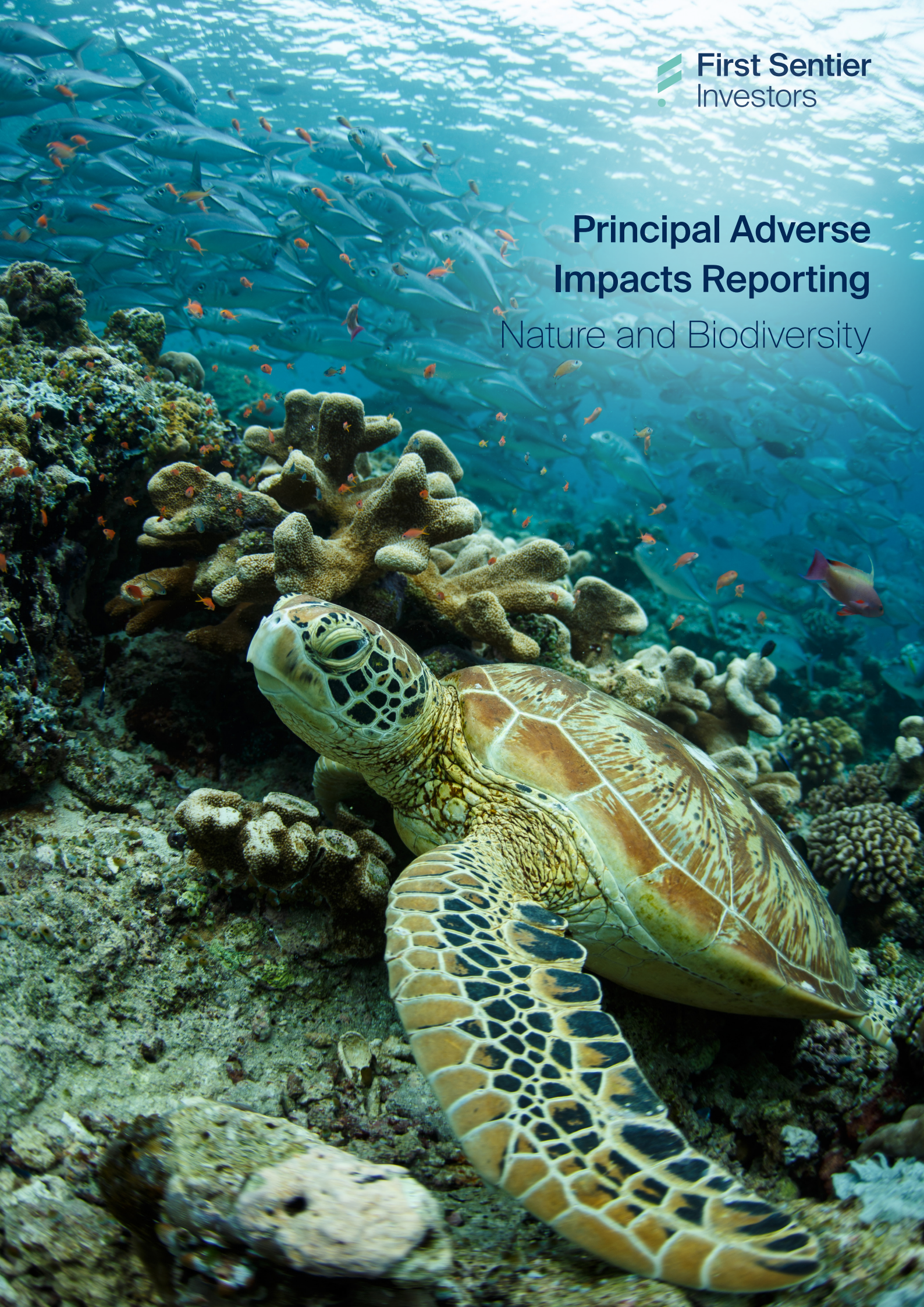


Principal Adverse Impacts Reporting

Nature and Biodiversity

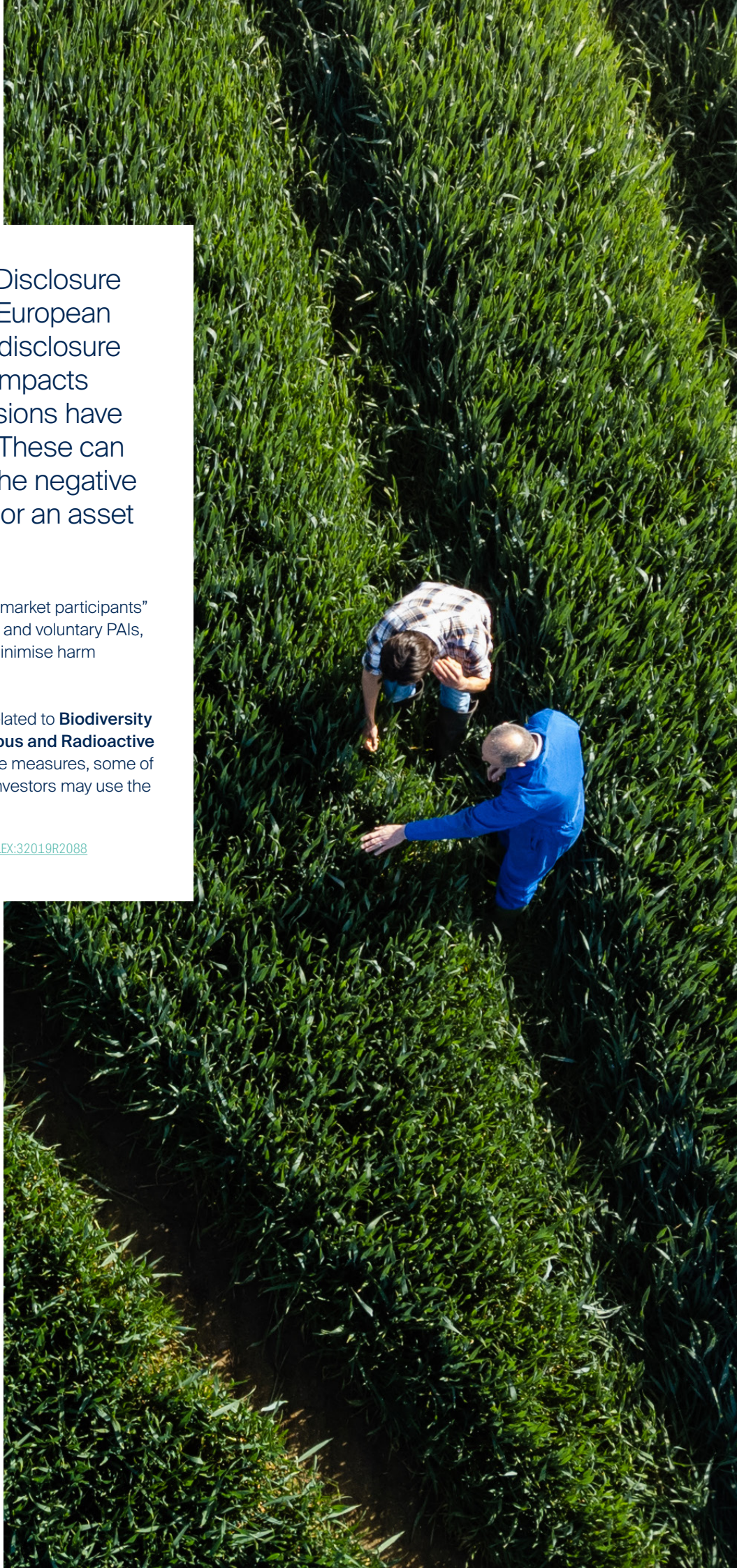


The Sustainable Finance Disclosure Regulation (SFDR) for the European Union (EU) mandates the disclosure of the “Principal Adverse Impacts (PAI) that investment decisions have on sustainability factors”. These can broadly be thought of as the negative impacts caused by a firm or an asset on people and planet.

Asset managers are among the “financial market participants” that need to report on up to 20 mandatory and voluntary PAIs, in order to identify and assess risks and minimise harm associated with their portfolios.

This article focuses on three of the PAIs related to **Biodiversity Areas, Emissions to Water, and Hazardous and Radioactive Waste**. Each PAI provides details about the measures, some of the challenges related to them, and how investors may use the information they provide.

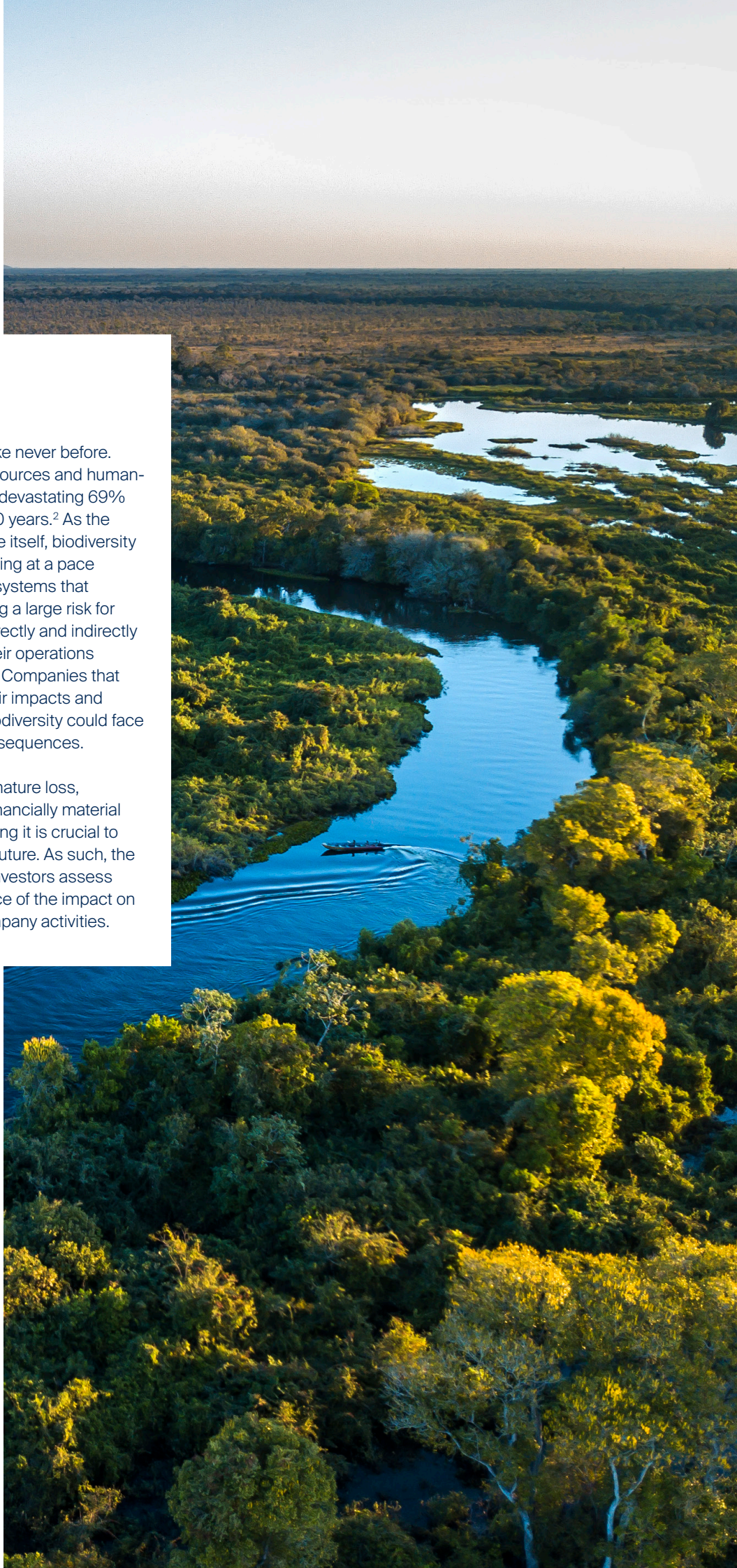
1. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2088>



Introduction

Nature and biodiversity are under threat like never before. Climate change, exploitation of natural resources and human-use of land and sea have contributed to a devastating 69% drop in wildlife populations over the last 50 years.² As the foundation of our economy, society and life itself, biodiversity supports all life on our planet. Yet it is eroding at a pace that is severely damaging the natural ecosystems that provide us food, water and clean air, posing a large risk for investors. Investee companies not only directly and indirectly impact nature and biodiversity through their operations and value chain, they are dependent on it. Companies that fail to adequately identify and manage their impacts and dependencies in relation to nature and biodiversity could face financial, reputational, legal and other consequences.

At First Sentier Investors (FSI), we believe nature loss, pollution and ecosystem degradation is financially material to companies and investors, and addressing it is crucial to achieving a net zero and climate resilient future. As such, the three PAIs referenced in this article help investors assess the impact and understand the significance of the impact on nature and biodiversity resulting from company activities.





Activities Negatively Affecting Biodiversity Areas (PAI 7)

Overview of the Metric

This metric measures the share of investments in investee companies with sites/operations located in or near to biodiversity sensitive areas, where activities of those investee companies negatively affect those areas. Activities negatively affecting biodiversity sensitive areas refer to those activities leading to the deterioration of natural habitats, the habitats of species and disturbance of the species for which a protected area has been designated. Such involvement in biodiversity sensitive areas is captured for each company, and a binary 'Yes/No' answer is provided.

Under the SFDR definition, 'Biodiversity sensitive areas' include protected areas as designated under the European Environment Agency's Common Database on Designated Areas (CDDA), those defined by the Natura 2000 network of protected areas and UNESCO World Heritage Sites and Key Biodiversity Areas.

This metric connects a company's business activities to physical locations. It's not a direct measure of impact but proxy of potential risk of negatively impacting biodiversity. For example, activities such as development of a linear infrastructure system (e.g. railway or roads) or withdrawing a large volume of water for manufacturing in or near locations that are important

for conserving or protecting biodiversity, can lead to the deterioration of natural habitats and disturb the species for which a protected area has been designated.

This indicator is aligned with the Taskforce on Nature-related Financial Disclosure's ("TNFD's") recommended global core sector metrics for financial institutions.

Why are these indicators important?

The threats to nature loss have been rising steadily for decades. This is highly related to large-scale land conversion and industrial activities' encroachment into high conservation value areas. As the importance of protecting, preserving and restoring nature gains momentum, there is an increase in international designations and the business sector's awareness of such locations. This is important because once ecosystems are degraded or disrupted, it is extremely difficult to bring them back to its previous intact state.

Operational sites' proximity to protected areas and key biodiversity areas is a useful proxy to assessing potential negative impacts. Research from RepRisk Geospatial³ (2023) demonstrates a clear correlation between the proximity of extractive projects to environmentally sensitive sites, and a steep

3. <https://www.businesswire.com/news/home/20230502006295/en/Link-Found-Between-Proximity-and-Biodiversity-Risk-%E2%80%93-With-Public-Companies-77-More-Exposed>

increase in potential environmental risk by owner and operator companies. This research shows that extractive projects operating within 1 km of environmentally sensitive sites increases the number of environmental risk incidents by 77% for public companies and 27% for private companies.

Company operations negatively impacting biodiversity face considerable financial risks through possible reputational damage, litigation, compensation claims, shareholder divestment and reduced access to financing. Disclosure of this PAI will provide investors with better information on how companies are involved in activities that could negatively impact nature.

Sectors most exposed to activities that could potentially harm biodiversity in the proximity area include large-scale infrastructure, transportation, mining, fossil fuel energy and construction.

Data availability

Sustainalytics monitors 12,772 entities for involvement in events that have a negative effect on biodiversity sensitive areas. The number of entities flagged under this indicator (as of 03/04/2023) are 201 (1.6% of the universe). This metric is based entirely on estimated data at this stage, by matching spatially explicit incidents and news headlines to sensitive areas defined by the SFDR regulation. As better location-based data becomes available and is used by data providers, this indicator will provide a more reliable indication of associated risk. Many larger European companies are already disclosing this information.

Thresholds

Given the relatively low exposure %, many portfolios may not have any exposure (0%) to this PAI. We advise reviewing any companies that are flagged to have any negative activities in biodiversity sensitive areas. Any thresholds that are set should be regularly reviewed as additional data becomes available.

Engagement

The indicator can assist with identifying adverse impacts on nature and biodiversity and with prioritising companies for engagement.

Engagement questions for companies that are flagged to have activities negatively affecting biodiversity areas could include:

- Does your company have a biodiversity protection policy covering operational sites owned, leased, managed in, or adjacent to, a protected area or an area of high biodiversity value outside protected areas?
- Are you aware of the locations, activities or incidents that are viewed to be negatively affecting biodiversity? If so, do you provide any public disclosure on this in your reports?
- Prior to any developments, do you conduct Environmental Impact Assessment⁴ which includes assessment on potential impacts on nature and biodiversity?
- Prior to any developments, do you consider Biodiversity Mitigation Hierarchy⁵ (Avoid – Mitigate – Restore – Offset), and how are they applying this in decision making process of designing and developing projects?
- For any known incidents that have led to the deterioration of natural habitats or species, what actions have you taken to mitigate and restore negative impacts on nature?

4. A document or a process of identifying, predicting, evaluating and mitigating the environmental, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

5. Mitigation hierarchy is a simplified ordering of project planning to minimize harm on nature. The order implies that biodiversity offsets should only be applied to the residual project specific impacts on biodiversity after appropriate efforts have been made first to avoid adverse impacts to biodiversity, then to minimise the unavoidable impacts, and finally to restore biodiversity on-site at the conclusion of a project.

Emissions to Water (PAI 8)

Overview of the Metric

The Emissions to Water metric measures tonnes of pollutants (emissions) released to water by investee companies per million EUR invested, expressed as a weighted average. This metric tells an investor the amount of pollutants discharged into water bodies and is measured in tonnes of pollutants.

The following pollutants are considered for the purpose of this metric: direct nitrates, direct phosphate emissions, direct pesticides emissions, direct emissions of priority substances (i.e. heavy metals, loads of organic pollutant parameters such as biochemical oxygen demand (BOD) and chemical oxygen demand (COD), nitrogen and phosphorus compounds, soluble or inorganic salts, and suspended solids).

This indicator identifies companies which cause significant adverse impacts to freshwater and marine ecosystems via various pollutants. Important considerations to be aware of include:

- the metric does not refer to whether emissions are near natural water bodies or not, but considers emissions to water in general;
- whether the emissions were treated previously is generally not part of the consideration; and;
- the metric captures discharges from companies involved in wastewater treatment.

This metric is also reflected in TNFD's core global disclosure metrics. The fact that it is aligned with the TNFD's disclosure metrics makes disclosing these indicators more efficient.

Why are these indicators important? Emissions to Water is an important indicator as it is an 'impact' indicator, meaning that once they are emitted or discharged, the pollutants cannot be captured back and they have a high chance of entering river and oceans. It is also an important indicator to measure companies' impacts on nature in quantitative way and particularly important for companies involved in sectors that typically generate more pollutants as part of their business operations.

Therefore, this metric would mostly apply to sectors with heavy pollutants usage such as chemicals, pharmaceuticals, materials and agriculture.

Companies that don't properly address these pollutants face the risk of financial and reputational damage.

Data availability

As of April 2024, there is still very low reported company data, with only 0.3% of Sustainalytics' coverage. Importantly, Sustainalytics does not use estimation for this metric, and, thus, only has data for 44 entities disclosing this information (out of 12,772 entities in the universe).

Where reported data is available it tends to be for large cap companies in sectors such as Pharmaceuticals, Automobile Manufacturers, Personal Care Products, Industrial Conglomerates, and Semiconductors.

Thresholds

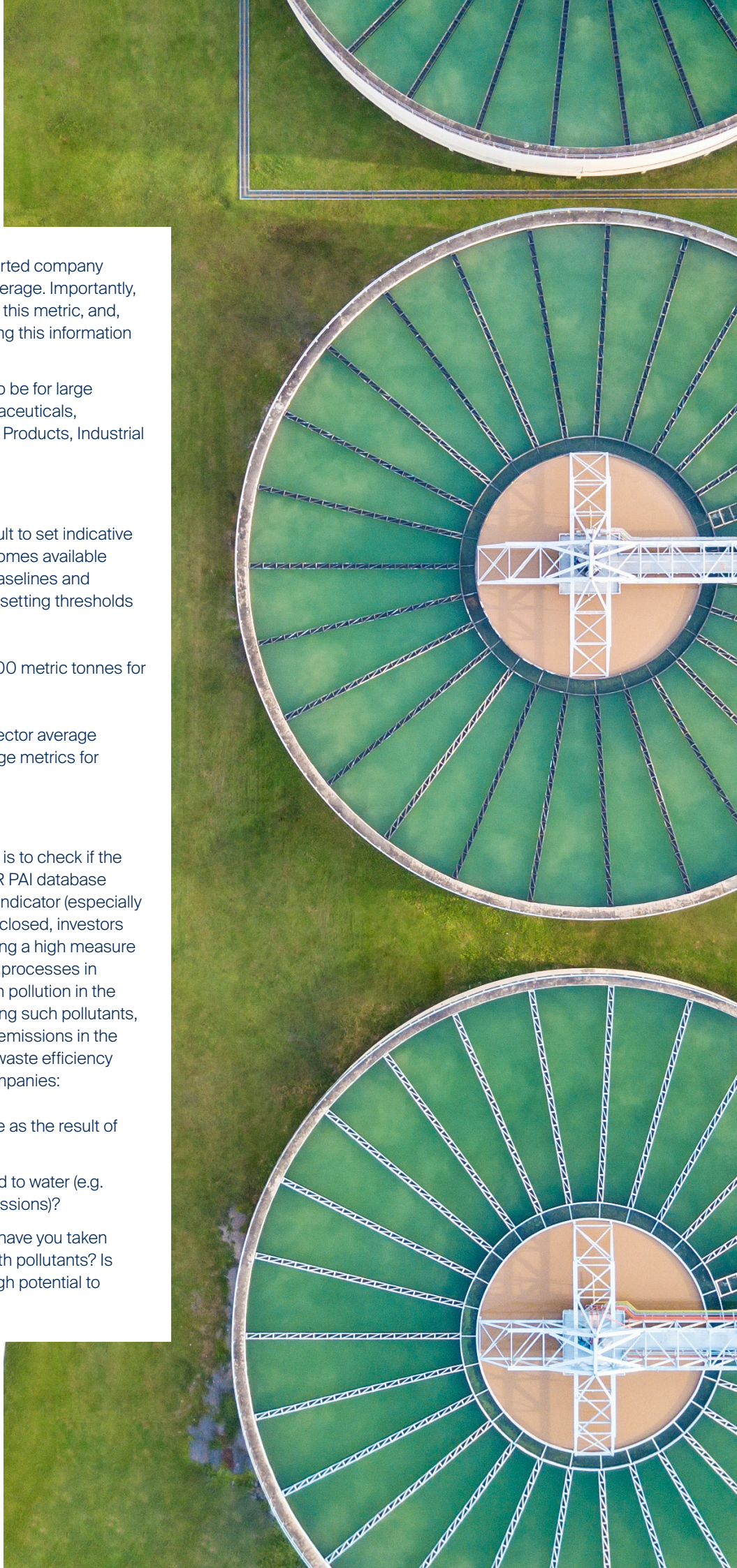
Due to the lack of available data, it is difficult to set indicative thresholds for now, but, as more data becomes available there will be more information on sector baselines and effective mitigation examples. Options for setting thresholds at company level could include:

- Flagging companies with more than 10,000 metric tonnes for further investigation; and/or
- Comparing the company's data with its sector average and flagging companies with above average metrics for further investigation.

Engagement

A good starting point prior to engagement is to check if the amounts have been disclosed in the SFDR PAI database first, and, if not, to seek disclosure on this indicator (especially in the aforementioned sectors). Where disclosed, investors should expect companies flagged as having a high measure of emissions to water to have remediation processes in place, as well as measures to reduce such pollution in the future. Instead of initially focusing on treating such pollutants, companies should focus on reducing the emissions in the first place through use of better data and waste efficiency measures. Engagement questions for companies:

- How much wastewater do you generate as the result of your business activities?
- What types of pollutants are discharged to water (e.g. nitrates, phosphates, or pesticides emissions)?
- What reduction and mitigation actions have you taken to reduce the amount of wastewater with pollutants? Is there a particular process that has a high potential to reduce emissions?





Hazardous Waste and Radioactive Waste Ratio (PAI 9)

Overview of the Metric

This metric measures tonnes of hazardous waste and radioactive waste generated by investee companies per million EUR invested expressed as a weighted average. This indicator identifies companies which cause significant adverse impacts via hazardous and radioactive waste.

Radioactive waste is generated as a by-product of producing or using radioactive materials and includes any material that is either intrinsically radioactive, or has been contaminated by radioactivity, and that is deemed to have no further use. Government policy dictates whether certain materials – such as used nuclear fuel and plutonium – are categorized as waste. Management of radioactive waste involves isolation or dilution such that the rate or concentration of any radionuclides returned to the biosphere is harmless. The international consensus is that geological disposal is the safest option⁶.

The EU definition of hazardous waste is as the following:

Hazardous waste is waste with one or more of the hazardous properties listed in Annex III of the EU's Waste Framework Directive, Directive 2008/98/EC on waste⁷. These hazardous properties are:

Explosive	waste which can, by chemical reaction, produce gas at such a temperature, pressure and speed as to cause damage to the surroundings. This includes pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste
Oxidising	waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials
Flammable	waste that could easily set on fire
Irritant	skin irritation and eye damage — waste which on contact can cause skin irritation or damage to the eye
Specific target organ toxicity (STOT)/Aspiration toxicity	waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following inhalation
Acute toxicity	waste which can cause acute toxic effects if swallowed, on skin contact or inhalation;
Carcinogenic	waste which induces cancer or increases its incidence
Corrosive	waste which on contact can cause skin corrosion

6. <https://world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/international-nuclear-waste-disposal-concepts.aspx>

7. <https://eur-lex.europa.eu/EN/legal-content/glossary/hazardous-waste.html>

Infectious	waste containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in humans or other living organisms
Toxic for reproduction	waste which has adverse effects on sexual function and fertility in adults and developmental toxicity in their offspring
Mutagenic	waste which may cause a mutation — a permanent change in the amount or structure of the genetic material in a cell
Release of an acute toxic gas	waste which releases acute toxic gases in contact with water or an acid;
Sensitising	waste which contains one or more substances known to cause sensitising effects to the skin or the respiratory organs
Ecotoxic	waste which presents or may present immediate or delayed risks for one or more sectors of the environment
Other	waste which could have a hazardous property listed above not directly displayed by the original waste

Hazardous waste and radioactive waste metric are reflected in TNFD's core global disclosure metrics. The fact that it is aligned with the TNFD's disclosure metrics makes disclosing these indicators more efficient.

Why are these indicators important?

This metric is important due to the nature of waste being hazardous and/or radioactive. Such hazardous and radioactive wastes are usually immobilised and captured in containers to prevent leakage. Due to the danger associated with such wastes, countries have strict regulations for appropriate handling, storage, transportation, and disposal. If not handled appropriately, accidents can occur which can be devastating to the company, its employees, local communities, nature and ultimately investors. Companies may face severe regulatory, reputational, financial and legal risk.

The top three industry sectors that generated the most hazardous waste in 2019 were, **Basic Chemical Manufacturing, Petroleum and Coal Products Manufacturing, and Waste Treatment and Disposal sectors**⁸. Additionally, the **semiconductor industry** also produces a significant amount of hazardous waste during the production stages of semiconductor chips.

Radioactive waste is typically generated by companies in **mining (such as uranium or plutonium), nuclear power generation, defence, medicine, and certain types of scientific research.**

Data availability

Sustainalytics research covers 12,772 entities for disclosure of their hazardous waste and as of April 2024, 11,365 of these have data (89.0%). Of these data points, 8,066 entities' data are estimated.

Thresholds

Due to low coverage of reported data and limited applicability of this metric to sectors, FSI has not established thresholds for this indicator at this stage. If there is a company producing more than 100,000 tonnes of hazardous waste per year, we suggest flagging it for further investigation and engagement. Over time, disclosure of this data is likely to improve.

Investors could also consider comparing the company's data with its sector average, although this may not lead to precise comparison due to company's different business practices and production. At this stage, investors can prioritise companies with the highest exposure to material sectors and check on the quality and robustness of disclosure.

Engagement

When checking for hazardous and radioactive waste data in material sectors, investors should be monitoring the total amounts, how they are affected by production (intensity-level) and what companies are doing to manage, prevent, treat and discharge them. Where a company is in a material sector and not disclosing the waste amount this should be the first point in engagement.

A company's response to this issue is often closely linked to local regulations and rules, so, whilst a company might be flagged as a high emitter, it may well be operating within the regulatory limits in its jurisdiction.

Engagement questions:

- What is the weight of hazardous and non-hazardous waste (tonnes), and how much of it is reused/recycled, incinerated, sent to landfill or any other methods of treatment?
- How do you treat toxicity or any hazardous components of your waste?
- What reduction and mitigation actions have you taken to reduce the amount of such wastes? Is there a particular process that has high potential to reduce emissions?
- Is there a threshold amount (or standard) required in your jurisdiction, what is it and how is your company's waste amount compared to the standard?

8. US Environmental Protection Agency <https://rcrapublic.epa.gov/rcra-public-web/action/posts/2>

Issues and challenges

One of the main challenges with these indicators is that many data points are based on estimation. As more companies start reporting on these metrics, there may be a large variance year on year (e.g. one year based on estimation followed by a more accurate reported figure the next year). Such fluctuating trends can be challenging for investors to understand companies' practices and performance accurately.

Regulations regarding both managing and monitoring emissions to water and hazardous waste are generally well established in many global jurisdictions. This has led to improvements in emissions to water and greatly contributed to making rivers, lakes, groundwater and seas cleaner compared to regions without such strict regulations. In the EU, waste-water management and treatment is regulated through the Urban Waste-Water treatment directive⁹ which was amended in 2022. The amended rules included introducing extended producer responsibility, based on the principle that the 'polluter pays', and, additionally, further requirements for monitoring of harmful substances such as microplastics and PFAS chemicals (per and polyfluoroalkyl substances). Similarly, Australian laws require firms to comply with the Environmental Protection Regulations 2021 when managing industrial waste.

Whilst the above regulations have supported corporate disclosure for specific sectors, broader mandatory disclosure of biodiversity-related data and non-GHG based emissions data remains a challenge. Whilst the gap is closing, we continue to see push back on disclosure of broader sustainability-

related data beyond GHG emissions. For example, in the EU, late and intensive corporate lobbying pressured the European Commission (EC) to roll back on including mandatory Biodiversity transition plans in the final text of the European Sustainability Reporting Standards (ESRSs). The decision was in direct conflict with the final recommendations of the EC appointed EFRAG (the body tasked with drafting the standards) and the consultation response of the European Platform on Sustainable Finance¹⁰. In defending the change, the EC cited the cost burden on companies to report transition plans. Such backtracking risks successfully achieving the 2030 and 2050 goals and targets of the COP15 Kunming-Montreal Biodiversity Global Framework.

Conclusion

Activities Negatively Affecting Biodiversity Areas (PAI 7), Emissions to Water (PAI 8), and Hazardous Waste and Radioactive Waste Ratio (PAI 9) can provide useful information on how companies potentially impact nature. Although data availability and company coverage by data providers is quite low, this is expected to improve over time as more regulations emerge to address nature loss and as more companies and investors start to disclose higher quality information on the PAIs. The inclusion of these 3 metrics as PAIs enables comparison across different funds as they are shown as either a percentage of total investment or a weighted average based on invested amount. Through conducting due diligence and engagement with companies, investors will develop a better understanding of a portfolio's negative impacts on nature.

9. [Wastewater treatment - Consilium \(europa.eu\)](https://eur-lex.europa.eu/eli/dir/91/1998/oj)

10. [Platform Response to the Call for feedback on draft ESRS delegated act \(July 2023\)](#)



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