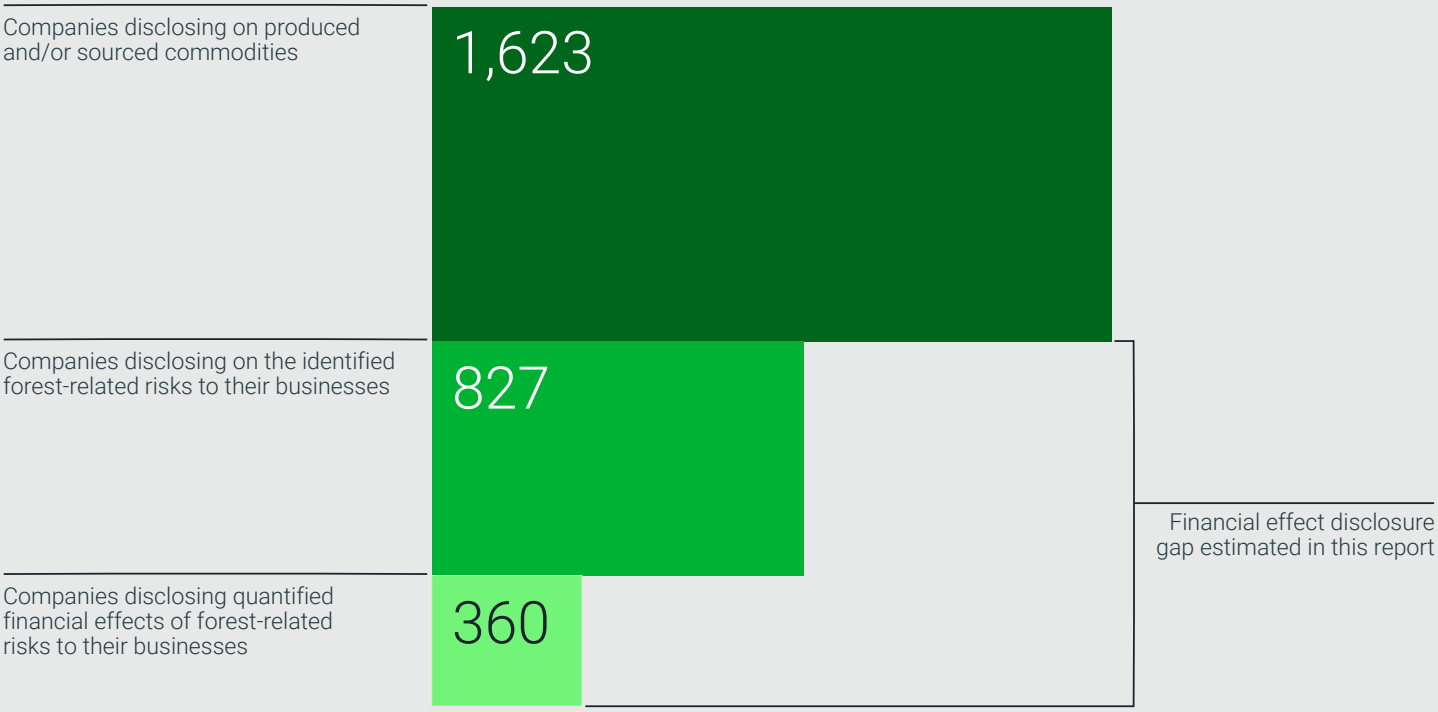
12 Climate High-Level Champions, Assessing the Financial Impact of the Land Use Transition on the Food and Agriculture Sector
13 CDP, The Disclosure Dividend 2025
14 Investing.com, Hershey outlook changed to negative amid cocoa price challenges

When commodity supply shocks driven by deforestation and climate impacts intersect with inadequate risk quantification, financial institutions face direct losses.

In 2025, Moody's Ratings changed The Hershey Company's outlook to negative, citing expected earnings weakness due to high cocoa prices. The credit rating agency projected the company's gross debt-to-EBITDA leverage would increase from 2.4x to nearly 3x by year-end.[14] Cocoa prices more than doubled in 2024 following successive climate-related production challenges in West Africa, where decades of forest clearance have intensified vulnerability to extreme weather. Financial institutions exposed to chocolate manufacturers and cocoa processors through loans, bonds and equity holdings experienced portfolio volatility and credit deterioration as companies struggled with unprecedented input costs.

For the first time, CDP has estimated this disclosure gap between quantified and unquantified risks, providing crucial evidence of the systemic vulnerabilities that emerge when forest-related risks remain hidden. With the findings presented in this report, financial institutions and regulators can gain improved visibility of the true portfolio value at risk from deforestation and understand the financial consequences of failing to act.

Figure 2. Illustration of the financial effect disclosure gap estimated in this report.[15]



15 The number of companies disclosing identified and quantified forest-related risks excludes outliers as well as disclosures with gaps in revenue data.

Private sector exposure to deforestation through commodities

To fully grasp the significance of forest-related risks, it is critical to recognize the private sector's contribution and exposure to deforestation linked to the production and sourcing of seven commodities: timber products, palm oil, cattle products, soy, coffee, cocoa and rubber (often referred to as 'forest-risk commodities'). These commodities have disproportionately large, commercially driven impacts on forests and are the focus of forests disclosure through CDP. They permeate the global economy, driven by consumer demand for products ranging from clothing and cosmetics, to food, packaging, and automobiles. When land is deforested to grow the commodities that underpin such products, companies all along these commodity supply chains have deforestation footprints. The financial institutions providing capital to these companies are, in turn, exposed to commodity-driven deforestation in their portfolios.

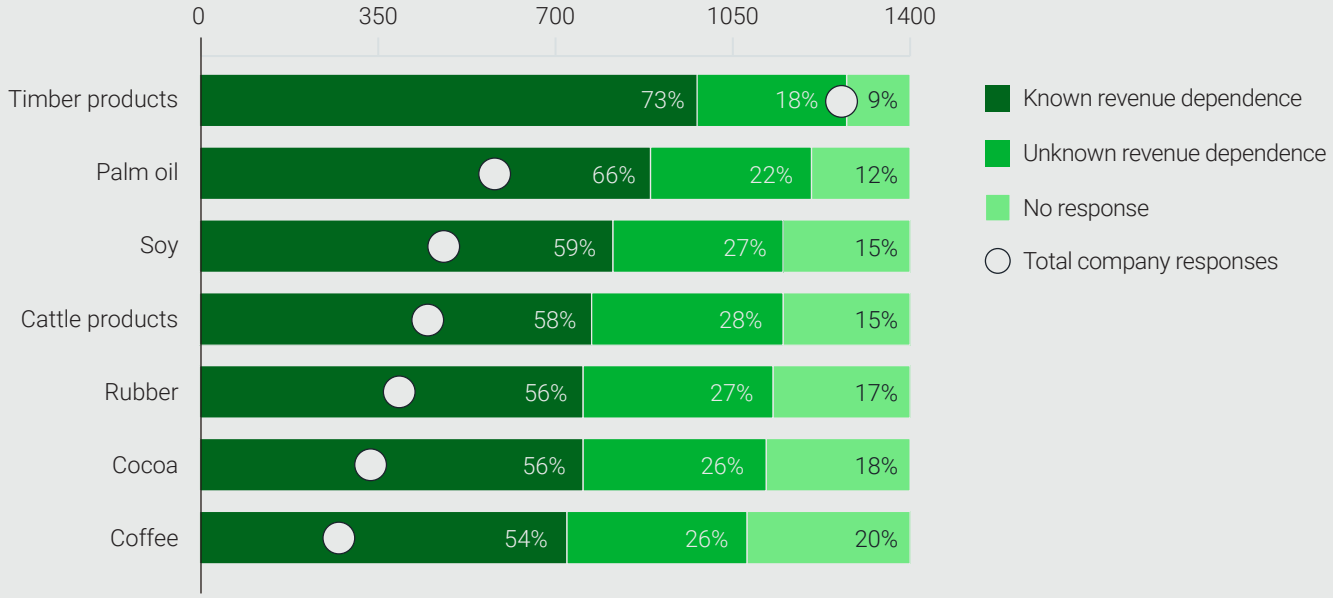
Real Economy Deforestation Exposure

1,623 companies reported producing and/or sourcing at least one of the seven commodities, and most identify the extent to which their financial performance relies on them. On average, companies producing and/or sourcing timber have more understanding of their revenue dependence on the commodity (73%) compared to those producing and/or sourcing coffee (54%), potentially due to well-established certification and traceability systems for timber. Conversely, many (18-28%) reported not knowing their revenue dependence across the commodities. This lack of awareness and transparency has cascading effects. If a company is unaware of its exposure to the commodities most linked to deforestation, then their assessment of environmental dependencies, impacts, risks and opportunities could be incomplete, leading to gaps in action.

18-28%

unknown revenue dependence on commodities.

Figure 3. Company awareness of their revenue dependence per commodity.



Focusing on the companies that know their revenue dependence reveals just how central the seven commodities are to bottom lines—especially for the Food, Beverage, and Agriculture industry.

> Food, Beverage and Agriculture companies reported a median 76% revenue dependence across these commodities.

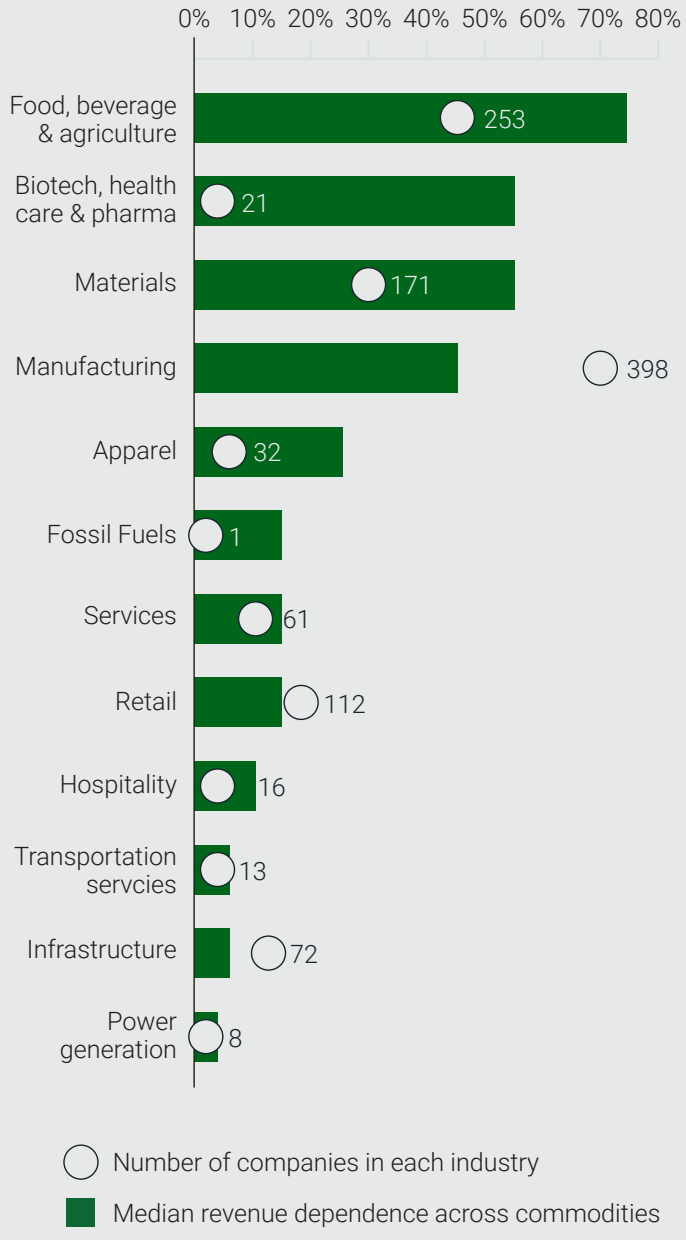
Notably, high revenue dependence is not confined to one industry. Manufacturing, materials, and even healthcare companies reported between 45-55% median dependence, highlighting that deforestation exposure is present in global supply chains far beyond primary production.

Given challenges with monitoring and attributing deforestation to specific entities, company revenue dependence on commodities is a critical proxy for assessing financial exposures to deforestation across investment portfolios.

Financial Services Deforestation Exposure

Despite the economy's clear reliance on agricultural and forestry commodities, the financial services sector remains largely unaware of its exposure to them. As a result, financial institutions have a significant blind spot when it comes to deforestation and interlinked environmental shocks, such as extreme temperatures and droughts. 129 financial institutions with with US$30 trillion in assets report that they are unaware whether they finance or insure companies in the value chains of key commodities.[16]

Figure 4. Median reported revenue dependence reported per CDP industry and number of companies reporting on revenue dependence per CDP industry.



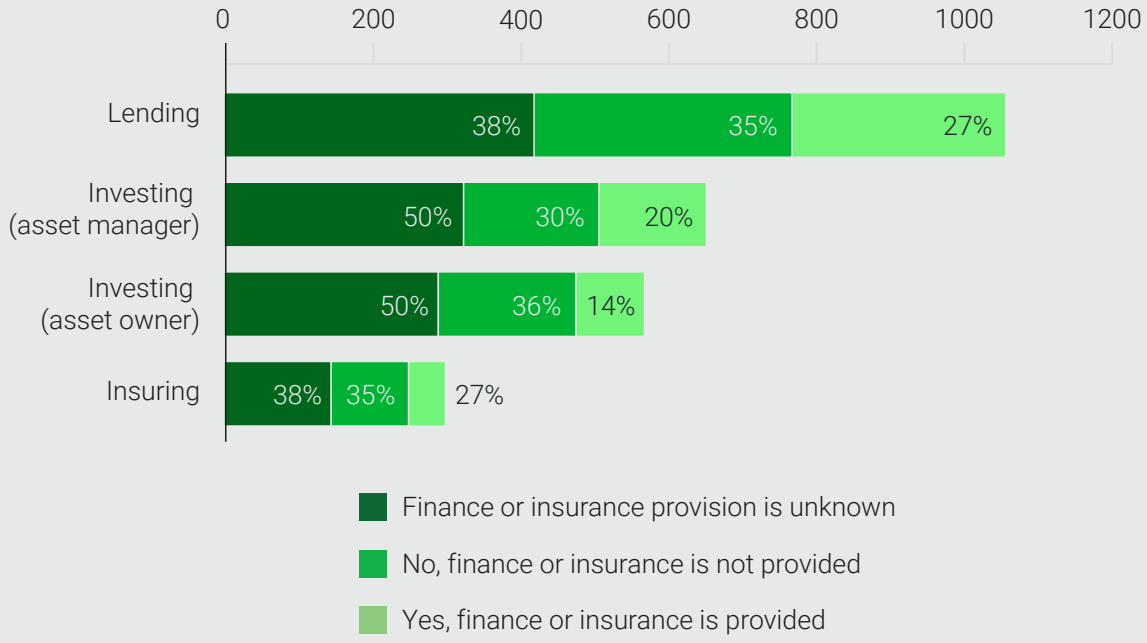
16 129 financial institutions responded "Unknown" for at least one portfolio activity and commodity when asked whether they finance or insure companies operating in timber, cattle product, palm oil, soy, rubber, coffee, and cocoa value chains in question 12.4 in the CDP questionnaire. 540 were presented with the question, while 237 provided a response.

When observing exposure by portfolio activity, blind spots are similar in scale across insurance, asset manager and asset owner portfolios with roughly 50% unknown exposure, while lending portfolios have slightly better visibility at 38% unknown. This difference may reflect the high level of commercial bank involvement in agribusiness, which includes provision of working capital finance, trade finance, supply chain finance, and beyond. Banks also typically hold direct relationships with corporate clients, and as such the varying degrees of proximity to clients across portfolio types may also be a factor.

Supervisory bodies and central banks are increasingly aware that such blind spots could aggregate into broader systemic vulnerabilities. CDP and WWF analysis of global systemically important banks (G-SIBs) shows that financing of forest-risk commodities remains largely unaddressed within risk frameworks.[17] None of the G-SIBs analyzed used an integrated scenario-based risk management process to assess, manage and mitigate exposure to deforestation (nor to water security), underscoring the nascent stage of incorporating nature-related issues in financial risk assessments.

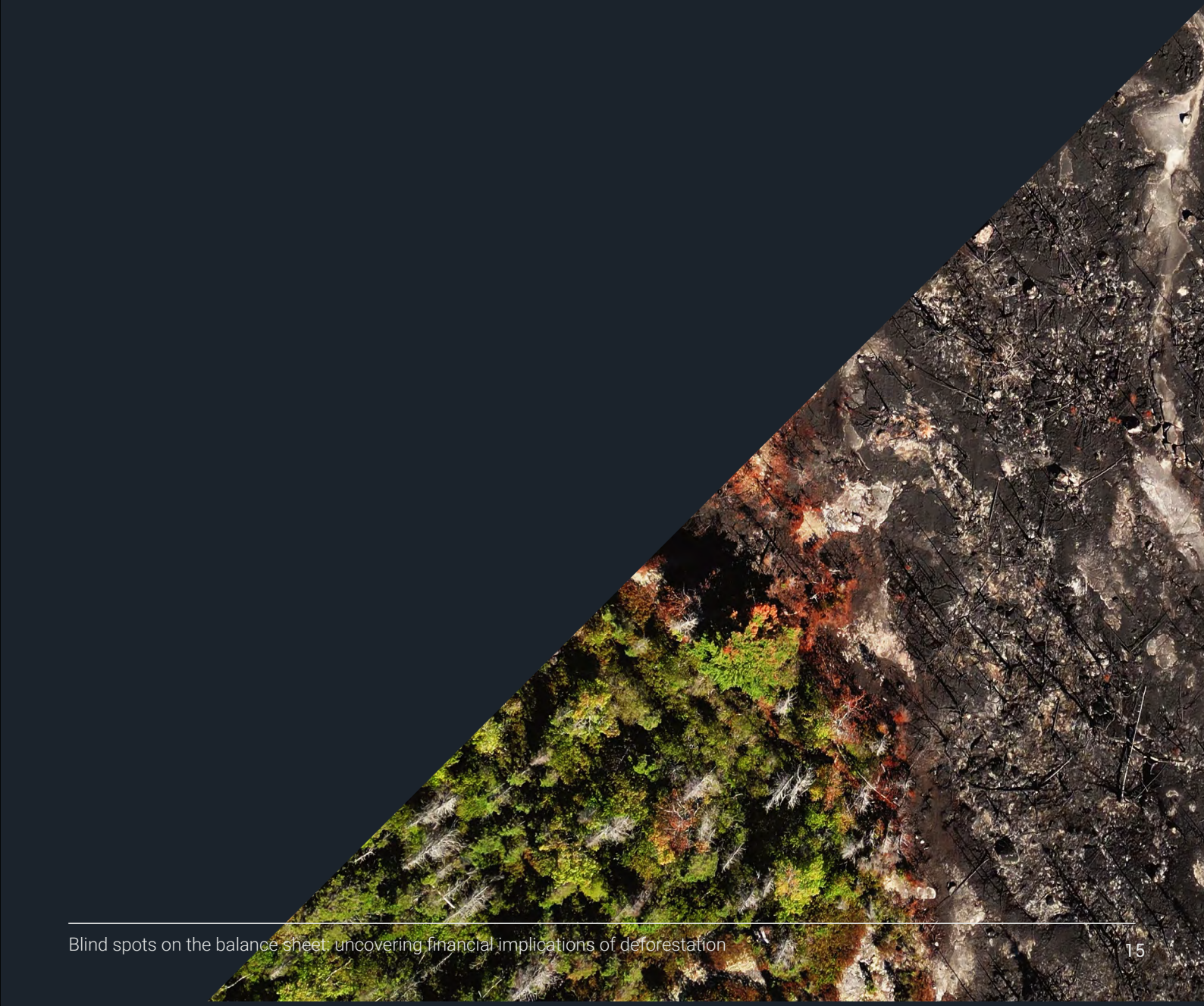
Financial institutions can shine a light on these blind spots by leveraging reported data on commodity volumes and revenue dependence–including company disclosures available through CDP.

Figure 5. Awareness of finance and insurance provision to companies in commodity value chains.



17 WWF & CDP, Addressing the Giants: Integrating Nature in Regulations for Systemically Important Banks

Forest-related risk disclosure



Both real economy companies and financial institutions report on the environmental risks they face through the CDP questionnaire, specifically risks identified as having a substantive effect on their organizations.

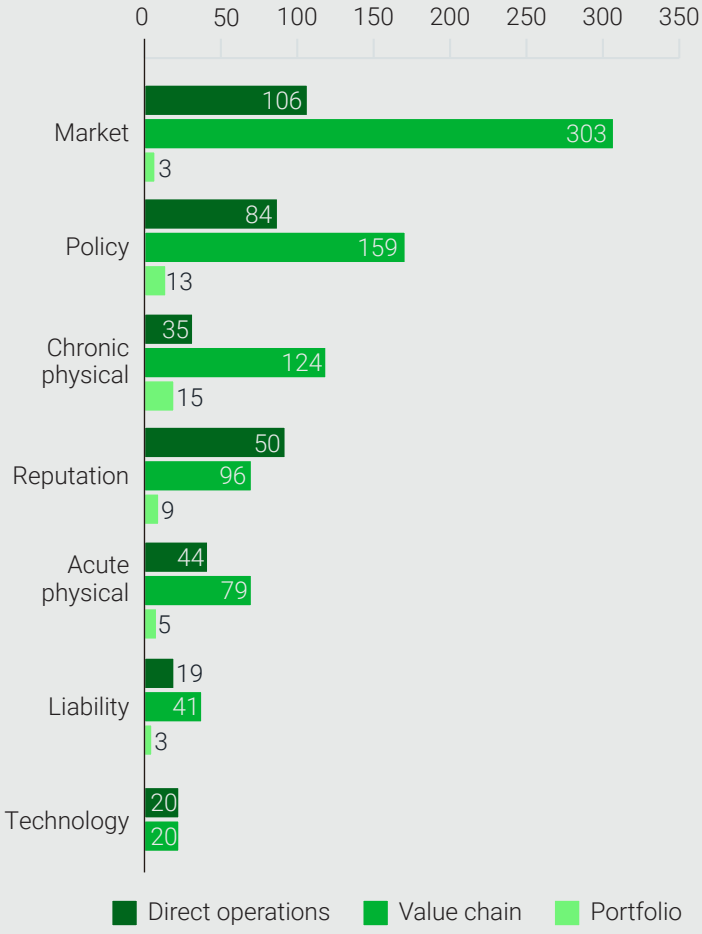
This includes details on current and anticipated risks that relate to forests, i.e. forest-related risks.[18] 1,229 forest-related risks reported in 2024 by 782 real economy companies and 45 financial institutions were analyzed for this report. Considering 1,623 real economy companies reported producing and/or sourcing the commodities of focus, this means just about half of these companies (for which forest-related risks could theoretically materialize) reported no forest-related risks at all. Similarly, compared to the 107 financial institutions that reported providing finance or insurance to companies operating in commodity value chains, over half did not report risks. This could be because said companies determined there to be no substantive risk, perhaps from sourcing very low quantities of commodities or financing few relevant companies. However, this difference between deforestation exposure and risk identification may point to challenges with risk assessment and risk transparency.

Acknowledging the underreporting of risks as a starting point, this section focuses on the companies who did identify and report substantive forest-related risks.

Types of forest-related risks companies and financial institutions face

Reported forest-related risks vary across physical and transition risk types, with about one-third of all risks described as market-based transition risks. The most reported market-based risks speak to the inherent downstream reliance on commodities: lack of availability and/or increased cost of (a) certified sustainable materials and (b) raw materials, as evident in the cocoa price increases previously mentioned.

Figure 6. Frequency of specific forest-related risk types, split by value chain stage where the risk occurs.



18 Companies are asked to report identified risks irrespective of whether those risks have been responded to or accepted. Response and mitigation actions are not within scope of this report but are captured in the CDP questionnaire.

Though only 54 forest-related risks were reported by 45 financial institutions (nearly all portfolio-level), many were reported as credit risk—at least in part reflective of the comparatively better awareness lenders have of their commodity financing activities. However, the underlying picture of (a) few forest-related risks reported by financial institutions and (b) those few risks having been mapped to reputational, policy and legal risk suggests that deforestation is seen more as a public perception issue and remains poorly integrated into financial risk management. Further, the low incidence of systemic risk responses suggests a disconnect between systemic risk drivers and individual financial institution efforts to assess portfolio risk, despite existing evidence that indicates nature is a macro-critical factor.[19] As systemic risk falls within the mandate of central banks and supervisors, addressing this disconnect requires joint action by both financial institutions and financial regulators.[20]

Only

54

forest-related risks were reported by 45 financial institutions.

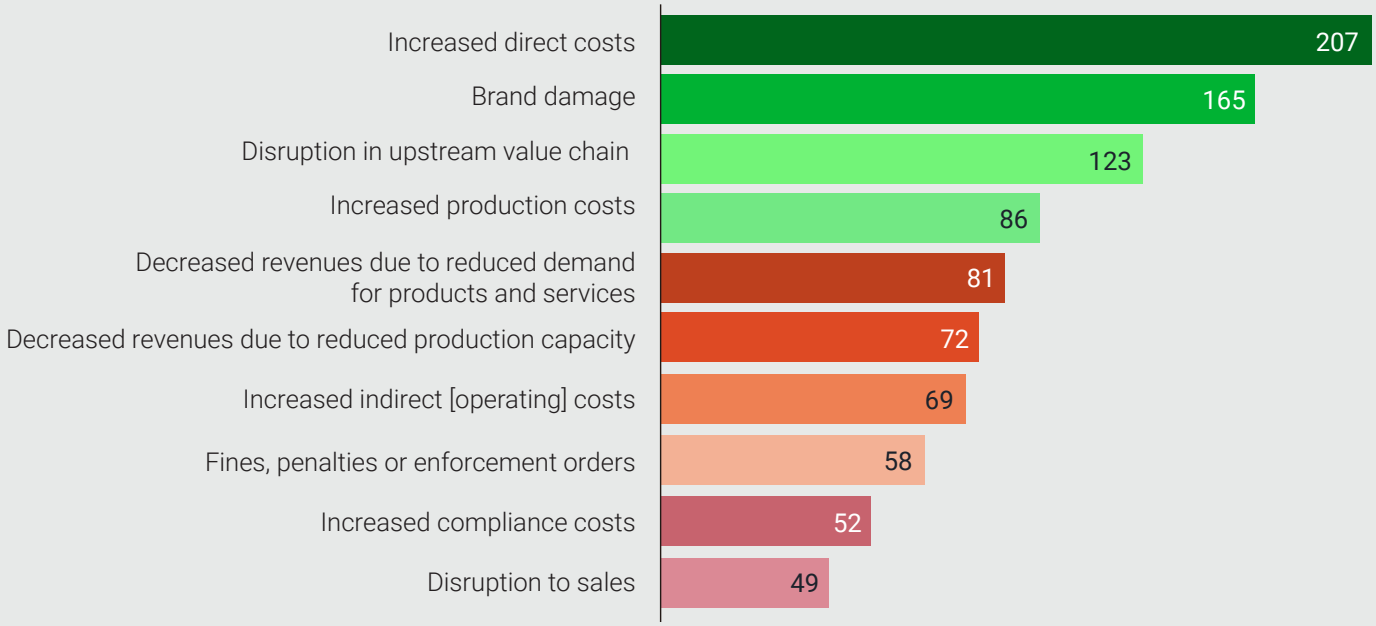
Figure 7. Frequency of traditional financial services risk categories reported by financial institutions.

19 LSE, Overlooking nature is no longer an option for fiscal policy and debt sustainability analyses
20 WWF & CDP, Addressing the Giants: Integrating Nature in Regulations for Systemically Important Banks

The financial effects from risks

Forest-related risks are wide-ranging. For the real economy, financial strains are primarily anticipated in the form of increases in direct costs—a reflection of higher raw material prices, as previously mentioned, and costs of securing deforestation- and conversion-free inputs. Brand damage also features prominently, highlighting the growing reputational risks for companies linked to deforestation. Companies further anticipate disruptions in their upstream value chains and increased production costs, as well as decreased revenues where market access is constrained by changing consumer demand—all tangible financial impacts.

Figure 8. The top 10 primary financial effects from forest-related risks reported by real economy companies.



Yet, even when companies are aware of what forest-related risks may entail, they still struggle to quantify their potential impact. Only about half of reported forest-related risks were quantified. In other words, nearly 500 companies reported anticipating forest-related risks of various kinds but did not provide corresponding financial figures. There is also some variance in ability to quantify risks depending on industry—62% of risks reported by the Materials industry were quantified, compared to only 31% for Financial Services. Food, Beverage, and Agriculture tracks near the overall average, but the rate of risks left unquantified is concerning when considering its incredibly high revenue dependence on just seven commodities. Nevertheless, with the risks that were quantified CDP was able to estimate those that were not.

Figure 9. Percentage of total risks that companies were able and unable to quantify.

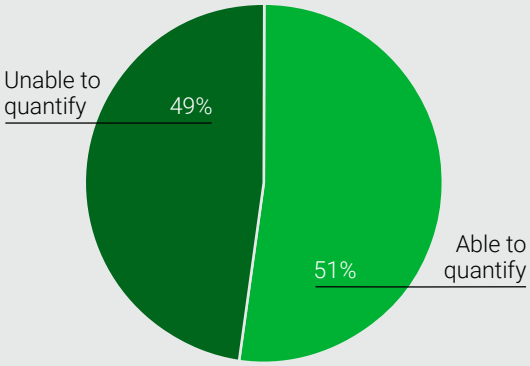
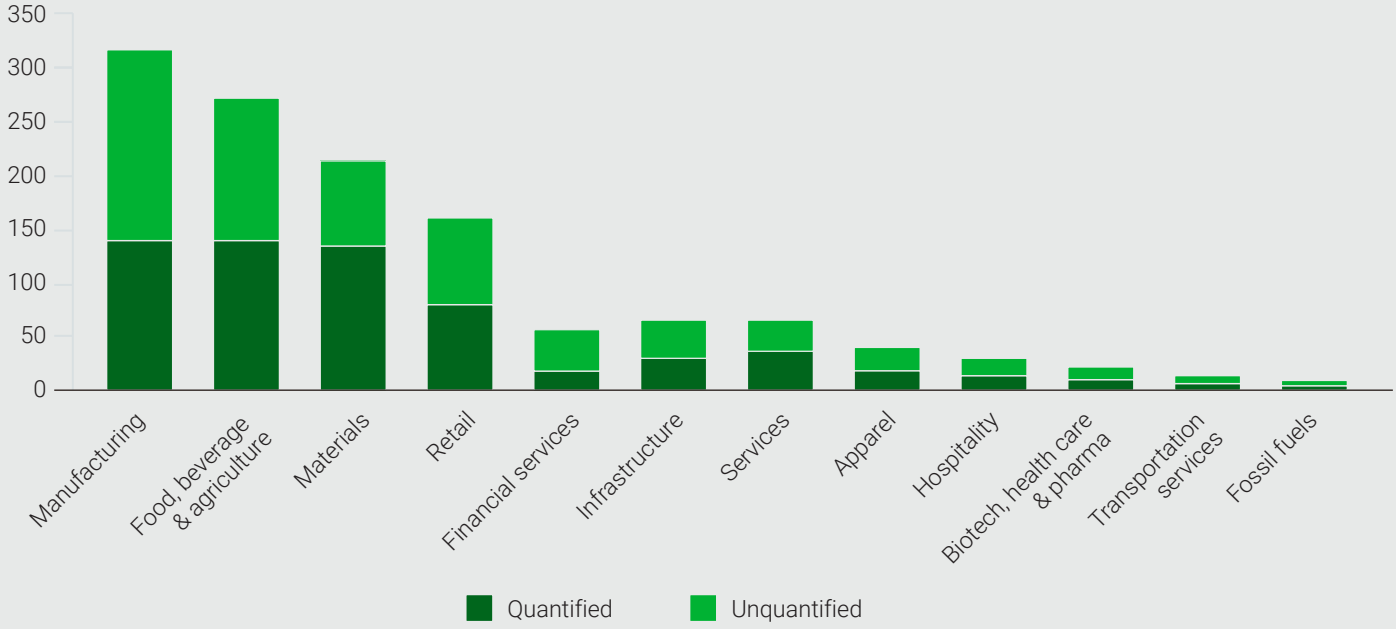


Figure 10: Number of forest-related risks by industry, split by risks that companies were able and unable to quantify.



Financial Risk Disclosure and TNFD Alignment

Transparent disclosure of nature-related financial risks is crucial for understanding how environmental dependencies and impacts affect corporate value. The TNFD core disclosure metrics C7.0, C7.1, and C7.2 aim to bring consistency and comparability to reporting on assets, liabilities, revenue, and expenses exposed to nature-related transition and physical risks. As a TNFD delivery partner, CDP is continuously enhancing its alignment with the TNFD recommendations and already surfaces raw data on these metrics, enabling disclosing organizations and data users to report, analyze, and assess financial exposures linked to nature-related risks.

Filling the financial effect disclosure gap

CDP estimated the missing half of financial effects by assessing the profiles of quantified risks and matching them to similar unquantified risks.

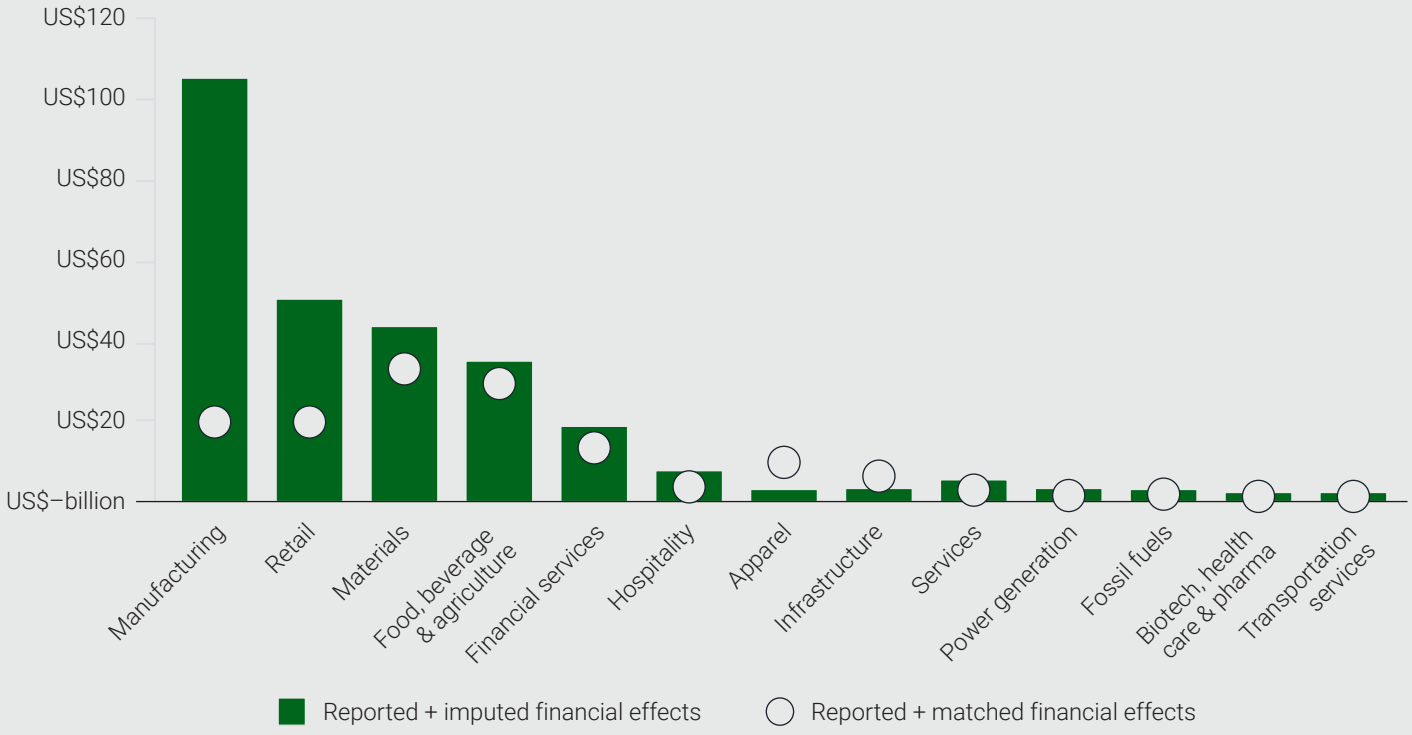
Factors assessed include:

- Company activity group
- Risk type
- Risk time horizon
- Commodities related to risk
- Countries where risk occurs

The reported and estimated figures combined reveal up to **US$279 billion** in potential financial effects from forest-related risks, **3.6x greater than was reported and on average US$338 million per company**.

When considering the reported likelihoods and time horizons in which risks are anticipated to materialize, US$68.8 billion in financial effects are >50% likely to have an effect by 2030.

Figure 11. Financial effects of forest-related risks per CDP industry.



Note: The dots depict totals using the financial effects of 606 quantified risks plus the estimated financial effects of 623 unquantified risks based solely on matched values (e.g., quantified risk A matches to unquantified risk B, therefore the financial effect of unquantified risk B is equal to that of quantified risk A). The bars depict totals in which the matched values are then normalized for company revenue and average time horizon range. Details on the estimation approach can be found in the Appendix.

The industries estimated to experience the most sizeable financial effects from risks include Manufacturing, Retail, Materials, and Food, Beverage and Agriculture, all industries that also reported sizeable revenue dependence on commodities. The greater its revenue dependence, the more vulnerable a company is to physical and transition forest-related risks from regulatory shifts, supply chain disruptions and reputational pressures linked to deforestation. The Financial Services industry is also not far behind with up to US$22.3 billion in estimated financial effects, the majority to impact portfolios.

Overall, companies anticipate most risks to have a financial effect in the medium-term, both in terms of frequency and monetary amount. Generally, companies self-define medium-term to mean 3–5 years from the reporting year (in this case 2023), suggesting many risks could start taking effect as early as next year, not to mention the short-term risks that may be materializing at present.

Many risks could start taking effect in 2026.

Figure 12. Heatmap of financial effects (reported + imputed financial effects) per risk type and time horizon.

	Short-term (median 0-2 years)	Medium-term (median 3-5 years)	Long-term (median 7-25 years)[21]
Acute physical	US$2,417,830,658	US$7,488,042,296	US$31,175,349,137
Chronic physical	US$5,450,705,843	US$8,425,502,052	US$10,360,279,746
Liability	US$16,500,952,778	US$1,113,176,643	US$1,462,021,955
Market	US$46,726,091,627	US$20,292,128,830	US$7,412,321,298
Policy	US$15,280,717,563	US$15,464,939,564	US$2,535,188,388
Reputation	US$3,712,564,303	US$80,249,431,181	US$150,136,560
Technology	US$553,545,458	US$1,171,754,409	US$1,275,253,169

21 The 25-year (median) end of long-term time horizons excludes those defined by companies as open-ended.

Financial effects are most immediate for market risks, in part a reflection of recent volatility in commodity prices.

Policy and liability risk also loom, indicating growing exposure to changing regulations like the EU Deforestation Regulation. Meanwhile, reputational risks peak sharply in the medium-term, suggesting heightened scrutiny from stakeholders as expectations for deforestation- and conversion-free supply chains grow and deadlines for global and corporate commitments fast approach. Companies appear to expect greater regulatory clarity, improved traceability, and stronger sustainability performance across their supply chains that significantly reduces policy and reputational risks in the long-term. Finally, both acute and chronic physical risks—consequences of ongoing deforestation and environmental degradation—become increasingly dominant over time. **Together, these point to company perception of a temporal shift from transition risks to physical risks as time goes on.**

The following examples illustrate both the scale of forest-related risks and the value of bringing them to light.

Industry: Materials

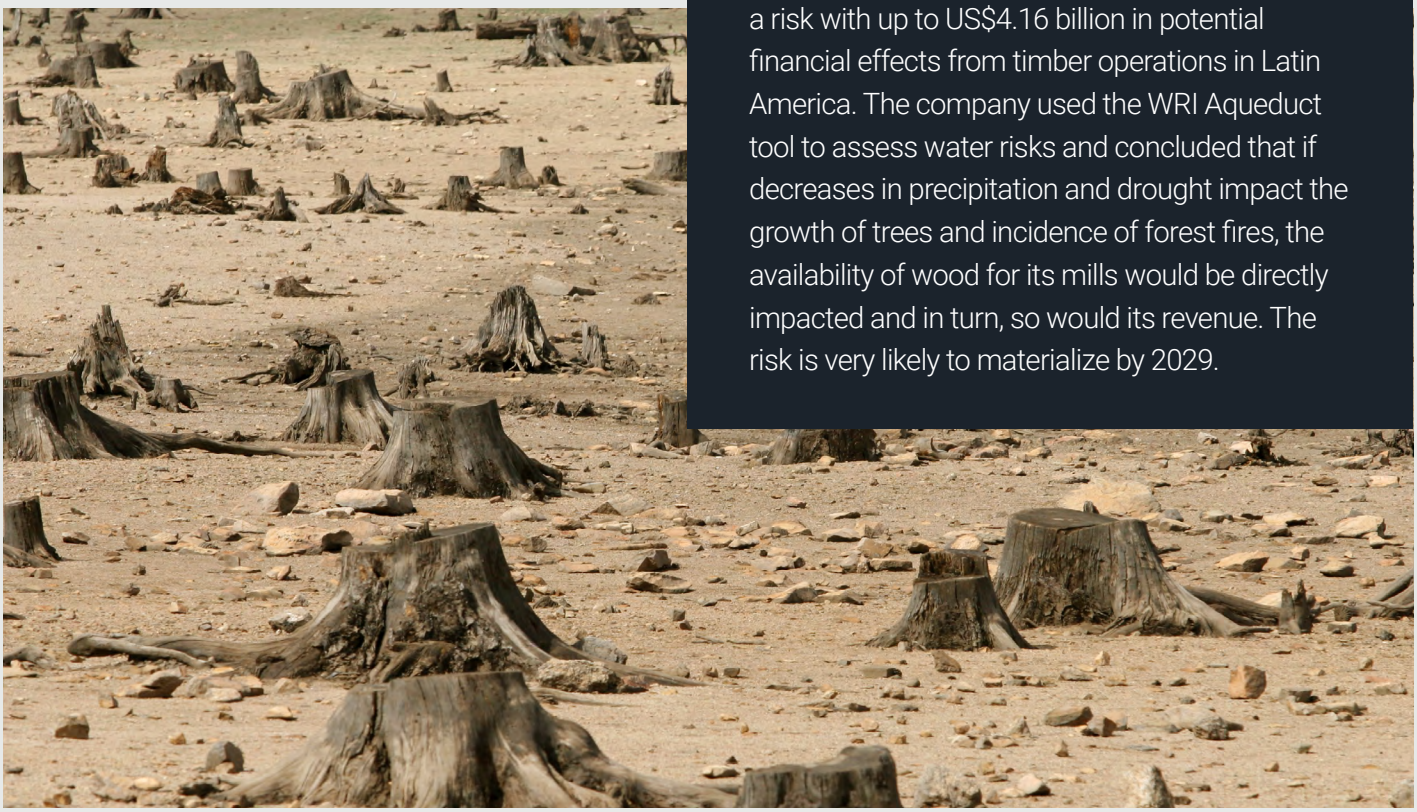
HQ Region: Asia

Risk type and primary environmental driver – Acute physical: Drought

Maximum financial effect: US$4.16 billion

Time horizon: Medium-term

A pulp and paper company based in Asia reported a risk with up to US$4.16 billion in potential financial effects from timber operations in Latin America. The company used the WRI Aqueduct tool to assess water risks and concluded that if decreases in precipitation and drought impact the growth of trees and incidence of forest fires, the availability of wood for its mills would be directly impacted and in turn, so would its revenue. The risk is very likely to materialize by 2029.



Industry:
Food, Beverage, Agriculture

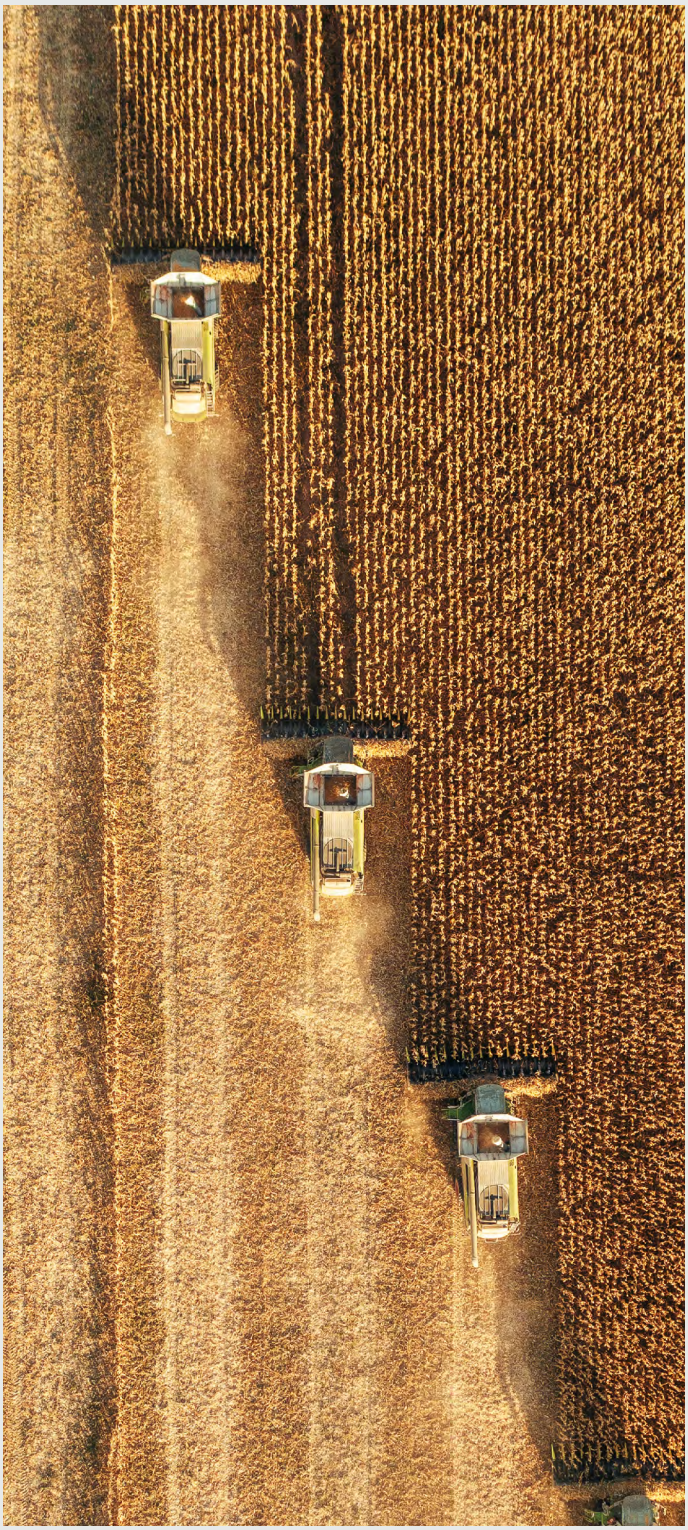
HQ Region: Europe

Risk type and primary environmental driver –
Market: Lack of availability and/or increased cost of certified sustainable material

Maximum financial effect:
US$435 million

Time horizon: Short-term

A chocolate company based in Europe reported a risk with up to $435 million in potential financial effects from sourcing palm oil from various countries. The company has made sustainable sourcing commitments and is increasing its purchasing of RSPO-certified palm oil to help meet them. However, it reports facing challenges with insufficient available supply and anticipates some customers would switch to competitors if they were unable to provide products with sustainability sourced ingredients, which would result in revenue losses. The risk is likely to materialize by 2028.



Conclusion

Since the introduction of CDP's dedicated forests questionnaire, the number of companies disclosing on forest-related issues has steadily increased.

Yet, significant disclosure gaps remain—from high-impact companies that do not yet disclose, to those that identify forest-related risks but stop short of quantifying their potential financial effects. These gaps limit market understanding of the true value at risk from deforestation.

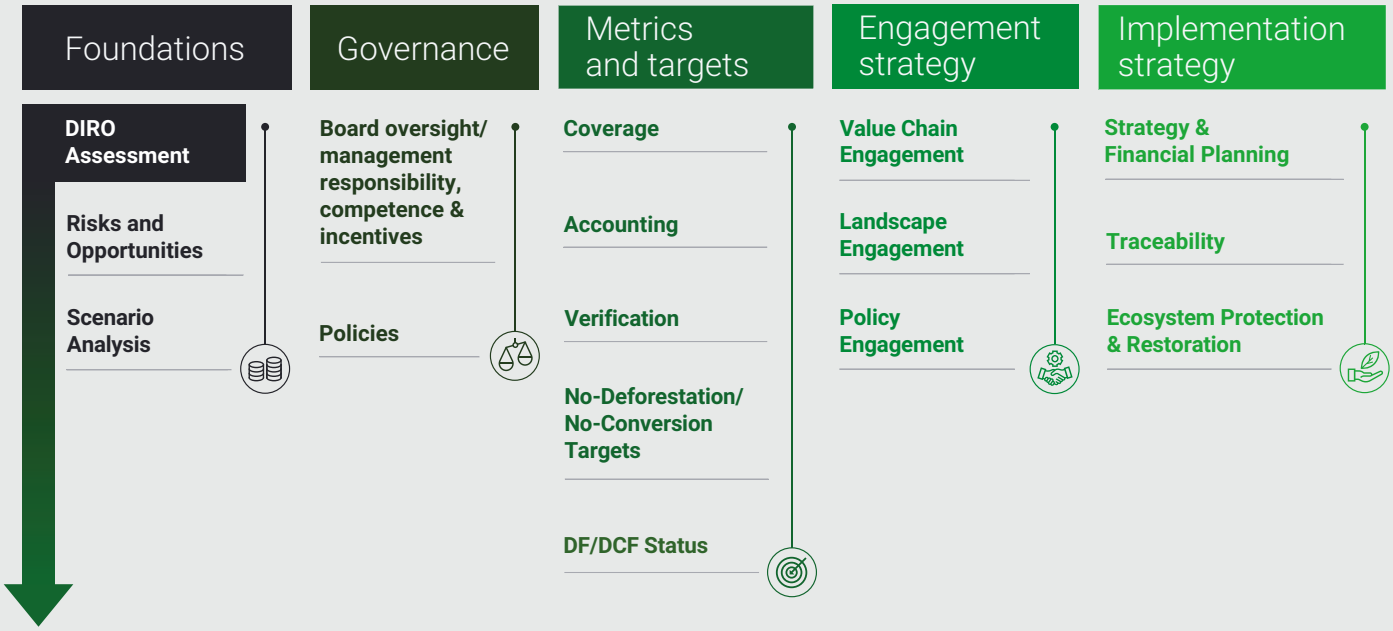
Several factors may explain the underreporting of financial effects: the inherent difficulty in quantifying dynamic risks, data gaps and geographic uncertainties, internal capacity to process environmental with financial data and, in some cases, concerns about commercial sensitivity.

> However, a critical underlying cause appears to be the absence of comprehensive DIRO assessments.

Without robust DIRO processes, such as supply chain mapping and identification of priority sourcing locations, companies only have a partial understanding of how their business models depend on forest ecosystem services, how they impact forests, and what risks and opportunities arise from these interactions. When conducted in line with guidance such as the TNFD LEAP approach, these assessments provide a holistic view of the business–nature interface and enable more accurate risk quantification.[22]

22 TNFD, Guidance on the identification and assessment of nature-related issues: the LEAP approach

As part of its bank of Key Performance Indicators that distill company disclosures, CDP has defined what a comprehensive DIRO assessment looks like for companies in commodity value chains.



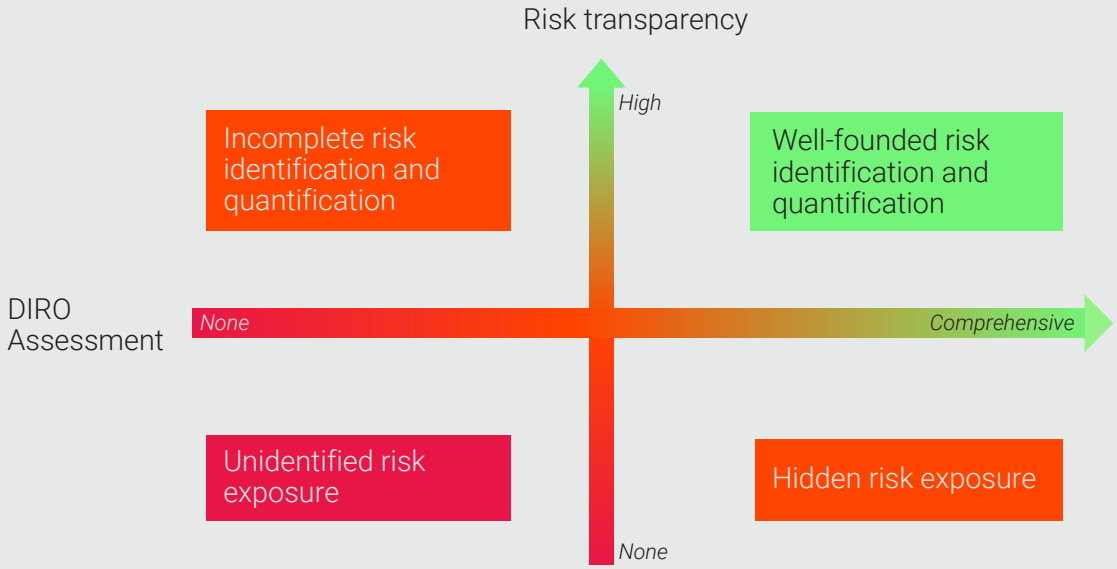
KPI level	CDP Commodity Management KPI – DIRO Assessment	Attainment[23]
Basic	Organization maps its value chain, has a process for identifying, assessing, and managing forest-related risks and opportunities, and identifies priority locations across its value chain	**12%** of real economy organizations reporting forests data
Full	Organization maps its value chain and has a comprehensive process for identifying, assessing, and managing forest-related dependencies, impacts risks and opportunities and identifies priority locations across its value chain. "Comprehensive" means: a. The process covers both direct operations and upstream value chain, and has full coverage of those value chain segments (except for producers) b. Frequency of the assessment occurs at least annually c. Time horizon of the assessment covers short, medium, and long-term d. At least two established tools and methods are used e. All risk types are included in the process f. The process is integrated into multi-disciplinary, organization-wide risk management processes g. Customers, employees, investors, local communities or indigenous peoples, and suppliers are considered h. Assessment includes both quantitative and qualitative elements i. Interconnections between environmental DIROs are assessed	**3%** of real economy organizations reporting forests data

23 n=2458 organizations

Policy incentives must therefore encourage both comprehensive DIRO assessments and high levels of risk transparency.

Without such incentives, the most transparent companies will inaccurately appear to carry higher risks than their peers. Limited risk transparency, when coupled with weak DIRO assessments, conceals risks. This can generate a false sense of low risk, distort the cost of capital, and create conditions for localized or systemic financial instability, especially where similar risk profiles cluster within sectors, commodities, or geographies.

Figure 13. Relationship between risk transparency and DIRO assessment quality



Transparent and well-founded risk disclosure is a key component of effective risk management. It allows policymakers and regulators to identify where market or policy interventions can most effectively reduce risks across value chains. For instance, when companies report challenges sourcing certified commodities, targeted government actions—such as farmer support programs, catalytic capital, or landscape-scale initiatives—can help address underlying supply constraints[24]. Recognizing that corporate responses to nature-related risks are influenced by broader enabling conditions—risk transparency and DIRO assessments, when properly supported and leveraged, can foster coordinated multi-actor action to resolve systemic challenges like commodity-driven deforestation.

Finally, the persistent disconnect between systemic nature-related risk drivers and the risk management practices of individual financial institutions underscores the need for stronger alignment between market participants and regulators. Bridging this gap is not only a matter of institutional capacity, but also of supervisory and policy coordination—ensuring that nature-related risks are addressed consistently across financial and regulatory frameworks.

24 CDP, Meeting Nature Goals: Landscape and Jurisdictional Approaches

Recommendations

The insights in this report have shown that disclosure gaps conceal material risks.

Improving both the breadth and depth of corporate disclosures on forests, particularly regarding assessment of Dependencies, Impacts, Risks, and Opportunities (DIRO) and resulting quantified risks, can improve the decision-useful information available to investors and provide regulators with the data needed to safeguard financial stability. While the nature-related disclosure landscape continues to evolve, existing reported data offers an important and underused resource. It not only supports transparency among leading companies but also highlights where visibility remains limited.

> While the nature-related disclosure landscape continues to evolve, existing reported data offers an important and underused resource.

CDP recommends that financial institutions, regulators, and policymakers take coordinated action across three interconnected fronts:

1

Identification: Encourage comprehensive DIRO assessments that include deforestation.

Robust identification of nature-related risks begins with comprehensive environmental DIRO assessments—particularly those aligned with the TNFD LEAP approach—to ensure companies systematically evaluate how their business models depend on and impact forest ecosystems.

Financial institutions and regulators should promote the widespread adoption of such assessments and encourage companies to address gaps through engagement and stewardship activities. This foundational step enables consistent, comparable data generation on forest- and other nature-related dependencies and impacts, providing the analytical basis for effective risk management.

2

Intervention: Improve transparency on deforestation-related risks and quantified financial impacts.

Building on stronger assessments, companies should disclose the outcomes of their DIRO assessments—specifically, how deforestation and related ecosystem changes translate into material financial risks and opportunities.

Financial institutions should incentivize greater transparency among clients and investees by integrating disclosure performance into financing and investment decisions. Simultaneously, central banks and regulators should reinforce expectations for disclosure of DIRO-derived information, ensuring forest-related risks are incorporated into supervisory reviews.

3

Implementation: Integrate disclosed data into financial decision-making, supervision, and policy design.

Transparency alone is not enough. Comprehensive disclosure data—such as that collected by CDP on commodity volumes, revenue dependence, DIRO assessments, and related risks—should be actively leveraged to guide financial and policy decisions. Financial institutions should use it to map portfolio exposure to deforestation, update internal policies, engage clients, and design products that enable the transition to deforestation- and conversion-free value chains. (Read From Plans to Capital: Unlocking Credible Transition Finance at Scale, for examples of how CDP forests data supports transition finance linked to nature).

Meanwhile, central banks and regulators should integrate nature- and deforestation-related risk assessments into capital adequacy requirements, stress testing, and supervisory expectations, including systemic risk surveillance and portfolio-level analysis.At the policy level, governments can leverage these data to inform national environmental commitments and implementation actions that take a whole-of-economy approach, aligning climate and nature objectives and strengthening the enabling environment for private sector transition. (Read Data as the Catalyst: Powering National Transition Planning Across Climate and Nature Goals).

Appendix: Glossary and estimation approach

Glossary

Environmental dependencies, impacts, risks, and opportunities (DIROs)	In this report, the process through which an organization assesses and identifies its environmental dependencies, impacts, risks, and opportunities (DIROs) is referred to as a DIRO assessment. Adapted from the TNFD, CDP defines DIROs as: Dependencies — aspects of environmental assets and ecosystem services that an organization relies on to function. Impacts — changes in the condition of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Risks — potential threats (effects of uncertainty) posed to an organization that arise from its and wider society's dependencies and impacts on the environment. Opportunities — opportunities generated through impacts and dependencies on nature.
Forest-related risk	Risk reported by a company that is self-identified as relating to forests in question 3.1.1 of the CDP questionnaire.
Quantified risk	Forest-related risk with at least one financial effect reported in the short, medium, and/or long-term.
Unquantified risk	Forest-related risk with no quantified financial effect.
Matched financial effects	The financial effects of quantified risks that were matched to unquantified risks, based on key factors.
Imputed financial effects	The estimated financial effects of unquantified risks, which normalize for company revenue and the average time horizons in question 2.1 of the CDP questionnaire. range of activity group.
Time horizon range	The difference between "To" years and "From" years that companies define for short-, medium-, and long-term time horizons. Averages per activity group are used to normalize values.
Quantified risk ratio	Ratio derived from adjusting a quantified risk for company revenue and average time horizon range of activity group.
Activity group	The middle tier in CDP's three-tiered Activity Classification System which categorizes organizations by focusing on the activities from which they derive revenue and associating these with the effects to their organization regarding climate change, deforestation, and water security.[25]

25 CDP, CDP's Activity Classification System (CDP-ACS)

Estimation approach

1 Adjust risks with quantified financial effects across short, medium, and long-term time horizons, creating a quantified risk ratio for each.

$$\textit{Quantified risk ratio}_{\textit{short-term}} = \frac{\textit{Short term financial effect}}{\textit{Revenue (USD) x Average acitivity group short term}}$$

2 Group quantified risks by 5 key factors: Activity Group, Commodity related to risk, Country where risk occurs, Time horizon, and Risk type.

3 Calculate median quantified risk ratios for each group.

4 Match unquantified risks to groups, using the following hierarchy of match levels:

- **Level 1:** Activity Group, Commodity, Country, Time horizon, Risk type. If no matches,
- **Level 2:** Activity Group, Commodity, Risk type, Time horizon. If no matches,
- **Level 3:** Activity Group, Risk type, Time horizon. If no matches,
- **Level 4:** Activity Group, Risk Type. If no matches,
- **Level 5:** Activity Group. If no matches
- **Level 6:** Overall median

5 Impute unquantified risk values for short, medium, and long-term time horizons.

$$\textit{Imputed financial effect}_{\textit{short-term}} = \textit{Median quantified risk ratio x Company revenue x Average activity group short term}$$

	Number of imputed risks
Level 1	16
Level 2	170
Level 3	136
Level 4	226
Level 5	56
Level 6	19

Limitations:

Due to the specificity and diversity of the forest-related risk information reported, many unique combinations of Activity Group x Commodity x Country x Time horizon x Risk type emerged. This means that most groups of quantified risks only contain one unique risk, and the unquantified risks that match to these groups were imputed using the singular quantified risk value in the group, rather than a median.

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About CDP

CDP is a global non-profit that runs the world's only independent environmental disclosure system. As the founder of environmental reporting, we believe in transparency and the power of data to drive change. Partnering with leaders in enterprise, capital, policy and science, we surface the information needed to enable Earth-positive decisions. We helped more than 24,800 companies and 1,100 cities, states and regions disclose their environmental impacts in 2024. Financial institutions with more than a quarter of the world's institutional assets use CDP data to help inform investment and lending decisions. Aligned with the ISSB's climate standard, IFRS S2, as its foundational baseline, CDP integrates best-practice reporting standards and frameworks in one place. Our team is truly global, united by our shared desire to build a world where people, planet and profit are truly balanced. Visit cdp.net or follow us @CDP to find out more.

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