Tackling greenwashing through data assurance

Open Data Institute

Contents

About

This draft report has been researched and produced by the Open Data Institute, and published in June 2022. Its lead authors are Matt Davies and Lucas Stiglich, with contributions from Deborah Yates, Milly Zimeta, Annalisa Eichholzer and Mahad Alassow.

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How can it be improved? We welcome suggestions from the community in the comments.

Executive summary

Averting the worst impacts of climate change requires organisations in every sector to shift investment away from harmful activities and towards projects which support the transition to net zero carbon. To facilitate this shift, an ecosystem of **green finance** firms has sprung up, offering services related to reporting the environmental performance of sectors, companies and their activities.

These organisations, which range from data providers and vendors to environmental, social and governance (ESG) investment funds, indexes and ratings agencies, are fundamentally data businesses. The way they create impact can be understood in terms of the Open Data Institute's (ODI's) established concept of the 'data value chain':

- **Data stewardship:** companies and data providers steward environmental performance data: collecting it, maintaining it and sharing it.
- **Insight creation:** companies, asset owners and financial organisations create information from this data in the form of analyses, insights, and visualisations, which are disclosed to investors.
- **Decision-making:** investors (both institutional and retail) make decisions about how to invest on the basis of this information and other factors.

However, the integrity of this process is threatened by **greenwashing**: 'the practice of businesses or investment funds making misleading or unsubstantiated claims about their environmental performance'. This threat, over time, risks discrediting the green finance agenda entirely and jeopardising the transition to net zero carbon.

At the ODI, we believe that the wider adoption of data assurance practices – which we define as 'the process, or set of processes, that increase confidence that data will meet a specific need, and that organisations collecting, accessing, using and sharing data are doing so in trustworthy ways' – could help tackle greenwashing, and build trust in environmental performance data, by delivering the below:

- **Consistency of,** and **compliance with,** metrics, standards and ratings, reducing the ability of organisations to 'shop around' to find indicators that are more favourable to them.
- **Transparency** about how data is being used to produce insights into environmental performance and make decisions about capital allocation based on these insights.
- **Accountability** to external stakeholders, preventing organisations from 'marking their own homework' on their environmental performance.

Firms offering data assurance products and services are being created at a rate of nearly 12% per annum, and we expect to see continued growth in the years to come, as more organisations grapple with demand for data and the need to build confidence in that data with customers, shareholders and the public. This includes products and services focused on assurance of environmental performance data, which are increasingly offered by traditional professional services firms as well as new entrants into the sector.

Current initiatives tend to focus on the first stage of the green finance data value chain (data stewardship) and particularly on the *validity* of the data used for disclosure, with some also focusing on *transparency* and *data sharing*. Comparatively few companies are focusing on assurance of data and data practices at the second (insight creation) and third (decision-making) stages of the green finance data value chain, or on attributes beyond the provenance and quality of data.

We think that different assurance activities are essential at each stage of the green finance data value chain, for example by:

- at the *data stewardship* stage, helping to ensure that the right data is collected and shared, and that its collection and reporting follows appropriate standards
- at the *insight creation* stage, helping to ensure that organisational processes for reporting are compliant with legal and regulatory requirements, and are comparable across different companies and investment products
- at the *decision-making* stage, ensuring that decision-making and accountability processes adequately take into account and respond to the information created from data.

The year 2022 is likely to be a pivotal year for the green finance agenda, as new requirements for disclosure of environmental performance will come into force around the world. We have identified three areas that will require further investigation and intervention from policymakers in order to embed data assurance practices in green finance and help the sector realise its full potential:

- **Laying the foundations for the assurance of data for green finance**, by working on developing clear definitions and standards, as well as ensuring that the organisations evaluating environmental performance are trusted by the general public.
- **Driving and directing the growth of the assurance sector**, by taking steps to stimulate demand for data assurance services, ensuring quality of the services provided, and assessing the additional costs and benefits introduced by embedding assurance of data in green finance.
- **Future proofing the assurance of data for green finance** by addressing emerging challenges and opportunities such as the prevalence of missing data for disclosure requirements, the increasing use of alternative data sources, the need for assurance of artificial intelligence systems, and the emergence of data institutions that steward environmental performance data.

Introduction

We are living through what is increasingly being termed a climate emergency – by scientists, activists, politicians and business people alike. According to reports from the United Nations Intergovernmental Panel on Climate Change, levels of global greenhouse gas (GHG) emissions must peak by 2025 if we are to avert the worst impacts of global heating.

Countries across the world have committed to legally binding carbon emission reduction targets at a series of international summits – most recently the Paris Agreement and COP26. In 2019, the UK became the first major economy to commit in law to net zero greenhouse gas emissions by 2050. Meeting these targets will require organisations in every sector to shift investment away from polluting activities and towards projects which support the transition to a net zero economy.

Investors and consumers increasingly expect their money to support these environmental objectives, with the Financial Conduct Authority's (FCA) most recent Financial Lives survey finding that 71% of UK retail investors want to 'invest in a way that is protecting the environment'. To meet this need, an ecosystem of firms has sprung up offering services related to the reporting of environmental performance; from providers of data about climate-related impacts, to indices and ratings of environmental, social and governance (ESG) performance.

The market for green finance-related services – including ratings, data and verification – is a relatively new one, but it is fast-growing, with Optimas estimating that the market for green finance and related services was worth $1bn by the end of 2021 and predicting annual growth rates of more than 20% in the coming years.

While the green finance sector continues to grow, its integrity is threatened by **greenwashing**: defined in the UK government's Green Finance Roadmap as 'the practice of businesses or investment funds making misleading or unsubstantiated claims about their environmental performance'. Reports in both the mainstream and financial press have highlighted instances of environmental performance being exaggerated or misrepresented, while 60% of the respondents to the 2021 Schroders Institutional Investor Study cited it as a major concern; more than any other issue.

By diminishing consumer, investor and policymaker trust in the reporting of environmental performance, greenwashing threatens to discredit the green finance agenda entirely: Erik Thedéen, chair of the sustainable finance task force at the International Organization of Securities Commissions (Iosco), has argued that 'greenwashing could damage the credibility of the green finance movement, endangering the work to limit the rise in global temperatures to 1.5°C.'

At the ODI, we believe that data assurance – 'the process, or set of processes, that increase confidence that data will meet a specific need, and that organisations collecting, accessing, using and sharing data are doing so in trustworthy ways' – can help to tackle greenwashing. By improving transparency, accountability and consistency across the sector, data assurance can improve both trust in, and the trustworthiness of, environmental performance data and help ensure the green finance agenda succeeds.

This draft (open for comment) report gives an overview of the role that data plays in the green finance system **(Chapter 1)**; explores what data assurance for green finance looks like **(Chapter 2)**; and suggests some areas that will require further investigation and intervention if data assurance is to be embedded in green finance **(Chapter 3)**.

Chapter 1: Data for green finance

Having the right data on the environmental risks and impacts of companies will be essential if we are to make finance 'green'. This chapter gives an overview of the role that data plays in the green finance system and explores some of the structural factors which drive greenwashing.

From data to decision-making

The term **green finance** refers to two separate, but overlapping, trends within the finance sector. The first of these might be referred to as 'greening finance': a movement to encourage investors to cease investment in companies and investment products which adversely impact the environment, thereby withdrawing funding from environmentally harmful activities and so indirectly supporting the transition to a net zero economy. The second might be termed 'financing green', and can be understood as efforts to actively direct investment towards companies and investment products that are contributing to the transition to a net zero economy.

Green finance, in short, is about making investment decisions that, at worst, don't adversely impact the environment – and at best improve it. Meeting these aims requires investors to have access to new sources of information to inform their decision-making. While previously decisions about where to allocate capital may have rested on a narrow set of metrics related to a company's financial performance, green finance instead requires that they are made on the basis of a wider range of considerations related to environmental performance.

The need to provide investors with this information is why data on environmental performance (hereafter referred to as **environmental performance data**) is so fundamental to green finance. The ODI's theory of change sets out how three activities create impact from data:

- **Data stewardship** – collecting it, maintaining it and sharing it.
- **Insight creation –** creating information from that data in the form of products and services, analyses and insights, or stories and visualisations.
- **Decision-making –** deciding what to do, informed by information from multiple sources along with experience and understanding.

Each of these activities can be carried out by individuals, companies, communities and governments. In the context of green finance, investors need to have access to relevant information on the environmental performance of the companies and products they are choosing to invest in or divest from in order to make decisions. This information, in turn, will need to be underpinned by accurate, high-quality data – in most cases, combinations of data from multiple sources.

Applying the ODI's theory of change to the green finance data value chain, the process by which data creates value, can help clarify this complex space, and can be summed up as follows:

- Companies and data providers **steward data** on environmental risks: collecting it, maintaining it and sharing it
- Companies, asset owners and financial organisations **create insight** from this data, which is disclosed to investors.
- Investors (both institutional and retail) **make decisions** about how to invest on the basis of this information and other factors.

Data needs for green finance

To arrive at some indicative examples of data for green finance, the following questions can be asked, starting with the decision-making stage and moving backwards along the green finance data value chain:

1. **What decisions need to be made?** Decisions need to be made about how to manage three factors: transition risks, physical risks and externalities (see Table 1).
2. **What information is needed to make these decisions?** This is determined by the specific risk that has been identified in step 1.
3. **What data is needed to produce the relevant information?** This is determined by the information identified as necessary in step 2.

Table 1 draws on these questions to provide some indicative examples of data needs for green finance.

Table 1: Examples of data needs for green finance along the three ODI data value chain stages

What kinds of investment decisions need to be made?	What information needs to be created?	What data should be stewarded?
Decisions about transition risks Transition risks are business-related risks arising from the changes necessary for the transition to net zero, which include changes in technology, policy, regulation, markets and consumer sentiment.	*Scope 1 emissions* Direct greenhouse gas emissions from company activities. Disclosure required under new UK legislation on Sustainability Disclosure Requirements (SDRs).	Data on operational processes that emit GHGs (for example manufacturing activities, transportation, waste disposal).
	Scope 2 emissions Indirect emissions from purchased electricity, heat or steam. Disclosure required by SDRs.	Data on energy consumption by sources.
	Scope 3 emissions Emissions that occur in the value chain of the reporting company both upstream and downstream remain. Disclosure currently voluntary.	Data from upstream activities such as those of companies executing outsourced activities, fuel consumption by contractor owned vehicles, and the production processes of purchased materials; and downstream data such as the emissions generated from the use of products produced and sold by the company.
Decisions about physical risks Physical risks are business-related risks arising as a consequence of the climatic impact of global heating and the increased frequency or severity of extreme weather events.	*Flood risk to company assets*	Data on flood risk and historic flood incidence; data on the location of operations and assets; data about climate conditions such as precipitation, temperature and sea levels; scenario forecasts of future weather conditions.
Decisions about externalities Impacts on the climate and environment as a consequence of business activities, but without necessarily posing business-related risks.	*Pollution prevention and control*	Data on the location of operations and assets; localised data on air quality such as the density of particulate matter; data on emissions from operations to water, air or land.

Environmental performance reporting is increasingly a legal requirement, with eight jurisdictions including the UK, the EU and Japan having introduced environmental disclosure requirements aligned with standards set out by the G20-founded Task Force on Climate-related Financial Disclosures (TCFD) as of September 2021.
This means that, in practice, the types of decisions made by investors – and therefore the information and data needs underlying those decisions – will be determined by legal reporting requirements, rather than investor discretion.
More information on disclosure requirements in the UK context can be found in **Appendix 1**.

Enablers of greenwashing

Greenwashing is the practice of businesses or investment funds making misleading or unsubstantiated claims about their environmental performance. Reports in both the mainstream and financial press have highlighted instances of environmental performance being exaggerated or misrepresented, while 60% of the respondents to the 2021 Schroders Institutional Investor Study cited it as a major concern; more than any other issue.

By diminishing consumer, investor, and policymaker trust in the reporting of environmental performance, greenwashing threatens to discredit the green finance agenda entirely: Erik Thedéen, chair of the sustainable finance task force at the International Organization of Securities Commissions (Iosco), has argued that 'greenwashing could damage the credibility of the green finance movement, endangering the work to limit the rise in global temperatures to 1.5C.'

Greenwashing can arise from intentionally dishonest business practices, but it is also enabled by structural and systemic factors:

- **Inconsistency** of existing frameworks, definitions, ratings and standards. This creates space for companies and investors to 'shop around' for indicators that are more favourable to them.
- **Lack of transparency** as to how data is being used to produce insights and make decisions about strategies for mitigating climate risk and reducing environmental impacts. Organisations may purport to make decisions on the basis of environmental performance information underpinned by sound data, but refuse to make this public as a result of uneven transparency requirements.
- **Lack of accountability** to external stakeholders, with organisations frequently 'marking their own homework' about their exposure to climate risk and environmental impacts, as a result of weak institutional arrangements. In other words, even when decisions and the information and data underlying them are transparent, poor or non-existent accountability mechanisms can mean that investment in environmentally harmful activities continues unabated.

Example of structural factors enabling greenwashing

This section provides a simplified example of how these structural factors enable greenwashing at each stage of the green finance data value chain.

Data stewardship stage

A **manufacturing company** wants to gather data on the environmental impact of its activities, both to fulfil mandatory reporting obligations placed on itself and its owners, and also to make voluntary disclosures to gain a competitive advantage. The company leadership decides to source this data through a combination of **internal data gathering activities** and by procuring data collection services from **external data aggregators and providers**.

At this stage, the data might be inconsistent in format, level of detail or standards for reporting environmental performance. If the manufacturing company fears that its environmental performance will be found to be poor, it might be tempted to 'shop around' – selecting metrics that highlight their lack of exposure to certain physical and transition risks, while minimising the negative environmental externalities produced by the company's activities. Even if no deception is intended by either the manufacturing company itself or the external data provider, there is a risk that the metrics selected will not accurately or comprehensively reflect the company's environmental performance.

Insight creation stage

After stewarding the relevant data, the manufacturing company, its **investors** and any **financial indices** it is listed on want to use this data on the company's environmental impacts to create insights into its environmental performance for compliance with disclosure requirements.

At this stage in the data value chain, it is possible that inaccurate information may be created due to inconsistency and lack of standardisation in the frameworks and definitions on environmental performance. Different indices and ratings agencies provide opinions on different aspects of sustainability performance and their assessments may not always be comparable. Again, there may be an incentive at this stage for the manufacturing company and its investors to shop around for more favourable assessments. In that sense, inconsistency of frameworks and definitions, coupled with an interest to show good performance indicators, incentivises greenwashing. This, in turn, is further exacerbated by the lack of transparency and accountability over how ratings and indices are arrived at, which makes comparisons across different companies and investment products difficult.

Decision-making stage

Once the disclosures have been made, **investors** want to use the insights created at the insight creation stage to make investment decisions informed by the environmental performance and the climate-related risks of their investments and existing alternatives.

At this stage in the data value chain, it is possible that the information created in the previous stage will not be properly reflected in the decision-making process, resulting in poor investment decisions, or investments that contribute to global heating.

Chapter 2: Data assurance for green finance

Data assurance practices can help to improve confidence in data and how it is being used. This chapter explores what data assurance for green finance could look like, and how it can help to mitigate the structural causes of greenwashing.

Building trust in environmental performance data

Assurance of business practices has existed for years, allowing businesses to demonstrate trustworthiness to investors, consumers and regulators. These are evolving, and we anticipate that assurance of data and data practices will be increasingly important as digital and technology dominate the way we do business.

At the ODI, we define **data assurance** as: 'the process, or set of processes, that increase confidence that data will meet a specific need, and that organisations collecting, accessing, using and sharing data are doing so in trustworthy ways.'

As detailed in Figure 1, assurance activities can help to improve trust in a range of attributes associated with data and datasets, such as data provenance, discoverability and quality, as well as data practices, such as how data is shared, governed and kept secure.

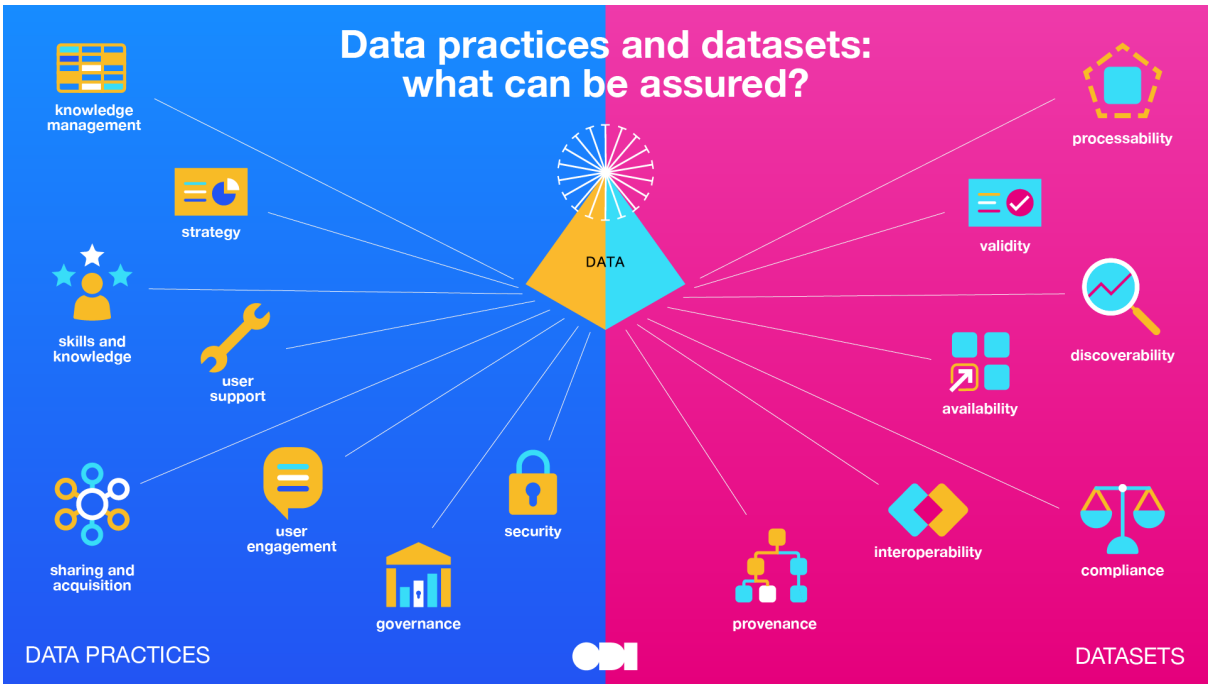

Figure 1 – Data practices and datasets: what can be assured?

In the context of green finance, we believe that the wider adoption of data assurance practices could help to undermine the systemic enablers of greenwashing, and build trust in environmental performance data, by delivering the following:

- **Consistency of,** and **compliance with,** metrics, standards and ratings, reducing the ability of organisations to 'shop around' in order to find indicators that are more favourable to them.
- **Transparency** about how data is being used to produce insights and make decisions about capital allocation based on these insights.
- **Accountability** to external stakeholders, preventing organisations from 'marking their own homework' about their environmental performance.

The remainder of this chapter focuses on data assurance in the green finance sector. **Appendix 2** goes into further detail on the range of data assurance activities and the organisations involved in carrying them out.

Data assurance in green finance

Research carried out for the ODI by Frontier Economics in 2021 found a nascent but buoyant market of UK business-to-business data assurance firms and services, with around 900 firms offering data assurance products and services in the UK, and more than half of them having been incorporated in the previous 10 years. Data assurance firms are being created at a rate of nearly 12% per annum, and we expect to see continued growth in the years to come, as more organisations grapple with demand for data and the need to build confidence in that data with customers, shareholders and the public.

This market includes data assurance products and services focused on environmental performance data. Traditional professional services firms such as KPMG, Ernst and Young, PwC and Deloitte (sometimes referred to as the Big Four) have started paying attention to opportunities in the ESG assurance sector, with one recent blog post by KPMG arguing that ESG assurance will be a 'game changer' for the professional services sector. Services offered by these firms are generally focused on offering independent assurance of the data and frameworks used for disclosure, as well as of legal and regulatory compliance.

In addition to incumbent firms, ESG assurance products are being developed by new entrants to the market. The second cohort of the FCA's Digital Sandbox focused on supporting firms that are developing innovative or disruptive products and services in the area of ESG data and disclosure. This cohort included firms such as Greenway Analytics, which draws on multiple data sources (for example from Internet of Things devices, Energy Performance Certificate reports and satellite imagery) to validate reported data on energy performance, and using machine learning to provide environmental insights into the impact achieved. Another company, Telespazio UK, is working on a tool that uses satellite imagery to measure environmental impacts on forests in order to assign an impact score and a recovery score for economic activities.

Most companies working on innovative assurance solutions face barriers to scaling them up, including a lack of standardisation around scores and metrics (as highlighted above), as well as issues around interoperability and access to data. Some companies are focused on tackling these issues, for example:

- Synectics Solutions is creating a standardised data model for storing and transmitting ESG data.
- Element22 and ESGi have developed a product for financial institutions to share ESG data between them.
- Coriolis Technologies is developing standardised and global ESG scoring methodologies.

As these examples show, current initiatives tend to focus on the first stage of the green finance data value chain (data stewardship), and particularly on the *validity* of the data used for disclosure, with some also focusing on *transparency* and *data sharing*. Comparatively few companies are focusing on assurance of data and data practices at the second (insight creation) and third (decision-making) stages of the green finance value chain, or on attributes beyond data provenance and quality.

Data assurance across the data value chain

Different activities to provide assurance of data will be relevant at each stage of the green finance data value chain, for example by ensuring that:

- the right data is collected and shared, and that its collection and reporting follows appropriate standards
- organisational processes for reporting and insight creation are compliant with legal and regulatory requirements, and are comparable across different companies and investment products
- decision-making processes adequately take into account and respond to the information created from data.

Some examples of data assurance in the context of environmental performance data are in **Table 2**.

Table 2: Assurance across the green finance data value chain

ODI data value chain	Stage 1: Data stewardship	Stage 2: Insight creation	Stage 3: Decision-making
What happens at this stage?	Data is gathered on environmental impact of companies and their activities.	Data is analysed to create insights into environmental impact of investments.	Investment decisions are made on the basis of insights created at the previous stage.
Who is involved?	Specialist data providers; companies themselves	Companies and their owners; financial organisations	Investors (retail and institutional)
What are the greenwashing risks?	Incorrectly sourced data; poor quality data	Inconsistency of frameworks	Weak institutional arrangements; failure to act
What aspects of data need to be assured?	Validity, provenance, privacy, security, ethics, user engagement	Interoperability; legal and regulatory compliance; availability; discoverability	Quality and accuracy
What data practices might need to be assured?	Sharing and acquisition, knowledge management, governance and internal oversight, skills and knowledge, privacy, security, ethics and transparency, user engagement	Skills and knowledge; strategy, quality and accuracy, data access processes	User engagement; user support
What sort of assurance products or services might be suitable?	Guidance on design and collection of data; validation against agreed standards	Certification of organisational processes against pre-defined standards	Audits of decision-making processes

The remainder of this chapter returns to our example of a manufacturing firm to explore in more detail how assurance of data and data practices might work in the context of green finance.

Data stewardship

A **manufacturing company** wants to gather data on the environmental impact of its activities, both to fulfil mandatory reporting obligations placed on itself and its owners and also to make voluntary disclosures to gain a competitive advantage. The company leadership decides to source this data through a combination of internal data gathering activities and by procuring data collection services from an external **data provider**.

At this stage, the manufacturing company itself might want to consider the following data assurance practices:

- **Assurance of its own data practices and those of the provider,** including the appropriate sharing and acquisition of data and organisational governance; risk management; and data management policies and processes once the data has been collected or procured. Activities to help provide assurance here could include checking that data access and management processes are being followed, or that they are in line with the company's data strategy; or more formal mechanisms such as external audit or certification to an agreed industry standard.
- **Assurance of the data itself,** particularly its provenance (where it is from and how it was produced), validity (its accuracy and quality), linkability, and risks related to its use for this particular purpose. Activities to help provide assurance here could include documentation or licensing, or validation against a set of standards.

Insight creation

After stewarding the relevant data, the manufacturing company, its **investors** and any **financial indices** it is listed on want to use this data to create insights into its environmental performance for disclosure.

At this stage, they might want to consider the following assurance practices:

- **Assurance of data practices relevant to the creation of insights,** including the presence of relevant skills and knowledge, the adoption of an appropriate strategy, and the suitability of data analysis processes (for example that they are repeatable and transparent). Activities to help provide assurance here could include the certification of organisational processes against a set of standards.
- **Assurance of the data itself,** particularly its interoperability with other datasets that it might need to be linked or combined with, and its compliance with any legal and or regulatory expectations. Activities to help provide assurance here could include documentation or licensing, or validation against a set of standards.
- **Access to data assurance outputs** from the previous stage.

Decision-making

Once the disclosures have been made, **investors (both retail and institutional)** want to use the insights created at the stage, to make investment decisions informed by the likely environmental impact of their investments.

At this stage, they might want to consider the following assurance practices:

- **Assurance of data practices relevant to the decision-making stage,** including that data users have been appropriately engaged and supported throughout; that decisions have been informed by data and insights which the company is justifiably confident in; and that the limitations of those data and insights are known. Activities to help provide assurance here could include checking organisational processes against certain predefined standards.
- **Access to data assurance outputs** from the previous stage.

Chapter 3: Embedding data assurance in green finance

For the green finance agenda to succeed, it will need to be accompanied by measures to embed data assurance within the sector. This chapter sets out areas for investigation and intervention to embed data assurance at each stage of the green finance data value chain.

The year 2022 is likely to be a pivotal year for the green finance agenda, with new requirements for the disclosure of environmental performance information coming into force in jurisdictions across the world, including the UK, the EU and Japan. For more information on disclosure requirements in the UK, please refer to Appendix 1.

If new disclosure requirements are to be successful, they will need to be accompanied by measures to catalyse the development of an assurance sector around environmental performance data and mainstream these practices in green finance.

These measures fall into three categories:

- Laying the foundations for the assurance of environmental performance data
- Driving and directing the growth of the assurance sector
- Future proofing the assurance of environmental performance data

Laying the foundations for the assurance of data for green finance

Defining green

Data assurance is about increasing confidence that data will meet a specific purpose, but this is difficult without clear criteria for evaluating whether that purpose is being supported. In the case of green finance, this means that assurance of data and data practices will require clear guidance on what is considered to be sustainable, and what risks and impacts need to be considered to evaluate sustainability.

An important prerequisite for assurance of environmental performance data will therefore be clarity on which transition risks, physical risks and environmental externalities should be considered in evaluating the environmental sustainability of economic activities and investments, and thus influence investment decisions.

As mentioned above, and discussed in more detail in **Appendix 1**, this work is already in train, both in the UK and in other jurisdictions.

We think it will be important for mandatory disclosure requirements to provide clear, usable definitions of the risks and impacts that ought to be reflected in sustainability reporting. This should reflect the role that data assurance products and services can play in further refining such definitions and improving the trustworthiness of environmental disclosures.

Reporting standards

In standardising statutory sustainability disclosure requirements (SDRs), financial regulators can define the type, frequency and level of detail of the information to be disclosed, and formalise it as a data standard – a documented, reusable agreement that helps people and organisations to publish, access, share and use better quality data.

By introducing requirements on what data must be disclosed, regulators also determine what kind of data companies and financial product providers need to collect, manage and share from their operations and their wider supply chain.

Additionally, regulators can assure data published within their sector, assessing the quality of what is reported and ensuring that it meets best practice standards. This will allow consumers and investors to be able to better compare different products and companies.

We think that it will be important for regulators to support open data standards for sustainability reporting, helping to consolidate a standards ecosystem which is currently crowded and complex.

Trusted rating providers

As mentioned above, the capacity to 'shop around' for favourable ratings and indicators is an enabler of greenwashing. This risk can be mitigated by setting standards for ratings and indicators. The legitimacy of ratings ultimately depends on the legitimacy of the organisations providing them. The question remains of whether public bodies such as regulators should define or provide ESG ratings or whether it should be an entirely private matter.

While it is important that providers are trusted by investors, asset managers and companies, the consequences of green finance affect the wider public and not just those actively participating in investment decisions. Our work on Trusted Data Institutions, and Trustworthy Data Stewardship, and our recommendations to the CMA on the future oversight of open banking, offer some pointers on how this can be achieved.

We think the government, regulators and industry bodies should take steps to ensure that standards and ratings are provided by institutions that are trusted not only by investors and companies, but also by the wider public.

Driving and directing the growth of the assurance sector

Increasing demand

It is likely that the introduction of new disclosure requirements (see **Appendix 1**) will stimulate the growth of the environmental performance data assurance market by creating incentives for firms, investors and regulators to provide assurance that the data being used to comply with these requirements is suitable. However, there might be downstream barriers and market failures preventing these services from emerging.

In most sectors, companies will often have a direct interest in ensuring that the data they use is trustworthy, regardless of whether the SDRs require them to do so. Using poor quality or unreliable data could impact the effectiveness of company decision-making, harming profitability. In the case of data on environmental performance, this won't always be the case. Companies and investors are bound to a certain extent by fiduciary duties to understand their exposure to climate-related risks and mitigate these risks accordingly. However, upcoming disclosure requirements go beyond this and require the reporting not only of climate-related risks but also impacts – activities that produce negative externalities for society or the environment. In these cases, there may be an incentive to downplay or minimise the extent of such activities.

This has potential implications for the role of data assurance in green finance. Demand, and therefore growth, might be lower for data assurance services provided to this sector. There might be a need to stimulate demand, which could take the form of mandating specific formal types of assurance (for example certification against agreed standards).

We think it will be important for the government to monitor demand and uptake of assurance services and take steps to stimulate demand if necessary.

Maintaining quality

For reasons similar to those outlined in the section above, it may also be the case that quality requirements for assurance in green finance might be lower. As a consequence, there might need to be a greater role for public or regulatory involvement in assurance of data for green finance, compared with the assurance of data for other sectors and use cases.

This could involve more tightly regulating assurance providers and standards-setting bodies: for example, requiring that firms providing these services subscribe to mandatory standards. It could involve regulators themselves having to carry out certain assurance responsibilities, if it is found that private providers are failing to do so to the requisite standard.

Short of this, and using their current powers, regulators could engage in 'softer' forms of intervention, such as the setting of best practices and publication of guidance, or the integration of data assurance into existing regulatory activities. In order to drive adherence to these best practices, regulators could collaborate with industry or professional bodies to offer certification schemes or to accredit other organisations to do so.

We believe that there is a need for policymakers, the governance profession and regulators to work together to shape and maintain quality in assurance services for green finance.

Costs and benefits of assurance

Whether through mandatory requirements, incentives or provision of services, implementing data assurance for environmental performance reporting will mean that costs associated with environmental performance disclosure may initially increase. A report by the Climate Risk Disclosure Lab at Duke University published in 2021 found that most companies expected audit and assurance services to be the main cost driver associated with the introduction of new disclosure requirements.

However, empirical evidence has shown that, at least in some cases, mandating assurance of non-financial disclosures can bring economic benefits to individual firms. It is reasonable to assume that increasing the trustworthiness of sustainability disclosures should enable the most sustainable firms and asset managers to differentiate themselves from less sustainable competitors and attract investment. Research conducted recently in Taiwan, where mandatory assurance was introduced for Corporate Social Responsibility disclosures, supported this, finding that mandatory assurance had the effect of reducing the cost of debt capital for firms.

Beyond the costs and benefits associated with individual firms and investors, there are also benefits to the wider economy that need to be factored in. Assuring that sustainability disclosures are accurate should enable the government, civil society organisations and the private sector to better understand the impacts of economic activities on the environment, and thus improve decision-making aimed at reducing climate change related impacts. Moreover, as a report commissioned to Frontier Economics by the ODI showed, increasing trust in data ecosystems has the effect of increasing the economic value generated by data in the long term. By increasing the trustworthiness of sustainable disclosures through assurance that they use reliable data and are created by following adequate data practices, data assurance should increase the value created from this data over time.

We think it will be important for any interventions aimed at embedding data assurance in green finance to assess – and, if necessary, aim to reduce – the additional costs of embedding assurance, while at the same time weighing these against the short-term and long-term economic benefits of a trustworthy green finance sector.

Future-proofing the assurance of data for green finance

Finally, we believe that several challenges will need to be addressed in the coming years if data assurance is to be successfully embedded in the green finance sector.

Data gaps and data holes

Although in many cases the data requirements for sustainability disclosures are clear, and the data itself is available, there remain many *data gaps* and *data holes* – instances where there are limited frameworks or guidance about what data is needed – that need to be filled:

- **Data gaps** are instances in which reporting frameworks exist but datasets are not adequately populated. A recent report by The Future of Sustainable Data Alliance found that important data gaps still exist, including for energy consumption and production by source, emissions of GHG, executive pay and board composition. These are all included in existing reporting frameworks, but the data to populate them is not always available.
- **Data holes** are instances where there are limited frameworks or guidance about what data is needed. These are often emerging topics that society is trying to tackle through ESG disclosure, but which are not yet captured by available reporting frameworks. These include risks and impacts on biodiversity, and issues associated with supply chain reporting. In both cases, there are still pending challenges on formulating indicators and standardising reporting.

Data assurance activities, such as third-party audits, could play an important role in discovering and fixing these data gaps and data holes, for example by highlighting specific examples of where a disclosure or type of disclosure is not underpinned by the necessary data.

We think it will be important for regulation to reflect the constructive role data assurance can play in helping to discover and fix data holes and gaps.

Alternative sources of data

It could be possible to fill some of these data gaps and data holes through the use of alternative data: data from new and unique sources used by investors to help evaluate a company or investment. Alternative data includes vast amounts of non-standardised and unstructured data that takes significant time and investment to properly make use of. The quality and limitations of the datasets being sold in the market today are often not known by alternative data users until this investment has been made.

There are many sources of alternative data – from web traffic and public records, to surveys and weather reports – but they can be broken down into three broad types:

- **Data about individuals,** such as data on consumer sentiment from social media and citizen-generated data.
- **Data about business processes,** like using web-scraped job postings to gain insights on company hirings.
- **Data from sensors,** such as from private aeroplane flight trackings to help discover potential deals between companies.

Data assurance activities can help to ascertain whether new or alternative sources of data are being used properly to fill data gaps and data holes in environmental performance reporting, providing confidence in their use.

We think it will be important for the government to consider how data assurance practices can help to improve confidence in alternative data.

AI assurance

Artificial intelligence (AI) systems are typically used at the insight creation stage of the data value chain, to create more sophisticated analyses and insights from data. Financial institutions, investors, ratings agencies and individual companies are increasingly using forms of AI modelling to produce insights into climate risks and externalities.

AI assurance is related to, but distinct from, data assurance. AI assurance is defined by the Centre for Data Ethics and Innovation as services which 'help people to gain confidence in AI systems by evaluating and communicating reliable evidence about their trustworthiness'.

Data assurance is a necessary condition for AI assurance: data is used to train and use AI systems, so AI assurance requires confidence that the data supplied is trustworthy and collected ethically and equitably. Beyond the assurance of the training and input data, AI assurance will involve other elements such as assurance of the AI models being used and of the instructions provided to these models by human operators.

AI assurance, like data assurance, will have a role to play in ensuring sustainability disclosures are both trusted and trustworthy.

We think it will be important for the government to consider green finance as a key use case for AI services and therefore AI assurance, as it continues to develop and roll out the support for the sector outlined in the AI Assurance Roadmap.

Data institutions for environmental performance data

Data institutions are organisations that steward data on behalf of others. They make decisions about who has access to data, for what purposes and to whose benefit, to realise the value and limit the harm that use of data can bring. The relative importance and number of data institutions – some of which are referred to as data intermediaries or data-sharing services – is increasing as we require data for various use cases to be aggregated from multiple sources.

Many existing data institutions steward data that is or may become relevant to green finance. The Data Institutions Register, developed and maintained by the ODI, includes a list of 30 data institutions working with climate data, including:

- iNaturalist, a citizen science project which empowers people to document biodiversity and share images of flora and fauna.
- Globe at Night, an international citizen science campaign to raise public awareness of the impact of light pollution by inviting citizen-scientists to measure and share their observations of the brightness of the night sky.
- Sensor.Community, a network of individuals with DIY air quality sensors. The community pools data about air quality from all over the world to create an open environmental dataset.
- The Energy Data Co-op, being developed by Open Data Manchester and Carbon Co-op, where people can pool and share data to improve the efficiency of their homes by changing how energy is used.

These institutions could potentially play a role in stewarding environmental performance data that is relevant for ratings providers and regulators, as well as for investors and asset managers wanting to make better informed decisions. Data institutions can play a role both in setting standards and in making data from statutory disclosures accessible in ways that allow third parties to evaluate and compare information across different companies and products.

Recent research carried out by the ODI with GPAI and Aapti has set out the potential for data trusts – themselves a type of data institution – to help tackle the climate crisis. There could be a role for data trusts and other types of other data institution in stewarding new and alternative datasets relevant to green finance. There are a number of ways the government can consider intervening to build trust in emerging data institutions, as outlined in a recent ODI report.

We think it will be important for the government to understand the role data institutions can play in stewarding environmental performance data, and consider how they can intervene to build trust in such organisations.

Next steps

The ODI has carried out this project to explore what data assurance for green finance could look like, and how it can help to tackle the threat posed by greenwashing. It forms part of our ongoing programme of work on data assurance.

We will continue to actively investigate these issues, and are interested in hearing from others working on this topic across industry and civil society. If you'd like to stay informed about our work in this area, provide feedback on this draft report, or get involved as a project partner or collaborator, we'd love to hear from you!

This report is published as an open draft for comment – please feel free to add your thoughts, reactions and commentary directly.

Alternatively, you can get in touch with us by emailing the ODI's Policy team at policy@theodi.org or by filling out the contact form on our project page.

Appendices

Appendix 1: Disclosure requirements in the UK

Environmental performance reporting is increasingly a legal requirement, with eight jurisdictions including the UK, EU and Japan having introduced environmental disclosure requirements aligned with standards set out by the G20-founded Task Force on Climate-related Financial Disclosures (TCFD) as of September 2021.

The UK government sees the disclosure of whether products are sustainable or not as a vital mechanism for 'greening' the financial system: by ensuring that 'decision-useful' information on investment sustainability is available to financial market decision-makers; those decision-makers can then factor sustainability into their investment choices.

The Greening Finance roadmap published by the Treasury in 2021 outlined the steps that the government will take to make this a reality:

1. The implementation of Sustainability Disclosure Requirements (SDRs) from April 2022 onwards.
2. Further mandatory disclosure requirements introduced by 2025, incorporating the UK Green Taxonomy and ISSB issued standards.

From April 2022: Sustainability Disclosure Requirements (SDRs)

From April 2022, new Sustainability Disclosure Requirements (SDRs) will come into force, placing new responsibilities on investment products, for corporate actors, and for asset managers and asset owners.

SDRs will cover both information that can have a material impact on investors' interests (transition risks and physical risks), and information on how firms impact the environment (negative and positive externalities).

Based on standards developed by the G20 Taskforce on Climate-related Financial Disclosures, SDRs will require the disclosure of information around four pillars:

1. **Governance**: governance arrangements around sustainability related risks, opportunities and impacts.
2. **Strategy:** actual and potential implications of sustainability-related risks, opportunities and impacts for businesses.
3. **Risk management:** the processes by which risks, opportunities and impacts are identified, assessed and managed will also have to be disclosed.

4. **Metrics and targets:** metrics and targets used to assess and manage risks, opportunities and impacts, as well as the performance against these targets, and relevant supporting information.

By 2025: The UK Green Taxonomy

The Greening Finance roadmap also details the development of the UK Green Taxonomy, with additional disclosure requirements based on this taxonomy set to be introduced in the coming years. Taxonomies have already been developed in jurisdictions around the world including the EU, China, Malaysia, Bangladesh and Russia. The UK taxonomy will build on these existing taxonomies, focusing on net zero in the UK context.

The aim of the UK taxonomy is to 'clamp down on greenwashing – unsubstantiated or exaggerated claims that an investment is environmentally friendly - and make it easier to understand how a firm is impacting the environment' by 'clearly defining which economic activities count as environmentally sustainable'.

Taxonomy-related disclosures will provide information on how firms impact the environment (negative and positive externalities). For an activity to count as taxonomy-aligned, it will need to meet the following criteria:

1. Make a substantial contribution to one of six environmental objectives:
    a. Climate change mitigation
    b. Climate change adaptation
    c. Sustainable use and protection of water and marine resources
    d. Transition to a circular economy
    e. Pollution prevention and control
    f. Protection and restoration of biodiversity and ecosystems
2. Do no significant harm to the other objectives.
3. Meet a set of minimum safeguards, based on the OECD Guidelines for Multinational Enterprises, and the UN Guiding Principles on Business and Human Rights.

Appendix 2: Data assurance

At the ODI, we define **data assurance** as: *'the process, or set of processes, that increase confidence that data will meet a specific need, and that organisations collecting, accessing, using and sharing data are doing so in trustworthy ways.'*

As detailed in Table 3, assurance activities can help to improve user confidence in a range of attributes associated with data and datasets – such as data provenance, discoverability and quality – as well as data practices – such as strategy, governance and user support.

Table 3: What data and data practices can be assured?
You can provide assurance for several aspects of data and data practices, for example:

Data and datasets	**to improve confidence that:**	**by performing activities such as:**
	data is of trustworthy *provenance*	checking individual data points to assess their accuracy; verifying the sources of data, including those that may come from third parties
	data has been *ethically sourced*	reviewing a dataset to ensure it does not contain personal data
	data is of appropriate *quality*	checking the structure of a dataset against a standard to confirm that it is well-formed and complete
Data practices	**to ensure:**	**by performing activities such as:**
	data can be *effectively used* by relevant decision-makers	ensuring that those involved in data practices have the necessary skills and knowledge to work with data
	data is shared with the right people	assessing the decision making for how data is shared, to ensure that it is shared responsibly and in ways that will minimise harms
	there are no harmful impacts on people, organisations and communities who the data is about, or who are affected by use of the data	reviewing the lifecycle of how data is collected, managed and shared to confirm that data is managed legally, securely and ethically

Formal and informal data assurance activities

Data assurance activities can be classified based on how formally they are defined and applied.

More formal assurance activities include processes such as audits, certification or accreditation schemes. They are described and supported by well-defined standards and involve multiple layers of review and assessment; not just of the process itself, but the people and organisations involved in it.

Less formal data assurance activities include developing and applying norms and principles that might help to guide and reinforce trustworthy behaviours. But their application may only be loosely defined and the results are not verifiable. In contrast, more formal data assurance activities typically follow well-defined processes and produce verifiable outputs.

Table 4: What types of data assurance activities are there?

What is assured?	Less formal	More formal
Data	Guidance on use of modelling and design of data Provision of data documentation or data licences	Quality control Validation against agreed standards
Data practices	Developing skills Building professional, social or organisational norms Developing shared principles and best practices	Conducting audits of data processes and governance Certification of organisational processes against predefined standards

Who is responsible for data assurance?

The assurance ecosystem extends to actors beyond the immediate environment of organisations creating and providing data, and those consuming data from third parties. This wider ecosystem includes:

- **Providers of data assurance**. These organisations can be found across different sectors of the economy, and they vary in size, although the majority of firms currently providing data assurance services were incorporated in the last 10 years and employ fewer than 10 people each. Public bodies such as regulators can directly provide data assurance services, although they are more likely to play a market-shaping role.
- **Governments, regulators, researchers and advocacy organisations.** These other actors help to create policies and legislative frameworks that guide how data is accessed, used and shared; provide guidance, support and influence to encourage and enable others to behave in certain ways; or develop the tools and technologies that support their activities.
- **Standards development organisations** such as the British Standards Institutions (BSI), Office for Product Safety and Standards, National Physical Laboratory and the United Kingdom Accreditation Service. These organisations help to develop and maintain the standards that describe how a product or service should operate (core standards), the standard processes by which a data-enabled product or service might be certified against that standard, and standard training and assessments that are used to accredit organisations to complete these certifications.

Glossary

Assurance: the process, or set of processes, that show evidence that something is reliable or trustworthy.

AI assurance: the process, or set of processes, that increase confidence that AI systems work as they are supposed to work, and that they are effective, trustworthy and legal.

Climate-related risks: potential negative impacts of climate change on an organisation. They can either be transition risks, which are financial risks associated with the transition to a lower-carbon economy, or physical risks, which are related to the physical impacts of climate change.

Data assurance: the process, or set of processes, that increase confidence that data will meet a specific need, and that organisations collecting, accessing, using and sharing data are doing so in trustworthy ways.

Data assurance activity: a specific activity to create trust in data, such as conducting an audit, validating a dataset, or carrying out training.

Data assurance scheme: a specific project that works by applying one or more data assurance activities and may involve multiple actors.

Data ecosystem: data infrastructure and the people, communities and organisations that benefit from the value created by it.

Data institutions: organisations whose purpose involves stewarding data on behalf of others, often towards public, educational or charitable aims.

Data practices: the processes by which data is collected, shared, held and/or managed.

Data value chain: the set of activities that create impact from data. At the ODI, we consider that the data value comprises three activities: stewarding data, creating information from that data, and deciding what to do based on that information.

Disclosure: the action of publishing information about a company's activities, financial performance, exposure to risks and other aspects relevant to its operations and current and future performance.

Environment: the surrounding on which a company or firm operates. It includes everything that is not within the company boundaries but can be impacted or affected by its activities.

Environmental performance: effects of business activities and products on the natural environment, which can be assessed in relation to development goals or policy objectives such as net zero.

Environmental performance data: data about the effects of business activities and products on the natural environment.

ESG: company reporting framed around three key factors: environment, social and governance. The first covers how organisations impact and are impacted by climate change and broader environmental issues. The second includes factors such as labour conditions, and impact on development. The third one refers to information about the way a firm is controlled and directed.

Green finance: an approach to the financial system that aims to align financial flows with the goal of achieving a low-carbon world. In 2019, the UK government published a Green Finance Strategy, which set out policy commitments to help align UK financial flows with a low-carbon world, by supporting the financial services sector to align with environmental goals and by mobilising finance to support clean and resilient growth.

Greenwashing: the action of making misleading or unsubstantiated claims about environmental performance of businesses, economic activities or investment products. It can lead to wrong investment and buying decisions, misallocation of capital intended for sustainable investments, and the undermining of trust in the market.

Mandatory Sustainability Disclosure Requirements: requirements announced by the Chancellor in July 2021 that aim to create an integrated framework for decision-useful disclosures on sustainability across the economy. They cover three types of disclosure: corporate disclosure, asset manager and asset owner disclosure, and investment product disclosure.

Physical risk: climate-related risks that may have financial implications such as damage to assets, supply chain disruption, changes in resource availability or quality, among others. According to the TCFD guidance, physical risks can either be considered acute when they are event driven, or chronic when they relate to longer-term shifts in climate patterns.

Quality infrastructure: formal mechanisms of assurance such as standardisation, conformity assessment, measurement or accreditation.

Sustainability Disclosure Requirements (SDRs): new requirements for corporate, asset managers and owners, and investment product disclosures that will create an integrated framework for decision-useful disclosures on sustainability across the UK economy. They build on the UK's TCFD implementation and its first measures will come into force in 2022.

Standards: documented, reusable agreements that solve a specific set of problems or meet clearly defined needs. Data standards are often used to help define or support a data assurance activity.

Taskforce on Climate Related Financial Disclosures (TCFD): an organisation created in 2015 by the Financial Stability Board of the G20 to develop consistent climate-related financial risk disclosures for use by companies, banks and investors. It published its final recommendations in June 2017.

Transition risk: financial or reputational risks associated with the transition to a lower-carbon economy and the policy, legal, technology and market changes that it requires or will require.

Trustworthy data ecosystem: an environment in which individuals and organisations across the public, private and third sector trust that data is flowing in ways that will maximise benefits whilst minimising harms.

UK Green Taxonomy: a common framework to determine which investments and economic activities are considered by the UK government to be environmentally sustainable. The government expects to have a Green Taxonomy legislation in place by the end of 2022.

EU Taxonomy: a classification system, establishing a list of economic activities considered by the EU to be environmentally sustainable.