

# Climate Change and Corporate Reporting in Europe



# Climate Change and Corporate Reporting in Europe:

## *Standard Setting and Disclosure Practices*

Edited by

Nicola Moscariello and Michele Pizzo

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Standard Setting and Disclosure Practices

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# INTRODUCTION

PIZZO M.<sup>\*</sup>, MOSCARIELLO N.<sup>\*</sup>

Climate change is undeniably one of the most pressing challenges of our time, with far-reaching implications for businesses and society as a whole. On 12 December 2015, at the UN Climate Change Conference (COP21), 196 governments signed the Paris Agreement with the aim to hold “*the increase in the global average temperature to well below 2°C above pre-industrial levels*” and pursue efforts “*to limit the temperature increase to 1.5°C above pre-industrial levels*” (UN, 2015). More recently, the Intergovernmental Panel on Climate Change (IPCC) has emphasized that scientific evidence indicates that any global warming above 1.5°C could result in catastrophic climate change (IPCC, 2018). It is therefore essential to take significant action to decarbonize the economy and prevent further warming.

As companies navigate the challenges and opportunities presented by climate change, the need for transparent and comprehensive reporting has become increasingly important. Investors and lenders require more and more information about climate change related risks in order to evaluate and price possible financial outcomes. In this regard, it is noteworthy that 733 investors who collectively manage assets of 52 trillion dollars, recently signed the “*2021 Global Investor Statement to Governments on the Climate Crisis*” asking for more reliable information on how companies are facing the risks and opportunities induced by climate change.

*“Investors recognize the global transition to a low-carbon, clean energy economy is now firmly underway and they want to make well-informed decisions that help Paris Agreement signatories deliver their national commitments. [...], it is vital that every signatory across the G7 and G20 adopts policies that drive better disclosure of climate risk, curb fossil fuel subsidies and put in place strong pricing signals sufficient to catalyze the significant private sector investment in low carbon solutions”.*

(Stephanie Pfeifer, CEO of IIGCC in Europe).

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However, it has been argued that corporate sustainability disclosure often fails to identify the specific impact of implementing effective sustainable strategies on income statements and balance sheets (Simnett et al., 2009; Hopwood, 2009). In a recent report issued by KPMG “*The KPMG Survey of Corporate Responsibility Reporting 2017*”, it has been highlighted that, among the 4900 financial statements that were globally analyzed, less than 30% of the companies currently acknowledge the financial risk of climate change in their annual reports (KPMG, 2017).

This scenario leads various academics, practitioners, regulators and policymakers to debate on how climate change-related risks should be accounted in companies’ financial statements (Cho et al., 2010; Brown and Dillard, 2013; Michelon et al., 2015). As such, standard setters around the globe are developing, integrating, or revising their positions on the profile of climate change reporting, setting the guidelines for the development of financial and non-financial reporting. On 12 April 2021, the EU Commission approved the new Corporate Sustainability Reporting Directive (CSRD). The CSRD, which covers all European-based companies with more than 250 employees, requires firms to report data according to common reporting standards to be developed by the European Financial Reporting Advisory Group (EFRAG). Recently, the International Financial Reporting Standards (IFRS) Foundation established the International Sustainability Standards Board (ISSB) to provide a comprehensive set of global sustainability-related disclosure standards. Meanwhile, in the United States, the Securities and Exchange Commission (SEC) has released a proposal that would mandate companies to disclose climate-related information to investors (US SEC, 2022).

This collection of contributions aims to provide valuable insights into the regulatory framework, determinants, and economic consequences of climate-related disclosure in Europe.

The book delves into various aspects of climate-related disclosure, exploring the evolving landscape of climate-related reporting practices, the determinants and the economic consequences of climate-related reporting, and the pivotal role of institutions and standard setters (i.e., EFRAG, ISSB, GRI) in providing guidance and promoting consistency in reporting practices, enabling stakeholders to make informed decisions.

While academic research forms a significant part of the contributions, professionals from various fields have also shared their expertise and experiences, enriching the discussion on climate-related reporting practices, and offering a comprehensive view of the current landscape.

First, the book offers an overview of the regulatory framework of non-financial disclosure, highlighting the role of standard setters at international

level and providing critical insights on the optimal regulatory infrastructure for environmental standards.

The second part consists of empirical studies which both provide evidence on the quality of firms' non-financial disclosure and evaluate determinants and consequences of corporate climate related reporting practices. Part III, instead, focuses on the growing debate on whether and how climate change risks are recognized in companies' financial statements, and whether and how auditors consider climate change risks in their reports.

Finally, since climate change implications on businesses varies significantly among industries, the book welcomes studies which explore climate change disclosure risks in specific industries, providing relevant insights into climate-related reporting practices in different contexts.

This book not only contributes to the academic debate on environmental reporting but also offers practical insights for regulators, policymakers, and businesses. It offers insights into the current state of climate change reporting, identifies areas for improvement, and highlights best practices that can guide organizations in effectively addressing climate-related risks and opportunities.

We extend our gratitude to the authors for their valuable contributions and their commitment to advancing our understanding of the interplay between climate change and financial reporting. We are confident that their work will inspire further research and stimulate useful debates in this important field.

**PART I –**

**REGULATORY FRAMEWORK  
OF NON-FINANCIAL DISCLOSURE**

# CHAPTER 1

## THE EUROPEAN ROADMAP TO SUSTAINABILITY REPORTING: THE EFRAG ENVIRONMENTAL STANDARDS<sup>1</sup>

ARENA C.\* AND CATUOGNO S.\*

### **The EU regulatory framework for sustainability reporting**

With increasing attention being paid to sustainability issues, along with the adverse effects of recent developments such as the aftermath of the COVID pandemic, geo-political risk and disruptions, and the energy crisis, the European Union (EU) has established a set of reforms with the aim of achieving an economy with net-zero greenhouse gas (GHG) emissions by 2050, in line with the European Green Deal and Paris Agreement 2050.

The three most important structural measures are the EU Taxonomy, the Sustainable Finance Disclosure Regulation (SFDR), and the Corporate Sustainability Reporting Directive (CSRD).

Whilst the EU Taxonomy defines investments supporting the transition to a greener economy through specific KPIs, the SFDR requires financial service providers to disclose information on the sustainability profile of their investments.

To establish greater transparency regarding the impact companies have on the planet, in April 2021 the European Commission (EC) introduced the CSRD.<sup>2</sup> This Directive mandates sustainability-related information, replacing

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<sup>2</sup> Directive (EU) 2022/2464 of the European Parliament and of the Council of 14<sup>th</sup> December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting (OJ L 322, 16.12.2022, p. 15).

the Non-Financial Reporting Directive (NFRD), which has imposed requirements to disclose environmental and social impacts since 2017.

Under the CSRD, the European Financial Reporting Advisory Group (EFRAG) was appointed as technical adviser to the EC to develop European Sustainability Reporting Standards (ESRSs). Already fulfilling its mission through its involvement in financial reporting activities through the Financial Reporting Board (FRB), in 2022 EFRAG modified its governance to reflect its new role in the development of ESRSs through a balanced representation of different stakeholders, including reporting entities, investors, auditors, trade unions, civil society, academics, and national accounting standard-setters.

In particular, the EFRAG Sustainability Reporting Technical Expert Group (EFRAG SR TEG) intensively interacts with EFRAG Sustainability Reporting Board (EFRAG SRB), providing technical advice on the ESRSs.

The first ESRS Exposure Drafts (EDs) prepared by the EFRAG Project Task Force on European Sustainability Reporting Standards (EFRAG PTF-ESRS) were presented for comments from 30 April 2022 to 8 August 2022. The EFRAG SRB, advised by the EFRAG SR TEG, addressed the feedback arising from the consultation and accordingly amended the first set of draft ESRSs that were released in November 2022 and submitted to EC for review.

Following further consultation with regulatory authorities' expert groups, the EC, along with EU member states, released updated draft standards for an additional four-week public feedback period in June 2023. On 31 July 2023, the EC adopted the final Delegated Act of the ESRSs subject to a scrutiny period of two months with a possible two-month extension. On 21 October 2023, the ESRSs became law and will be adopted by companies falling under the scope of the CSRD starting from 2024.

The Delegated Act includes the 12 established ESRSs, which comprise two cross-cutting standards which apply to all sustainability matters and 10 topical standards covering a wide range of environmental, social, and governance matters.

ESRSs will apply on an individual or consolidated basis from 1 January 2024, and will be subject to a phased introduction that will start with Public Interest Entities (PIEs) and companies already obligated to comply with reporting requirements under the NFRD (i.e. large EU-listed companies with more than 500 employees). ESRSs will expand the scope of NFRD to reach: (i) all EU listed companies, including listed SMEs (except listed micro-enterprises), (ii) large unlisted companies; and (iii) non-EU companies. In subsequent years, the EC is expected to adopt further delegated acts for additional sets of standards, namely, sector-specific

standards, proportionate standards for listed SMEs, and standards for non-EU companies.<sup>3</sup>

To ensure proportionality and facilitate application of the standards, the Delegated Act introduced several modifications to the first set of draft standards submitted by EFRAG. Specifically, the EC reduced the scope of the disclosure requirements that are mandatory, that is, those which should be disclosed regardless of the assessment of double materiality. Consequently, all disclosure requirements and data points will be subject to a materiality assessment by the reporting entity, the only exception being the disclosure requirements specified in the ‘General disclosures’ (ESRS 2). Furthermore, the EC has provided for further phase-ins that will help all companies, particularly smaller companies subject to sustainability reporting requirements for the first time, to apply the standards effectively. Finally, the EC has made certain datapoints voluntary and introduced flexibilities for a number of the mandatory datapoints.

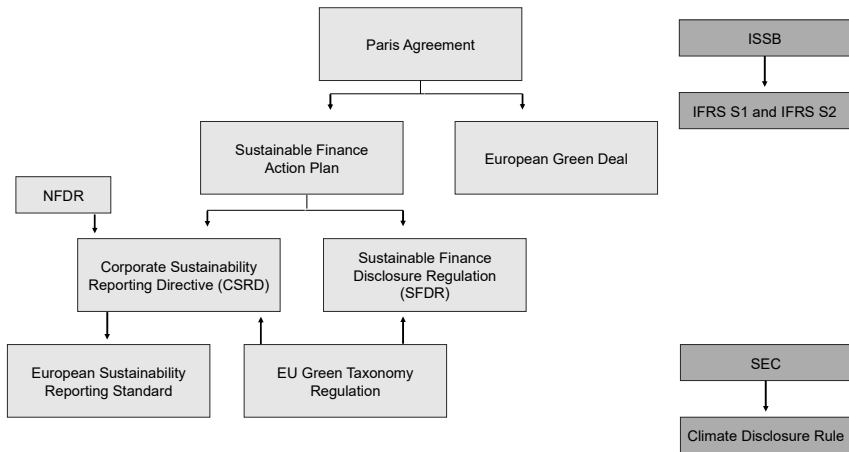
Outside the EU, two other regulatory bodies provide sustainability-related disclosure requirements, although their scope and other details vary. These are the International Sustainability Standards Board (ISSB) at the international level and the Securities and Exchange Commission (SEC) in the United States (US).

The ISSB finalised the release of IFRS S1 & S2 in June 2023, whilst the final SEC rule is still pending and the California’s Climate Disclosure law was signed in October 2023.

Figure 1 presents a graphical illustration of the new regulatory framework for the sustainability reporting landscape.

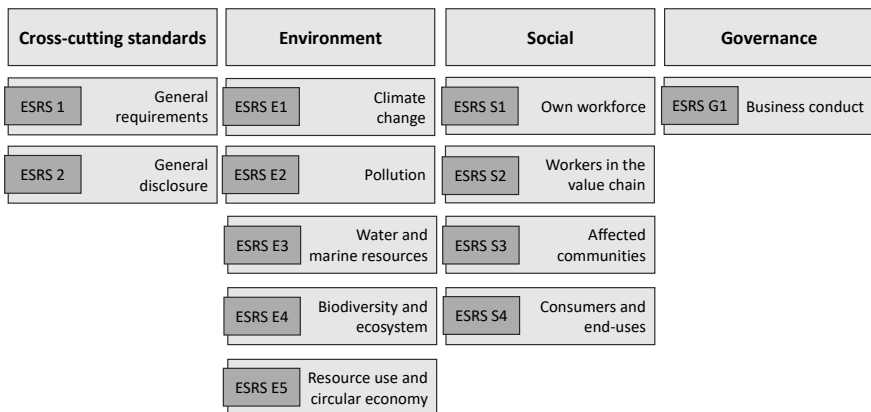
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<sup>3</sup> In its Work Programme for 2024, the EU identified a list of actions for reducing the reporting burden – this also has implications for the implementation of the CSRD. The main amendments that have been targeted are reducing the scope of application of the CSRD and postponing the deadline of the adoption of sector-specific and third country ESRs from June 2024 to June 2026.

**Figure 1.** The regulatory framework for sustainability reporting

## The reporting framework of ESRs

The objective of the first set of ESRs is to specify the sustainability information that companies shall disclose. The application of ESRs will allow companies to fulfil the reporting obligations envisaged by the CSRD.

**Figure 2.** The architecture of ESRs (ESRS 1)

The first set of ESRs comprises 12 Standards (Figure 2) articulated in three categories: (a) two cross-cutting standards of a general scope; (b) ten topical standards divided into five Environmental, four Social, and one Governance standard; and (c) sector-specific standards that, at the time of writing, are still under development.

Companies under the scope of CSRD must provide granular sustainability-related disclosures. The disclosure requirements in topical ESRs are structured into four reporting areas (as specified in ESR 2), which are summarised as follows:

The first reporting area is related to Governance (GOV), defined as the governance processes, controls, and procedures employed to monitor, manage and oversee impacts, risks, and opportunities.

The second reporting area is related to Strategy (SBM), defined as how a company's strategy and business model interact with its material impacts, risks, and opportunities, including how the company addresses these.

The disclosure requirements on GOV and SBM will apply to all companies and topics.

The third reporting area is related to Impact, Risk, and Opportunity management, defined as the processes by which companies identify impacts, risks, and opportunities (IROs) and assess their materiality, along with how they manage material sustainability matters through policies and actions. IRO management disclosures need to be provided for topics that are assessed as material.

The fourth reporting area is related to Metrics and Targets (MT), which refers to the company's performance, including targets it has set and progress made towards meeting these. Specific sets of sector-agnostic metrics and targets will need to be disclosed for material topics by a company, regardless of industry.

The transparency driven by the ESRs architecture will clearly set out how companies should address sustainability-related topics and integrate ESG objectives into their governance and strategy to elucidate how sustainability initiatives influence their performance. Companies will also need to revise their Enterprise Risk Management (ERM) to include the risks related to climate and other environmental issues, such as the loss of biodiversity and health and social issues, including child and forced labour.

As a result of this architecture, ESRs develop through three reporting layers. These are: (i) sector-agnostic disclosures that apply to all companies for maximum comparability; (ii) sector-specific disclosures under development that apply to companies of a specific sector for maximum relevance; and (iii) company-specific disclosures that refer to additional disclosure requirements on material IROs not covered by topical standards.



ESRSs will also introduce innovative features into the disclosure of sustainability-related information. The first is the double materiality approach. ESRSs require companies to disclose information considered material in accordance with the double materiality perspective. Double materiality refers to two dimensions of materiality, ‘financial’ and ‘impact’. According to the financial materiality dimension, companies will have to provide sustainability information on sustainability-related matters that exert material financial effects on their development (e.g. cash flows, financial position or financial performance) in the short, medium, or long term (outside-in approach). With respect to the impact materiality dimension, companies need to disclose sustainability-related matters that relate to its material actual or potential impacts on people or the environment over the short, medium or long term (inside-out approach).

The second feature of the ESRSs framework is the requirement to report sustainability matters on a par with financial reporting information and along the entire value chain. The reporting boundary will be based on the perimeter of the financial statement, but expanded to cover information on the material IROs connected with the upstream and downstream value chain using all reasonable and supportable information, including estimates. In addition, companies within the requisite scope will prepare a sustainability statement concomitantly with the financial statements and include the disclosures requirements in a clearly identifiable section of the management report titled ‘Sustainability Statement’ (Figure 3). Specific datapoints prescribed by ESRSs may be incorporated into the sustainability statement by referring to other documents (e.g. another section of the management report, the financial statements, the corporate governance statement, or the remuneration report).

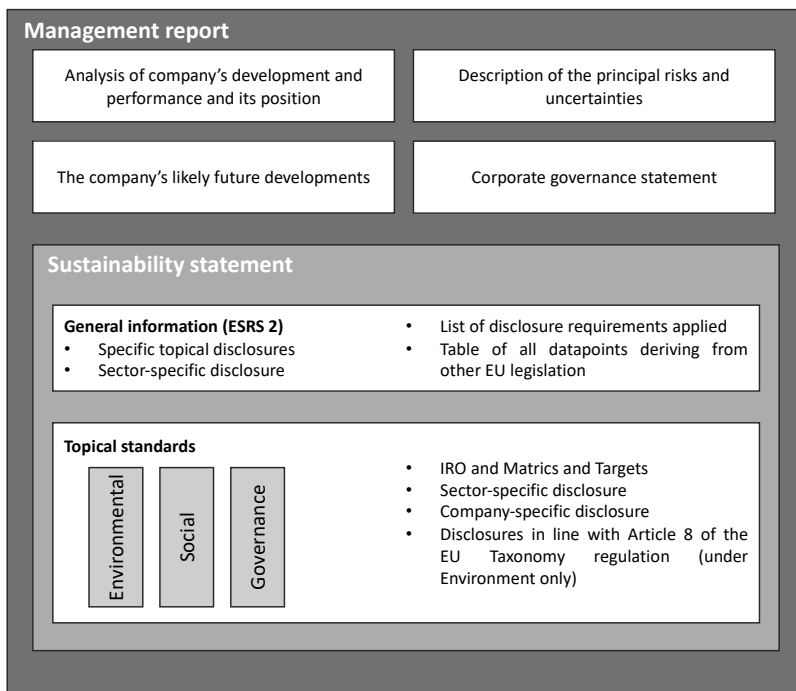
The third feature is the requirement to provide digitalised sustainability information in order to increase the dissemination of sustainability-related information. Companies will be obliged to present such information in a format that is both human- and machine-readable, using the European Single Electronic Format (ESEF) required by ESRS 2, and should also consider the use of ‘tags’ (digital labels) for ESG reporting.

The fourth innovative feature is the assurance obligation for the sustainability report. Currently, the requirement is to achieve a ‘limited assurance’ that results in a negative conclusion at an acceptable level that, based on professional judgement, there is nothing to indicate that the sustainability-related information has been materially misstated.

In the future, the intention is to achieve a ‘reasonable assurance’ (i.e. typical of the economic-financial balance sheet), that is, sufficient appropriate evidence to conclude that the sustainability-related information

is prepared, in all material respects, in accordance with the applicable reporting criteria (positive conclusion).

**Figure 3.** Example of the structure of an ESRS sustainability statement



## The double materiality approach

The concept of materiality is central to corporate reporting because it allows the management to detect relevant issues that are worth disclosing. Its origins date back to the nineteenth century when it was first used in jurisdiction courts for a financial fraud (OIBR, 2022) and has become a topic of immense importance for accounting and auditing (Messier et al., 2005). In the context of sustainability reporting, the concept has developed as two alternative single-materiality approaches: the financial materiality mainly pursued by ISSB and the Sustainability Accounting Standard Board (SASB), and the impact materiality as defined by the Global Sustainability Standard Board (GSSB).

Although academics and practitioners concur that the application of the materiality concept in sustainability reporting increases its value relevance and engagement with stakeholders (Adams et al., 2021), research reveals that approaches to the materiality assessment vary considerably, with relative disclosure often insufficient and unsatisfactory (Cooper & Michelon, 2022).

Within the framework of the ESRs, the EGRAG defines the double materiality from two complementary perspectives: impact materiality and financial materiality. A sustainability matter is material from an impact perspective when it pertains to the reporting entity's material (actual or potential) positive or negative impacts on people or the environment in relation to environmental, social, and governance matters over the short, medium, or long term. For instance, an organisation's activities will have an impact on people and the environment in the case of violations of human rights or environmental damages. Impact materiality is relevant to a broader array of stakeholders, such as employees, suppliers, consumers, local communities, and public authorities, including regulators and supervisors. Its nature means that it may also be considered a silent stakeholder.

A sustainability matter is material from a financial materiality perspective if it triggers risks and opportunities that have financial effects in terms of financial position, financial performance, cash flows, access to finance, or cost of capital over the short, medium, or long term. For example, when the reporting entity's business model depends on natural and social resources such as water, its financial position, financial performance, and cash flows are likely to be affected by changes in the quality, availability, and pricing of that resource. The financial materiality perspective is of interest for those using sustainability statements, such as investors, lenders, and other creditors, which includes asset managers, credit institutions, and insurance reporting entities. The financial materiality for sustainability reporting extends the scope of materiality used in the reporting entity's financial statements; however, it does not limit these to matters that are within the control of the reporting entity as it includes information on material risks and opportunities attributable to business relationships beyond the scope of consolidation.

A sustainability matter is 'material' when it meets the criteria defined for impact materiality or financial materiality (or both) from inception or becomes material over time. Therefore, the evaluation of double materiality must be dynamic and the assessment process should be updated regularly to deal with the evolution of economic, social, and environmental issues.

Under the ESRs' reporting framework, materiality assessment is the starting point for identifying the material IROs to be reported, as outlined

in the non-binding flowchart for determining disclosures in ESRS 1 (Appendix E). Companies will be able to conclude that information is immaterial at the level of a topical standard, an individual disclosure requirement, or even a single datapoint.

To identify the sustainability matters that are material, organisations should start with the list of sector-agnostic sustainability matters covered in the topical ESRS. However, they will also be required to identify entity-specific sustainability matters not explicitly mentioned in the ESRS.

IROs relating to any sustainability matter can be positive or negative, actual, or potential, and interconnected with those related to other topics. In identifying and assessing double materiality, the reporting entity shall focus on all areas along the value chain where IROs are deemed likely to arise, based on the nature of the activities, business relationships, geographies, or other factors concerned. To ensure accurate understanding of material IROs, the reported information should be disaggregated by countries, operating sites, or significant assets. In this step, the organisation can refer to previous materiality assessments, internal documentation (e.g. impact and risk assessments), external documentation (e.g. sector reports, benchmarks and ESG ratings), and insights derived from stakeholder engagement.

In the process of assessing the double materiality of sustainability matters, the reporting entity shall quantify IROs by drawing on multiple sources of input (e.g. dialogue with stakeholders and experts, interviews, surveys, and workshops).

With regard to impact materiality, the reporting entity will focus on the impacts that the organisation is exerting or contributes to exerting on people and the environment. In assessing impact materiality, the reporting entity shall: (i) identify the context in relation to its impacts, including its activities, business relationships, and stakeholders; (ii) define actual and potential impacts (both negative and positive) by engaging with stakeholders and experts reliant on scientific and analytical research on the impacts on sustainability matters; (iii) determine material matters to be reported in its sustainability statement based on the actual and potential impacts, and also by applying thresholds or cut-off points. To measure the relevance of an actual or potential impact, the reporting entity shall consider the severity and likelihood of the impact, taking into account its scale (how serious/bad the impact is or would be), scope (how widespread the impact is or would be), and irremediability (how difficult it is or would be to remedy the impact).

In terms of financial materiality, the reporting entity shall consider information as material if omitting, misstating, or obscuring that information could reasonably be expected to influence the decisions made

by primary users of general-purpose financial reports on the basis of the reporting entity's sustainability statement.

In assessing financial materiality, the reporting entity shall undertake the following three steps: (i) identify dependencies on natural and social resources as sources of financial effects; (ii) define sustainability-related matters as sources of risk if they contribute to negative actual or potential financial effects, or opportunities if they contribute to positive actual or potential financial effects; (iii) determine which of these are material for reporting based on the likelihood of occurrence and the potential magnitude of financial effects measured in accordance with appropriate thresholds.

The reporting entity shall inform the assessment of its material IROs in its sustainability due diligence process, the core elements of which are as follows:

- a) Embedding the double materiality process in a governance, strategy, and business model with the support of the board of directors, top management, and the interdepartmental body.
- b) Engaging with affected stakeholders in all key steps of due diligence, not only to identify and quantify IROs (with relative scoring) but also to discuss them and to define the strategy, policies, and action plans required to deal with the relevant issues.
- c) Identifying and assessing adverse impacts, ensuring a good balance between i) completeness, by using as many sources as possible and triangulating the insights, and ii) uniqueness, by prioritising the potentially material topics and considering their interrelationship.
- d) Taking actions to address those adverse impacts to ensure that the double materiality extends beyond the simple reporting activity and informs the entire strategic decision-making process (e.g. forecasting, planning, or setting remuneration policy).
- e) Tracking the effectiveness of these efforts and communicating in the sustainability statement the soundness and credibility of the broader strategy, risk management, and planning of the organisation in addressing sustainability matters.

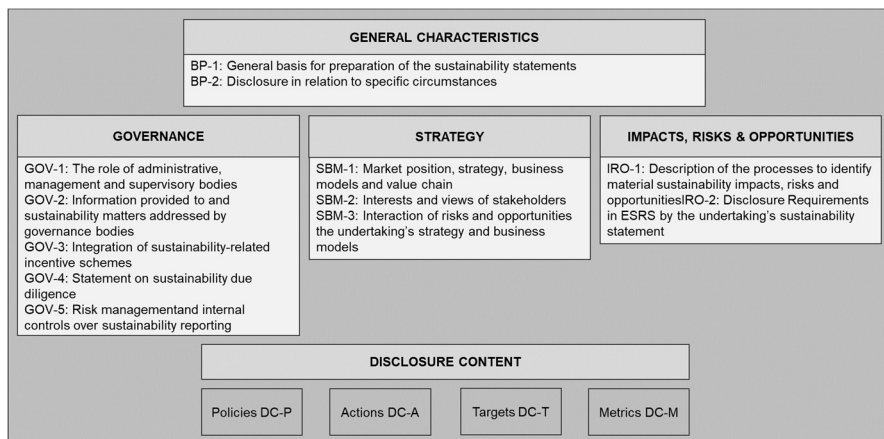
## **General disclosure requirements: ESRS 2**

ESRS 2 sets out the disclosure requirements that apply to all reporting entities regardless of their sector of activity (i.e. sector agnostic) and across sustainability topics (i.e. cross-cutting) (Figure 4). These disclosure requirements are always mandatory and should be met irrespective of the outcome of the materiality assessment.

The reporting entity shall disclose the general basis for preparing the sustainability statement (BP-1), including the scope of consolidation (whether the sustainability statement has been prepared on a consolidated or individual basis), the upstream and downstream value chain information, and, where relevant, whether the reporting entity has used any of the options for omitting.

In addition, it shall provide information in relation to specific circumstances (BP-2), that is: (i) deviation from the usual time horizon, (ii) estimated metrics in value chain disclosure, (iii) sources of estimation and outcome uncertainty, (iv) changes in preparation or presentation, (v) information on reporting errors in the prior period, (vi) disclosures stemming from other legislation, (vii) information incorporated by reference, and (viii) use of phase-in provision.

**Figure 4. Overview of ESRS 2**



ESRS 2 also establishes detailed disclosure requirements relating to the four reporting areas of sustainability-related disclosure for Governance, Strategy, Impact, Risks and Opportunities, Metrics, and Targets, and applies these to Environmental, Social, and Governance topical standards. Governance information (GOV) entails five disclosure requirements (DR). In particular, the reporting entity shall disclose information on the composition and diversity of the administrative, management, and supervisory bodies, their roles and responsibilities, and access to expertise and skills with regard to sustainability matters (DR GOV-1). Governance information should specify how administrative, management, and supervisory bodies consider

IROs in sustainability matters when overseeing the company's strategy, including how these matters were addressed during the reporting period (DR GOV-2). An important aspect of Governance information relates to the integration of sustainability-related performance into incentive schemes (DR GOV-3). The reporting entity shall provide information on whether sustainability-related incentive schemes are offered to members of the governing bodies, the amount involved, and their key characteristics. Finally, the reporting entity must disclose the mapping of the information provided in its sustainability statement regarding the due diligence process (DR GOV-4), along with the main features of risk management and internal controls over sustainability reporting, including scope, features, risk assessment methodology, and mitigation strategies (DR GOV-5).

Regarding Strategy (SBM), ESRS 2 sets out three disclosure requirements. The reporting entity shall disclose the key elements of its strategy that relate to sustainability matters in terms of significant markets and/or customer groups served, business model, and its value chain (DR SBM-1). This information is extremely important for understanding the sources of IRO along the value chain. In addition, the reporting entity shall disclose how the interests and views of its stakeholders are considered in the strategy and business model, and in stakeholder engagement (DR SBM-2). Lastly, the reporting entity should provide a brief description of the material IROs as they result from the reporting entity's double materiality assessment (DR SBM-3), its interaction with the strategy and business model, and its resilience. Furthermore, it is required to disclose information on current and anticipated financial effects of the reporting entity's material risks and opportunities with respect to its financial position, financial performance, and cash flows.

With regard to IRO management, ESRS provides two disclosure requirements and minimum disclosure content for policies, actions, and targets applied at the topical level. After describing the process that identifies and assesses material IROs, its thresholds, steps, and the interaction with the due diligence process (DR IRO-1), the reporting entity should provide a list of material disclosure requirements included in the reporting entity's sustainability statement and of the topics that have been omitted as not material, including the specific motivation for such omissions (DR IRO-2).

Finally, ESRS 2 provides four important forms of disclosure content, that is, minimum disclosure requirements on Policies, Actions, Targets, and Metrics to manage material sustainability matters.

Disclosure on Policies (MDR-P) includes information on its objectives, scope, internal or external responsibilities, and the relationship with affected stakeholders. Disclosure on Actions (MDR-A) entails information on current and future financial and other resources in relation to the implementation of sustainability-related action plans, including transition plans – particularly when they require operational expenditures (Opex) and/or capital expenditures (Capex).

ESRS 2 sets out minimum disclosure requirements on Metrics (MDR-M) for the provision of qualitative and/or quantitative indicators to measure and report on the effectiveness of sustainability-related policies. For each metric, the reporting entity shall disclose its label, definition, methodologies, significant assumptions, and unit of measure. With regard to Targets (MDR-T), the reporting entity will disclose the measurable, outcome-oriented, and time-bound goals it aims to achieve in relation to sustainability matters. For each target, the disclosure will include a description, target level, scope, baseline value and base year, period, methodologies, and significant assumptions, and specify whether it is based on conclusive scientific evidence and the engagement of stakeholders in the target setting.

## **Environmental topical standards: ESRS E1 – ESRS E5**

Under ESRSs, environmental disclosure is regulated by five topical standards (ESRS E1 – ESRS E5), as specified in Figure 5.

Once environmental matters have been assessed as material, the reporting entity shall report information in accordance with the disclosure requirements of the topical ESRS.

The topical standard on climate change (ESRS E1) covers environmental disclosure related to climate change mitigation, climate change adaptation, and energy-related matters to the extent that they are relevant to climate change, taking into account the requirements of other EU regulations (i.e. EU Climate Law, Climate Benchmark Standards Regulation, Sustainable Finance Disclosure Regulation, EU Taxonomy, and EBA Pillar 3 disclosure requirements).

Following the disclosure related to Governance, as part of the integration of climate-related considerations into incentive schemes, the reporting entity shall provide information on Strategy with reference to the transition plan for climate change.



**Figure 5.** Environmental matters to be included in the materiality assessment

| Topical ESRS | Sustainability matters covered in topical ESRS |  |  |
|--------------|--|--|--|
|              | Topic  | Sub-topic  | Sub-sub-topic  |
| ESRS E1      | Climate change                                 | <ul style="list-style-type: none"> <li>- Climate change adaptation</li> <li>- Climate change mitigation</li> <li>- Energy</li> </ul>   |  |
| ESRS E2      | Pollution                                      | <ul style="list-style-type: none"> <li>- Pollution of air</li> <li>- Pollution of water</li> <li>- Pollution of soil</li> <li>- Pollution of living organisms and food resources</li> <li>- Substances of concern</li> <li>- Substances of very high concern</li> <li>- Microplastics</li> </ul> |  |
| ESRS E3      | Water and marine resources                     | <ul style="list-style-type: none"> <li>- Water</li> <li>- Marine resources</li> </ul>  | <ul style="list-style-type: none"> <li>- Water consumption</li> <li>- Water withdrawals</li> <li>- Water discharges</li> <li>- Water discharges in the oceans</li> <li>- Extraction and use of marine resources</li> </ul>                       |
| ESRS E4      | Biodiversity and ecosystems                    | <ul style="list-style-type: none"> <li>- Direct impact drivers of biodiversity loss</li> </ul>   | <ul style="list-style-type: none"> <li>- Climate Change</li> <li>- Land-use change, fresh water-use change and sea-use change</li> <li>- Direct exploitation</li> <li>- Invasive alien species</li> <li>- Pollution</li> <li>- Others</li> </ul> |
|              |  | <ul style="list-style-type: none"> <li>- Impacts on the state of species</li> </ul>  | Examples: <ul style="list-style-type: none"> <li>- Species population size</li> <li>- Species global extinction risk</li> </ul>  |
|              |  | <ul style="list-style-type: none"> <li>- Impacts on the extent and condition of ecosystems</li> </ul>  | Examples: <ul style="list-style-type: none"> <li>- Land degradation</li> <li>- Desertification</li> <li>- Soil sealing</li> </ul>  |
|              |  | <ul style="list-style-type: none"> <li>- Impacts and dependencies on ecosystem services</li> </ul>   |  |
| ESRS E5      | Circular economy                               | <ul style="list-style-type: none"> <li>- Resources inflows, including resource use</li> <li>- Resource outflows related to products and services</li> <li>- Waste</li> </ul>   |  |

In the transition plan, the reporting entity shall ensure that its strategy and business model are compatible with the transition to a sustainable economy, the objectives of which are limiting global warming to 1.5 °C in line with the Paris Agreement and achieving climate neutrality by 2050. The key disclosures of the transition plan for climate change mitigation (Strategy - DR E1-1) are as follows:

- Compatibility of GHG emission reduction targets with limiting global warming to 1.5°C.
- Decarbonisation levers identified and key actions planned.
- Investments and funding supporting the implementation.
- Potential locked-in GHG emissions from key assets and products.

- e) Objective of aligning its economic activities with the EU Taxonomy.
- f) Whether it is excluded from EU Paris-aligned Benchmarks.
- g) Alignment with overall business strategy and financial planning.
- h) Implementation progress.

Disclosure on interaction between IROs and strategy (DR SBM-3) requires that for each identified material climate-related risk, the reporting entity shall explain whether it is considered a climate-related physical risk or climate-related transition risk. Physical risks arise when natural systems are compromised due to the impact of climatic, geologic events, or changes in ecosystem equilibria. Transition risks result from a misalignment between an organisation's or investor's strategy and management, and the changing regulatory, policy, or societal landscape in which these operate.

The reporting entity shall provide a description of the processes employed to identify and assess material climate-related IROs (DR IRO-1). This shall include GHG emissions, climate-related physical and transition risks in its own operations and along the value chain, and climate-related opportunities.

To identify the IROs, analyse resilience, and set GHG emission reduction targets, the reporting entity may rely on climate-related scenarios analysis.

ESRS E1 sets out specific disclosure content to be applied for Policies, Actions, Targets, and Metrics (Figure 6)

**Figure 6.** Disclosure Content for Climate Change-related Policies, Actions, Metrics, and Targets

| ESRS E1 - CLIMATE CHANGE   |   |   |   |
|--|---|---|---|
| Policies<br>(DR E1-2)  | Actions and resources<br>(DR E1-3)  | Targets<br>(DR E1-4; E1-5; DR E1-6; DR E1-7; DR E1-8)                     | Metrics<br>(DR E1-4; E1-5; DR E1-6; DR E1-7; DR E1-8)       |
| Climate change mitigation  | Present key actions taken or planned by decarbonisation lever including the nature-based solutions  | Climate change mitigation and adaptation / GHG emission reduction targets | Absolute value and intensity value of GHG emissions         |
| Climate change adaptation  |   | Energy consumption and mix  | Breakdown Scope 1, 2, and 3 GHG emissions                   |
| Energy efficiency  | Include the achieved and expected GHG emission reductions   | Gross Scopes 1, 2, 3 and Total GHG emissions                              | GHG emission intensity                                      |
| Renewable energy deployment  | Relate significant monetary amounts of CapEx and OpEx required to implement actions to financial reporting line items / performance metrics | GHG removals and GHG mitigation projects financed through carbon credits  | Energy consumption from removable and non-renewable sources |
|  |   | Internal carbon pricing   | Energy intensity based on net revenue                       |
|  |   |   | Amount in metric tonnes CO <sub>2</sub> eqt                 |
|  |   |   | Carbon credits outside the value chain                      |
|  |   |   | Carbon pricing scheme                                       |
| Anticipated financial effects from material physical and transition risks and potential climate-related opportunities (DR E1-9)  |   |   |   |
| Anticipated financial effects from material physical risks (e.g., monetary amount of current net assets at risk, share of net assets at physical risk covered by a climate change adaptation action plan, share of turnover of activities exposed to physical risks) |   |   |   |
| Anticipated financial effects from material transition risks (stranded assets / potential liabilities, Share of net transition risk assets covered by a climate change mitigation action plan)   |   |   |   |
| Potential to benefit from material climate-related opportunities (e.g., expected cost savings)   |   |   |   |

The topical standard on pollution (ESRS E2) covers environmental disclosure related to the pollution of air, water, and soil and substances of

concern (including those of extremely high concern).

The reporting entity should provide information on whether it has screened its site locations and business activities in order to identify actual and potential pollution-related IROs in its own operations and along the value chain, and if so, the methodologies, assumptions, and tools employed (DR IRO-1).

When conducting a materiality assessment, the reporting entity shall adopt the ‘Location, Evaluation, Assessment, Prepare’ (LEAP) approach, entailing the four phases of: (i) locating where the interface with nature takes place (Phase 1); (ii) evaluating the dependencies and impacts (Phase 2); (iii) assessing the material risks and opportunities (Phase 3); and (iv) preparing and reporting the results of the materiality assessment (Phase 4).

Figure 7 details the disclosure content to be applied for pollution-related Policies, Actions, Targets, and Metrics.

**Figure 7. Disclosure Content for Pollution-related Policies, Actions, Metrics, and Targets**

| ESRS E2 - POLLUTION  |  |   |   |
|--|--|---|---|
| Policies (DR E2-1)   | Actions and resources (DR E2-2)  | Targets (DR E2-3; DR E2-4; DR E2-5)   | Metrics (DR E2-3; DR E2-4; DR E2-5)   |
| Mitigate negative impacts related to pollution<br>Substitute and minimise substances of concern, phase out substances of very high concern (in particular for non-essential uses)<br>Avoid incidents and emergency situations  | Avoid Pollution<br>Reduce pollution, minimize and substitute substances of concern<br>Restore, regenerate and transform ecosystems where pollution has occurred<br>Specify whether and how adopted in the mitigation hierarchy | Prevention and control of air pollution and respective specific loads<br>Prevention and control of emissions of water<br>Prevention and control of pollution to soil<br>Prevention and control of substances of concern and substances of very high concern | Emission of air pollutants generated by the undertaking<br>Emission to water generated by the undertaking<br>Emissions of inorganic pollutants generated by the undertaking<br>Emission of ozone-depleting substances generated by the undertaking<br>Microplastic generated or used by the undertaking<br>Total amounts of Soc/SVHC generated/used during the production |
| Anticipated financial effects from material physical and transition risks and potential climate-related opportunities (DR E2-6)  |  |   |   |
| Anticipated financial effects on financial position, financial performance, cash flows, cost of capital, access to finance over the short medium and long term horizons (e.g., the share of Soc/SVHC-related net revenue, CapEx/OpEx related to incidents and deposits, provisions for environmental protection and remediation costs) |  |   |   |
| Transitional provisions allows qualitative disclosures for the first three years of preparation of its sustainability statement  |  |   |   |

The topical standard for water and marine resources (ESRS E3) covers environmental disclosure related to surface water, groundwater, and marine resources, including water consumption, water withdrawals, and water discharge in the reporting entity’s activities, products, and services.

The reporting entity should provide information on whether and how it has screened its assets and activities in order to identify its actual and potential water and marine resources-related IROs, and if so, the methodologies, assumptions and tools used employed (DR IRO-1).

This assessment should be conducted by adopting the LEAP approach and taking into due consideration the entire value chain, along with a life cycle assessment.

With respect to the other environmental standards, ESRS E3 sets out specific disclosure content to be applied for Policies, Actions, Targets, and Metrics (Figure 8).

**Figure 8.** Disclosure Content for Water and Marine Resources-related Policies, Actions, Metrics, and Targets

| ESRS E3 - WATER AND MARINE RESOURCES  |  |  |   |
|---|--|--|---|
| Policies<br>(DR E3-1)   | Actions and resources<br>(DR E3-2)   | Targets<br>(DR E3-3; DR E3-4)  | Metrics<br>(DR E3-3; DR E3-4)   |
| Water management (use and sourcing)<br>Product and service design addressing water-related issues and the preservation of marine resources<br>Commitment to reduce material water consumption in areas at water risk<br>Areas of high-water stress<br>Sustainable oceans and seas   | Avoid the use of water and marine resources<br>Reduce the use of water and marine resources such as through efficiency measures<br>Reclaiming and reuse of water<br>Restoration and regeneration of aquatic ecosystem and water bodies | Management of material IRO related to areas at water risk, (including improvement of the water quality)<br>Responsible management of marine resources related IRO including the nature and quantity of marine resources-related commodities<br>Reduction of water consumption, including areas at water risk, and of high water-stress<br>Ecological thresholds and methodology used | Total water consumption in m3;<br>Total water consumption in m3 in areas at water risk / high-water stress<br>Total water recycled and reused in m3<br>Total water stored and changes in storage in m3<br>Water intensity<br>Any contextual qualitative information |
| Anticipated financial effects from material water and marine resources-related risks and opportunities (DR E3-5)  |  |  |   |
| In terms of financial position, financial performance, cash flows, cost of capital, access to finance over the short medium and long term horizons (e.g., anticipated financial effects in monetary terms before considering water and marine resources-related actions or where not possible without undue cost or effort)<br>Transitional provisions allows qualitative disclosures for the first three years of preparation of its sustainability statement. |  |  |   |

The topical standard for biodiversity and ecosystems (ESRS E4) covers environmental disclosure related to terrestrial, freshwater and marine habitats, ecosystems and populations of related fauna and flora species, including diversity within and between species, and ecosystems and their interrelation with indigenous peoples and other affected communities.

The reporting entity may disclose its transition plan to elucidate the resilience of its strategy in relation to biodiversity and ecosystems, and the compatibility of its strategy with local, national, and global public policy targets (Strategy - DR E4-1).

Disclosure on interaction between IROs and strategy (DR SBM-3) requires that the reporting entity provides a list of material sites, material negative impacts regarding land degradation, desertification, or soil sealing, and operations that affect threatened species.

The reporting entity shall describe the process employed to identify material impacts, risks, dependencies, and opportunities (DR IRO-1), supported by a scenario analysis. The description shall include actual and potential impacts on biodiversity and ecosystems, dependencies on biodiversity and ecosystems, transition and physical risks and opportunities, and eventual systemic risks.

ESRS E4 establishes specific disclosure content to be applied for biodiversity and ecosystems-related Policies, Actions, Targets, and Metrics (Figure 8).

**Figure 9.** Disclosure Content for Biodiversity and Ecosystems-related Policies, Actions, Metrics, and Targets

| ESRS E4 - BIODIVERSITY AND ECOSYSTEMS   |   |  |   |
|---|---|--|---|
| Policies<br>(DR E4-2)   | Actions and resources<br>(DR E4-3)  | Targets<br>(DR E4-4)   | Metrics<br>(DR E4-5)  |
| Biodiversity and ecosystem protection policy operational sites around a biodiversity-sensitive area<br>Sustainable land / agriculture practices or policies<br>Sustainable oceans / seas practices or policies<br>Policies to address deforestation   | Disclose use of biodiversity offsets in its action plans<br>Describe how it has incorporated local and indigenous knowledge and nature-based solutions into biodiversity and ecosystems-related actions | Alignment with Post 2020 Global Biodiversity Framework, the EU Biodiversity Strategy for 2030<br>Relate to the biodiversity and ecosystem IROs<br>Use of biodiversity offsets in setting its targets<br>Allocation of the target in the mitigation hierarchy | The number and areas (in hectares) of operational sites around a protected areas or key biodiversity areas<br>Reference to E standards<br>Other relevant metrics considers relevant |
| Anticipated financial effects from material biodiversity and ecosystem-related risks and opportunities (E4-6)   |   |  |   |
| The undertaking shall disclose its potential financial effects of material risks and opportunities arising from biodiversity and ecosystem-related impacts and dependencies.<br>Potential financial effects in monetary terms or where impracticable qualitative information.<br>Transitional provisions allows qualitative disclosures for the first three years of preparation of its sustainability statement. |   |  |   |

Finally, the topical standard for resource use and circular economy (ESRS E5) covers environmental disclosure related to the circularity of material resources, renewable and non-renewable resource inflows, resource outflows, and waste.

The reporting entity shall describe the process employed to identify material impacts, risks, dependencies, and opportunities (DR IRO-1), providing information on the screened assets and activities and the related actual and potential IROs, and the methodologies, assumptions, and tools utilised.

Similar to the other environmental standards, this disclosure should be undertaken according to the LEAP approach, taking into consideration the value chain and life-cycle assessment, whilst also identifying physical and transition risks and opportunities.

The disclosure content for resource-use and circular economy-related Policies, Actions, Targets, and Metrics provided by ESRS E5 is presented in Figure 10.

Importantly, the EFRAG new set of environmental standards requires that qualitative and quantitative non-financial information be combined with financial information to ensure the connectivity of sustainability information with financial reporting. Sustainability information should be measured and illustrated in detail, providing a direct or indirect reconciliation of the significant amount of assets, liabilities, and net revenue (vulnerable to either material physical risks or transition risks) to the relevant line item or disclosure in the financial statements. Where appropriate, a reconciliation may even be presented in tabular form.

**Figure 10.** Disclosure Content for Resource Use and Circular Economy - related Policies, Actions, Metrics, and Targets

| ESRS E4 - BIODIVERSITY AND ECOSYSTEMS   |   |  |   |
|---|---|--|---|
| Policies<br>(DR E4-2)   | Actions and resources<br>(DR E4-3)  | Targets<br>(DR E4-4)   | Metrics<br>(DR E4-5)  |
| Biodiversity and ecosystem protection policy operational sites around a biodiversity-sensitive area<br>Sustainable land / agriculture practices or policies<br>Sustainable oceans / seas practices or policies<br>Policies to address deforestation   | Disclose use of biodiversity offsets in its action plans<br>Describe how it has incorporated local and indigenous knowledge and nature-based solutions into biodiversity and ecosystems-related actions | Alignment with Post 2020 Global Biodiversity Framework, the EU Biodiversity Strategy for 2030<br>Relate to the biodiversity and ecosystem IROs<br>Use of biodiversity offsets in setting its targets<br>Allocation of the target in the mitigation hierarchy | The number and areas (in hectares) of operational sites around a protected areas or key biodiversity areas<br><br>Reference to E standards<br><br>Other relevant metrics considers relevant |
| Anticipated financial effects from material biodiversity and ecosystem-related risks and opportunities (E4-6)   |   |  |   |
| The undertaking shall disclose its potential financial effects of material risks and opportunities arising from biodiversity and ecosystem-related impacts and dependencies.<br>Potential financial effects in monetary terms or where impracticable qualitative information.<br>Transitional provisions allows qualitative disclosures for the first three years of preparation of its sustainability statement. |   |  |   |

## Interoperability and connection with other frameworks

In the new panorama of sustainability reporting standards, the set of ESRs co-exists with other reporting frameworks on environmental and social matters.

Within the EU legislation, the EU Taxonomy on sustainable finance provides a classification of sustainable economic activities aimed at encouraging investments with environmental and social objectives. It defines six environmental objectives (climate change mitigation; climate change adaptation; water and marine resources; circular economy; pollution prevention; biodiversity and ecosystems) which are consistent with the minimum environmental reporting requirements of the CSRD.

Companies must include the disclosures required by the EU Taxonomy regulation in their sustainability statement. In particular, ESRs require companies to report which of their economic activities are: (i) eligible, meaning that the activities are included in the list defined by the Taxonomy as having the potential to be sustainable; and (ii) aligned, meaning that the economic activity meets specific criteria established by the Taxonomy.

At an international level, in June 2023 the ISSB, as an international organisation that has no regulatory power, published new voluntary reporting standards, namely IFRS S1 & S2, to meet investors' demands for consistent and comparable sustainability disclosures.

Whilst IFRS S1 provides disclosure requirements to enable companies to communicate sustainability-related risks and opportunities to investors, IFRS S2 sets out specific climate-related disclosures, as well as providing industry-specific requirements. Both fully incorporate the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD, 2017).