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Valuing Impact Materiality

**Methods for Assessment and Valuation of
Materiality Thresholds and Industry Benchmarks
under the EU CSRD**

Financial Market Chapter



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1 Introduction

In the year 2022, the European Parliament and the Council enacted the Corporate Sustainability Reporting Directive (CSRD), and it has been in force since 2023.¹ Developed over the course of over 15 years, the CSRD amended a directive from the year 2013. It is Legal Act of the European Union and the basis for robust and comprehensive sustainability reporting standards aligned with the objectives of the European Green Deal and other policies. It also aligns with other international standards in order to establish interoperability and connectivity.² The resulting sustainability reporting standards (ESRS) are based on this primary legislation. Beyond the EU, several developments (e.g., IFRS ISSB S1 and S2, US SEC Climate Disclosures, PBOC Basic Standards) aim at enabling companies to integrate sustainability into their activities by means of consistent and comparable reporting and assurance.

What is impact valuation?

"The role of monetary valuation is to translate those changes in well-being into monetary terms to reflect the value of the impact to affected stakeholders." (IFVI, GM2, par. 58).

How does it relate to impact accounting and measurement?

The system of accounting for impacts (impact accounting) depends on methods of measurement and modeling of impact drivers (inputs, activities, outputs). Impact valuation is the mathematical operation of monetization on specific impact drivers in a denominated currency unit.

What is Valuing Impact Materiality?

Valuing Impact Materiality is the approach to assessing the materiality of topics based on their impacts on local society. It measures the degree of change in societal well-being because of a company's activities.

At the heart of the CSRD framework lies the *materiality assessment*, designed to guide companies in understanding and addressing their environmental, social, and governance impacts.³ It requires companies to disclose material sustainability matters—encompassing general, topical, and sector-specific issues—to achieve transparency consistent with the objectives of the CSRD.⁴ The CSRD and its delegated acts leave it at the discretion of companies to define materiality thresholds.

In past collaborative Sprints, the member companies and partners of the Value

¹ Directive (EU) 2022/2464.

² European Green Deal (11 Dec 2019) revises non-financial reporting (Directive 2013/34/EU) to make the EU climate-neutral by 2050, promoting resource-efficient, sustainable, and inclusive transitions, protecting natural capital and health (Regulation (EU) 2021/1119). Commission's 'Action Plan on Financing Sustainable Growth' (8 Mar 2018) redirects capital to sustainable investments, manages environmental risks, and fosters transparency, with comparable sustainability disclosures supporting these goals (Regulation (EU) 2019/2088). 'EU Biodiversity Strategy for 2030' (20 May 2020) aims to restore ecosystems globally by 2050, protecting biodiversity essential for sustainability. Regulations like Regulation (EU) 2020/852 on sustainable economic activities, Regulation (EU) 2019/2089 on IMPACT disclosures, and others address impact risks and financial market transparency, reducing greenwashing. EU aligns with global frameworks like the SDGs (2030 Agenda) and the Paris Agreement (2015), ensuring EU policies support global sustainability goals.

³ 02-04 Materiality Assessment TEG meeting 06 November 2023 EFRAG Secretariat Revised FAQ 23.

⁴ ESRS 1, para. 7.



Balancing Alliance enhanced the decision-usefulness of their sustainability reporting,⁵ and most recently by connecting the CSRD to impact accounting and valuation. This effort was highlighted in Deloitte's paper on double materiality assessment and KPMG's publication for the World Economic Forum.⁶ Additionally, service providers—WifOR Institute and GIST Impact—have contributed to increasing transparency by publishing their valuation factor matrix, including valuation techniques and application guidance.⁷ Valuing Impact and RGS further contributed by publishing their valuation methodology,⁸ while the IFVI published their comprehensive set of value factors.⁹

Under any policy scenario of ESRS implementation, the CSRD marks a paradigm shift from GDP-focused growth towards a model of inclusive wealth that accounts for natural, human, produced, and other capitals.¹⁰ To establish a global methodology, IFVI and VBA have worked to standardize impact accounting through a structured process, starting with greenhouse gas (GHG) emissions and adequate wages.¹¹ The open-source value factors, accessible impact accounting methodologies, and advanced tools they've created make sustainability reporting and assurance more efficient and reliable.

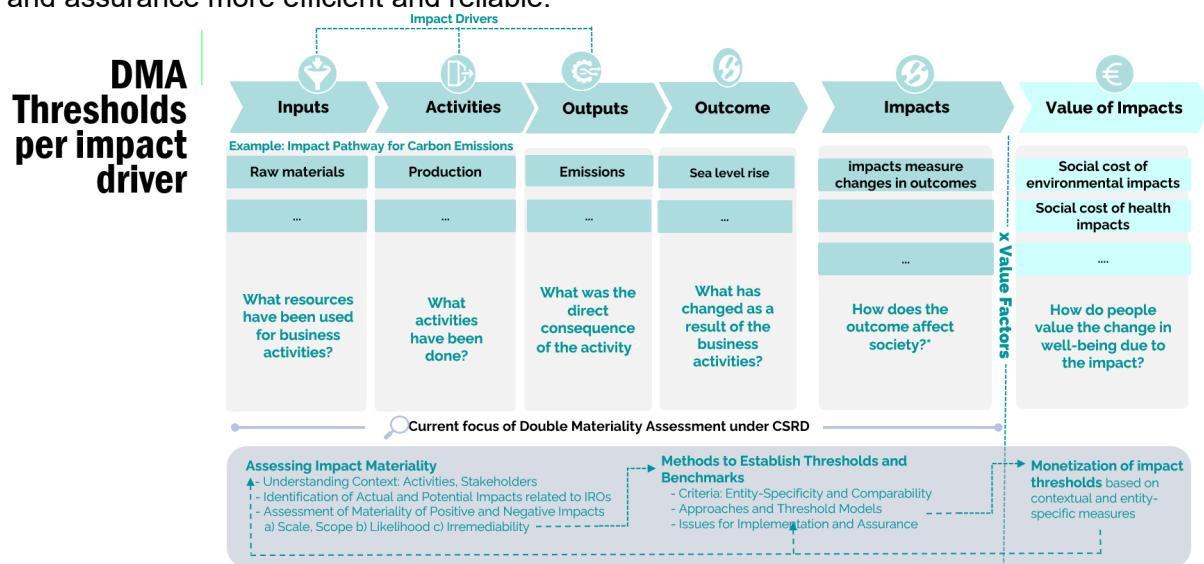


Figure 1: Adapted Impact Pathway inspired by VBA, Impact Pathway with Thresholds, 2025.

⁵ VBA et al., Impact Valuation Sprint Report 2024, 2024, www.value-balancing.com.

⁶ Deloitte, Advancing Double Materiality through Impact Valuation, 2024,

<https://www2.deloitte.com/ch/en/pages/risk/articles/advancing-double-materiality-through-impact-valuation.html>; World Economic Forum, How impact valuation helps undertakings meet the latest sustainability reporting requirements, 2024, <https://www.weforum.org/agenda/2024/04/impact-valuation-sustainability/>

⁷ GIST Impact and WifOR, Joint Value Factors, 2024, <https://insights.wifor.com/en/joint-value-factors> (Value Factor Framework).

⁸ Valuing Impact, eQALY Impact Valuation Method, 2024, <https://www.valuingnature.ch/post/eqaly-impact-valuation-method>.

⁹ <https://ifvi.org>, forthcoming.

¹⁰ UNEP, Inclusive Wealth Report 2023, 2023, pp. 16-17; World Bank 2021, The Changing Wealth of Nations 2021: Managing Assets for the Future,

<https://openknowledge.worldbank.org/entities/publication/e1399ed3-ebe2-51fb-b2bc-b18a7f1aaaed>

¹¹ IFVI and VBA, Impact Accounting Methodology, <https://ifvi.org/methodology/>

As illustrated in Figure 1, impact materiality encompasses the effects of corporate activities on social and environmental systems, along with their impact drivers (inputs, activities, outputs). Concepts like ‘true profit’ and ‘just profit’ promote sustainable practices, improve transparency, and foster impact-driven growth by aligning financial success with societal and environmental value.

As awareness grows around the interdependencies between business, civil society, and the environment, shareholders increasingly emphasize purpose-driven strategies. This shift amplifies stakeholder demands to reinforce corporate responsibility through due diligence based on double materiality.¹² In turn, regulations such as the EU's CSRD and SFDR, as well as IFRS and SEC frameworks are driving companies toward greater accountability and sustainability in their operations.

2 Valuing Impact Materiality

2.1 Impact Valuation: An Information User Experience View

Assessing the *materiality* of information hinges on the notion of a threshold: a critical point at which information is designated as *relevant* and *significant* for a specific group of information users—in essence, information that matters for a given set of decisions. The qualitative features that enhance the information user experience across various reporting frameworks, including the ESRS (as the delegated act to the CSRD), can be distilled into three key dimensions:

- **Relevance:** The alignment of potential decision outcomes with the preferences of information users.
- **Usability:** The context-, behavior-, and preference-based information gain experienced by users.
- **Presentation:** The format and structure in which relevant and usable information is conveyed to users.

For information users relying on thresholds and benchmarks under the CSRD, two key features determine the usability of such thresholds: *comparability* and *specificity* of the information provided.

The double materiality of information introduces a nuanced variation, addressing both the *impacts* and the *dependencies* within a defined time horizon:

- **Financial materiality** — encompasses the effects of social and environmental systems on a corporate entity
- **Impact materiality** — highlights the effects of the corporate entity on social and environmental systems.

¹² ESRS 1, para 24.



Impact valuation serves as a precursor or input to the (double) materiality assessment process. It does not, on its own, define materiality. Instead, it aids information users, both the preparer entity and its various stakeholders, by enhancing comparability across regulatory, regional, industry, and absolute thresholds. As a preliminary step in the process, impact valuation translates reported and estimated ESRS data points into (potential and actual) impacts, in monetary terms. This enables companies to identify and monitor material topics along their value chain and undertake necessary interventions to achieve their targets.

Notably, both the ESRS and ISSB frameworks leave the definition of thresholds to the discretion of reporting entities and provide limited guidance or details in their standards and accompanying documents.¹³

Impact valuation captures both positive and negative impacts, providing valuable insights for the application of various thresholds and benchmarks. It complements the materiality assessment process by simplifying analysis, reducing costs, supporting global value chain mapping, and filtering out non-material issues through Environmentally Extended Input-Output (EEIO) approaches. Thus, to ensure a comprehensive assessment of impact materiality, a hybrid approach combining data-driven impact valuation and stakeholder engagement is recommended.

¹³ See paragraph B19 of IFRS S1; Sustainability-related risks and opportunities and the disclosure of material information, Educational Material, p. 45; ESRS 1 and EFRAG IG 1: Materiality Assessment Implementation Guidance, par. 27.



2.2 Definition of Materiality Thresholds and Benchmarks

A threshold for impact materiality represents the point at which the negative or positive impacts are considered relevant and significant from the perspective of information users.

Double materiality underpins the identification of thresholds and benchmarks by requiring companies to evaluate sustainability issues through two lenses:¹⁴ **financial materiality**, which focuses on risks and opportunities affecting financial performance, and **impact materiality**, which considers the broader social and environmental consequences of corporate activities.¹⁵

2.2.1 Threshold

More generally, a threshold is a point at which a certain reaction occurs, or a consequence is triggered within a system. The construction of thresholds involves three key elements:

- **Reference system:** A system in which the whole and its parts interact dynamically—naturally and/or through human intervention.
- **Limit:** A critical quantity of flow or stock within the reference system and/or a logical conclusion derived from qualitative criteria.
- **Reaction:** A response triggered by reaching the defined limit, which may be naturally occurring and/or of human design for a specific user (e.g., dose-response).

Thresholds are dynamic, evolving with changes in the system, and assume a normal distribution of numerical values. Construction and application of thresholds requires a mix of calculation and judgement. As social and ecological systems change, thresholds may shift due to alterations, e.g., in transition risks or physical risks. Such shifts could result from changes at sensitive intervention points, such as tightening regulatory standards or changing societal expectations, or the breaching of planetary boundaries and surpassing of tipping points.

For the CSRD, this means: The *reference system* is determined by several elements, incl. the structure and nature of the specific impact driver, the causal relationships of stocks and flows in social-environmental systems as well as the attribution of impacts (logic model), the context of various system levels and geographic scopes (the ‘system boundary’), and the calculability of impact drivers as inputs, activities, and outputs (measurement units). *Limits* are decision weights that are dependent on the information user experience (incl. their behavior, goals, preferences, context, etc.). *Reactions* are the potential outcomes of decisions made by information users (e.g., investors and various stakeholders); examples include investor decisions to buy, hold, sell, engage.

¹⁴ ESRS 1, pars. 37-53.

¹⁵ Cp. EFRAG, p. 15, https://www.efrag.org/sites/default/files/media/document/2024-07/EFRAG_ESRS%20initial%20observed%20practices%20Q2%202024%20final%20version.pdf



Definitions and Related Concepts	Source
<p>“The undertaking shall apply the criteria set under sections 3.4 and 3.5 in this Standard, using appropriate quantitative and qualitative thresholds. Appropriate thresholds are necessary to determine which impacts, risks and opportunities are identified and addressed by the undertaking as material and to determine which sustainability matters are material for reporting purposes.”</p>	ESRS 1, para 42.
<p>“The disclosure required by paragraph 29 shall include the following information:</p> <p>(a) whether ecological thresholds and allocations of impacts to the undertaking were applied when setting targets. If so, the undertaking shall specify:</p> <ul style="list-style-type: none"> i. the ecological thresholds identified, and the methodology used to identify such thresholds; ii. whether or not the thresholds are entity-specific and if so, how they were determined; and iii. how responsibility for respecting identified ecological thresholds is allocated in the undertaking;” 	ESRS E4 para. 32
<p>“The significance of an impact is assessed, and the organization has identified other impacts. The organization should arrange its impacts from most to least significant and define a cut-off point or threshold to determine which impacts it will focus its reporting on. The organization should document this threshold. To facilitate prioritization, the organization should group the impacts into topics (see Box 4 in this Standard).”</p>	GRI, GRI 3 Material Topics 2021, 2023, p. 13.
<p>“Materiality judgements are specific to an entity. Consequently, this Standard does not specify any thresholds for materiality or predetermine what would be material in a particular situation.”</p>	B19, IFRS ISSB, S1.
<p>“A sustainable future relies on ensuring that no one falls short on life’s essentials and that we collectively do not overshoot our pressure on Earth’s life-supporting systems. Societal or ecological thresholds identified by science help establish the foundations and ceilings that earth and society should seek to operate within to prevent harm to people and the natural environment.”</p>	Threshold defined in Impact Management Platform, https://impactmanagementplatform.org/thresholds-and-allocations/ , last visited 14/10/2024.
<p>“The targets need to be aligned with scientific thresholds and international frameworks. So rather than focusing on the risk sustainability themes pose to the financial institution’s activities, the indicator examines its impact on them.”</p>	Referring to thresholds used as targets, Financial System Benchmark Methodology, 2021, p. 24, https://assets.worldbankgroupalliance.org/app/uploads/2021/12/WBA_21_financial-system-benchmark_v4.pdf , last visited 14/10/2024
<p>“A level or range of performance that divides sustainable from unsustainable performance. These ranges are set with reference to social norms or planetary limits that have been identified through scientific research. Learn more about thresholds and allocations.”</p>	https://impactmanagementplatform.org/thresholds-and-allocations/



2.2.2 Benchmark

A benchmark for impact materiality is a reference point for evaluating a company's sustainability performance relative to a specific topic, industry, region, or universe.

A benchmark is a static measure relative to a sample within the reference system. It must be periodically adjusted based on the underlying reference index. The numerical outputs represent averages applicable to a specific part of the reference system (sample distributions). Benchmarks alone do not define materiality thresholds, as they primarily serve as comparative reference points. However, when combined with additional contextual measures—such as regulatory limits, scientific thresholds, or sector-specific risk adjustments—they may serve as a proxy for setting thresholds, helping to determine materiality in sustainability assessments.

Definitions and Related Concepts	Source
“[Benchmark] means any index by reference to which the amount payable under a financial instrument or a financial contract, or the value of a financial instrument, is determined, or an index that is used to measure the performance of an investment fund with the purpose of tracking the return of such index or of defining the asset allocation of a portfolio or of computing the performance fees;”	Regulation EU 2016/ 1011 Art. 3 1 (3)
“When developing its entity-specific disclosures, the undertaking shall carefully consider (a) comparability between undertakings while still ensuring the relevance of the information provided, recognizing that comparability may be limited for entity-specific disclosures. The undertaking shall consider whether the available and relevant frameworks, initiatives, reporting standards and benchmarks (such as technical material issued by the International Sustainability Standards Board or the Global Reporting Initiative) provide elements that can support comparability to the maximum extent possible and (b) comparability over time: consistency of methodologies and disclosures is a key factor for achieving comparability over time.”	Application Requirement 4(a) in ESRS
“Processes used to track the effectiveness of actions can include internal or external auditing or verification, impact assessments, measurement systems, stakeholder feedback, grievance mechanisms, external performance ratings, and benchmarking.”	Guidance to 3-3-1, GRI 3 Material Topics 2021, 2023, p. 22.
“Benchmarks and ratings are assessments and rankings of organizations' sustainability practice and performance, relative to each other or against sustainability thresholds. While organizations themselves can carry out benchmarking, it is primarily conducted by external parties that collect and standardize data from various organizations. Such external benchmarks and ratings can provide additional inputs to organizations' impact management processes. They are also important to organizations' stakeholders, such as investors or clients, who may rely on them for their decision-making processes and to hold organizations accountable.”	Benchmarking in Impact Management Platform, https://impactmanagementplatform.org/actions/benchmarking-and-rating/ , last visited 14/10/2024.
“The benchmarks demonstrate to companies and their stakeholders where they stand compared to peers and where they can improve. This information gives businesses and stakeholders a roadmap for future transformations, showing how sectors can positively leverage their influence and where action is urgent. The best available science informs the benchmarks and builds on existing norms, standards, frameworks, and initiatives.”	Referring to the sector specific benchmarks, Financial System Benchmark Methodology, 2021, p. 5, https://assets.worldbenchmarkingalliance.org/uploads/2021/12/WBA21_financial-system-benchmark_v4.pdf , last visited 14/10/2024.



2.3 Issues for Policy and Practice

Thresholds and benchmarks can interact in different ways:

- **Benchmarks shaping thresholds:** Benchmarks can influence normative expectations and perceptions of appropriateness. As used widely by market participants, benchmark methods may acquire the quality of standard-like norms, which can, in turn, inform the development of thresholds.
- **Thresholds shaping benchmarks:** Thresholds can be used as standardized reference points, as limits for negative impacts (e.g., harm reduction), or as indicators of additionality for positive impacts.

Generally speaking, issues of science-based causality or attribution play a critical role in qualifying the relationship between benchmarks and thresholds. Benchmarks can form the basis for constructing indices that track a firm's performance relative to peer groups within thematic categories. While benchmarks can approximate thresholds, they must be used with caution. Industry averages may reflect past performance rather than forward-looking sustainability requirements, and sector-based benchmarks may not account for emerging risks or absolute planetary limits. Therefore, benchmarks should be contextualized with regulatory guidance, scientific findings, or stakeholder priorities to ensure thresholds remain meaningful. In other words, benchmarks may be used as thresholds in materiality assessment—however, challenges remain, particularly in determining the meaning of positive impacts from the information user perspective, rather than assuming industry averages as natural thresholds.

Impact valuation is essential for identifying positive and negative impacts, risks, and opportunities (IRO) of a company's business activities and value chain, as well as defining time horizons for materiality assessments. In preparing for the impact materiality process, companies describe the IROs with sufficient granularity to encompass impacts from the business perspective (disaggregated if necessary), including separate valuations for potential and actual impacts, positive and negative impacts, and impacts within companies' own operations versus those in the value chain.¹⁶

Environmental impacts are typically assessed prior to mitigation, permitting gross valuations of potential impacts and net valuations of actual impacts, and providing a clearer understanding of net impacts in the materiality analysis.¹⁷ ESRS sustainability matters provide a starting point, and companies are required to identify entity-specific topics that go beyond generic assessments. Note that specific thematic standards may impose additional requirements as well.

¹⁶ EFRAG IG 1, FAQ 4.

¹⁷ EFRAG IG 1, FAQ 23.



Consistent impact materiality processes and comparable valuation techniques enable companies to assess material positive and negative impacts. This includes tracking impact performance data points not expressly mandated for disclosure under ESRS, but which nonetheless support a better understanding of impact trajectories within the CSRD framework.

Independent advisors can play a role in encouraging standardized metrics for impact measurement, improving the consistency of data collection and reporting over time to enable meaningful comparisons across reporting periods and extending beyond own operations to value chain stages and industries. Early planning for the impact materiality process beyond the first reporting period ensures control over impact and gap assessments while benefiting from streamlined procedures and economies of scale. Audits further strengthen this process through increased alignment, enhanced comparability, credibility, and stakeholder trust in reported information. Material impacts should be evaluated from the stakeholder's perspective, factoring in the scale, scope, and irreversibility of impacts across own operations and the value chain and considering that materiality thresholds may require adjustment over time to reflect changing circumstances.

3 Methods to Establish Thresholds and Benchmarks

3.1 Overview: from Impact Assessment to Valuation

In this section, we provide a first-of-its-kind evaluation of approaches to thresholds and benchmarks for double materiality assessment (DMA) with and without impact valuation. Today's impacts may evolve into tomorrow's risks and opportunities, given the interconnection between impact, dependency, risk, and opportunities.¹⁸ *Severity*, based on scale, scope, and irreversibility, defines the threshold for actual negative material impacts, while scale and scope apply to actual positive material impacts. *Likelihood* is considered for negative and positive potential impacts.¹⁹ When assessing potential adverse human rights impacts, severity should be prioritized over likelihood to ensure accurate and meaningful evaluations. Companies retain the discretion to define thresholds within legal constraints.²⁰

¹⁸ Referring to discussion on transformative solutions can drive regeneration and address unsustainable practices, in John Elkington, *Green Swans: The Coming Boom in Regenerative Capitalism*, 2020 and Carney addressing climate in Financial Times, *Mark Carney warns net zero will mean 'significant' stranded property assets*, 02.10.2024, <https://www.ft.com/content/d0925242-858c-4a97-a98b-db846a470d27>

¹⁹ ESRS 1, para. 45 and 46.

²⁰ ESRS 1 AR 11.



For the application of thresholds under the CSRD,²¹ the following steps are important: 1) *Identification and application* of threshold approach and methodology; 2) *Specification of thresholds* to the entity and its context; 3) *Operationalization* using the applied thresholds.

First, preparers identify the thresholds and how they are applied, i.e., their methodology (identification and application). The delegated acts point at robust, context-specific methodologies, such as sectoral benchmarks, scientific targets (e.g., SBTi for climate), and international frameworks (e.g., SDGs).²² It is helpful to distinguish between the reference system, the limits, and the reaction described in 2.2.1 above. This is reflected in the delegated act, where thresholds need to be identified, and the respective methodology.²³

Second, those thresholds need to be—whenever possible—entity-specific. Entity-specific here means that the thresholds are a function of measured or modelled data from specific operations and locations of the company and its value chain. The method of data collection and analysis, as well as the sources of thresholds, should be intelligible. According to the delegated acts, the companies need to clarify whether or not the thresholds are entity-specific and, if so, how they were determined.²⁴ Entity-specificity and operationalization of general and topical thresholds cover impacts from unique own operations, value chains, and geographic contexts of the reporting entity.²⁵

Third, entities follow their corporate policies when they implement thresholds as part of organizational practices. If preparers use such thresholds as described above, they will have some kind of organizational structure which allocates responsibility to respect the identified thresholds from the information user perspective. To describe this structure, the model of information user experience is useful, which follows the features described in 2.1 above. The delegated acts will have some guidance for entities to explain how responsibility for respecting identified (ecological) thresholds is allocated in the undertaking.²⁶ An entity may show how assurance and responsibility are allocated across functions and divisions, including in its enterprise risk management system, compliance, strategy, and innovation processes.²⁷

As shown in Figure 2 below, impact materiality assessments must meet the usability criteria of entity-specificity and comparability. Thus, *specificity* on the x-axis means that approaches and methods provide materiality thresholds that are specific to the context and business

²¹ See criteria for thresholds in ESRS 1 3.4 and 3.5 as by 3.2 36, 3.3.

²² Reference to the chapeau “The undertaking shall establish how it applies criteria, including appropriate thresholds” in ESRS 1, para 36.

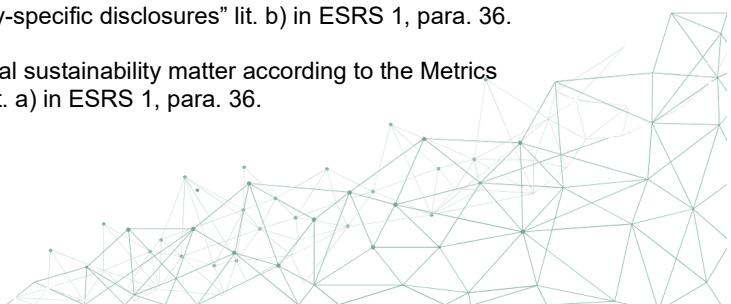
²³ ESRS E4 para. 32(a)(i).

²⁴ ESRS E4 para. 32(a)(ii).

²⁵ Reference to “the information to be disclosed as entity-specific disclosures” lit. b) in ESRS 1, para. 36.

²⁶ ESRS E4 para. 32(a)(iii).

²⁷ “... the information it discloses on metrics for a material sustainability matter according to the Metrics and Targets section of the relevant topical ESRS...” lit. a) in ESRS 1, para. 36.



model of the corporate entity. *Comparability* on the y-axis means that approaches and methods provide materiality thresholds that are comparable among different corporate entities and against external performance benchmarks.

This categorization results in four types of threshold methods:

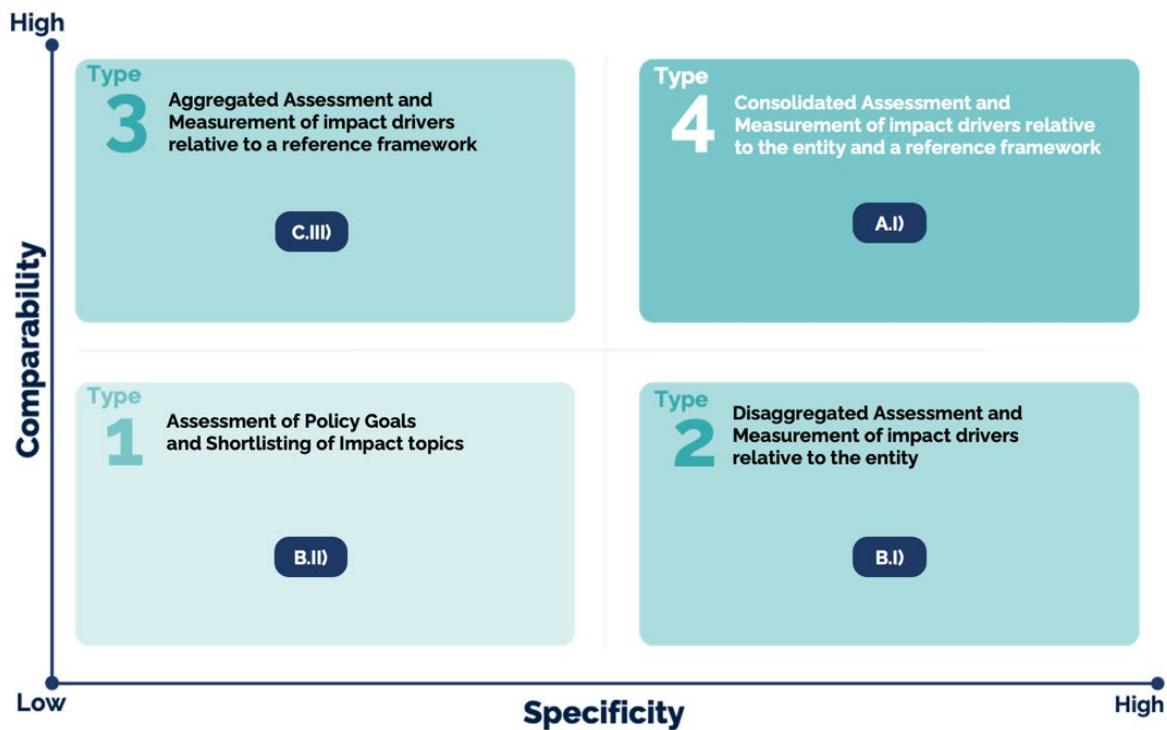


Figure 2: Usability matrix for materiality threshold methods (adapted from West and Euler, 2023).

This evaluation framework of thresholds corresponds to the CSRD's delegated act requirements regarding: a) whether the thresholds are identified, and the methodology used to identify such thresholds; b) whether or not the thresholds are entity-specific and, if so, how they were determined; and (c) how responsibility for respecting identified ecological thresholds is allocated in the undertaking.²⁸ The examples used above are explained in section 3.2 below, including A.I) Classification-based/Cross-sector thresholds, C.III) Target-based/Corporate pathways, B.I) System-based/Local and regional boundaries, and B.II) System-based/Planetary boundaries. Further mapping of detailed methods is on-going work-in-progress.

Advancing from Type 1 to Type 4 assessments facilitates an increasingly higher degree of usability as a function of entity-specificity and comparability. In turn, this leads to a broader

²⁸ Also compare with 42, 7.6 102. And AR 9. AR AR 10, 11 and 15; ESRS 2 IRO-1 53 and 59; ESRS E2-1 and E2-2 19 b); E2-3 25; E2-3 AR 16; E2-4 AR 25-27; E3-3 24-25; E3-3 AR 22; E4-4 32; E4-5 AR 27 e); E5-3 26; E5-3 AR14.

and more consistent understanding of impact materiality from the information user's perspective.²⁹

The role of impact accounting is clear when it comes to optimization between entity-specificity and comparability. Type 4 assessments, through scoring, rating, and valuation of measured impacts, represent the highest degree of usability in terms of entity-specificity and comparability. But regardless of what assessment type companies use, they need to demonstrate how severity and likelihood are determined.³⁰ ESRS data points are sourced through qualitative, quantitative, or mixed methods, on the impacts of the businesses' own operations and their impacts within the company and its value chain.³¹ In particular, impact accounting supports performance assessment along defined trajectories between *material negative* and *material positive* impacts. The process provides a complete picture of material sustainability issues. Usability is prioritized through a user-centric approach that delivers decision-useful information for managers, investors, and communities, enabling them to understand the company's business model, stakeholder relationships, context, and value chain. Complementing qualitative stakeholder engagement with quantitative impact assessment reduces subjectivity and bias, increases consistency, comparability, efficiency as well as decision-usefulness in sustainability reporting.

²⁹ Source: West et al., Agile Sustainable Development: A Primer on Corporate Impact Indicators and Valuation Factors via Agile Models, 2023. <https://ssrn.com/abstract=4545204>

³⁰ ESRS 1, 3.4.

³¹ See e.g., ESRS 1, para. 42.

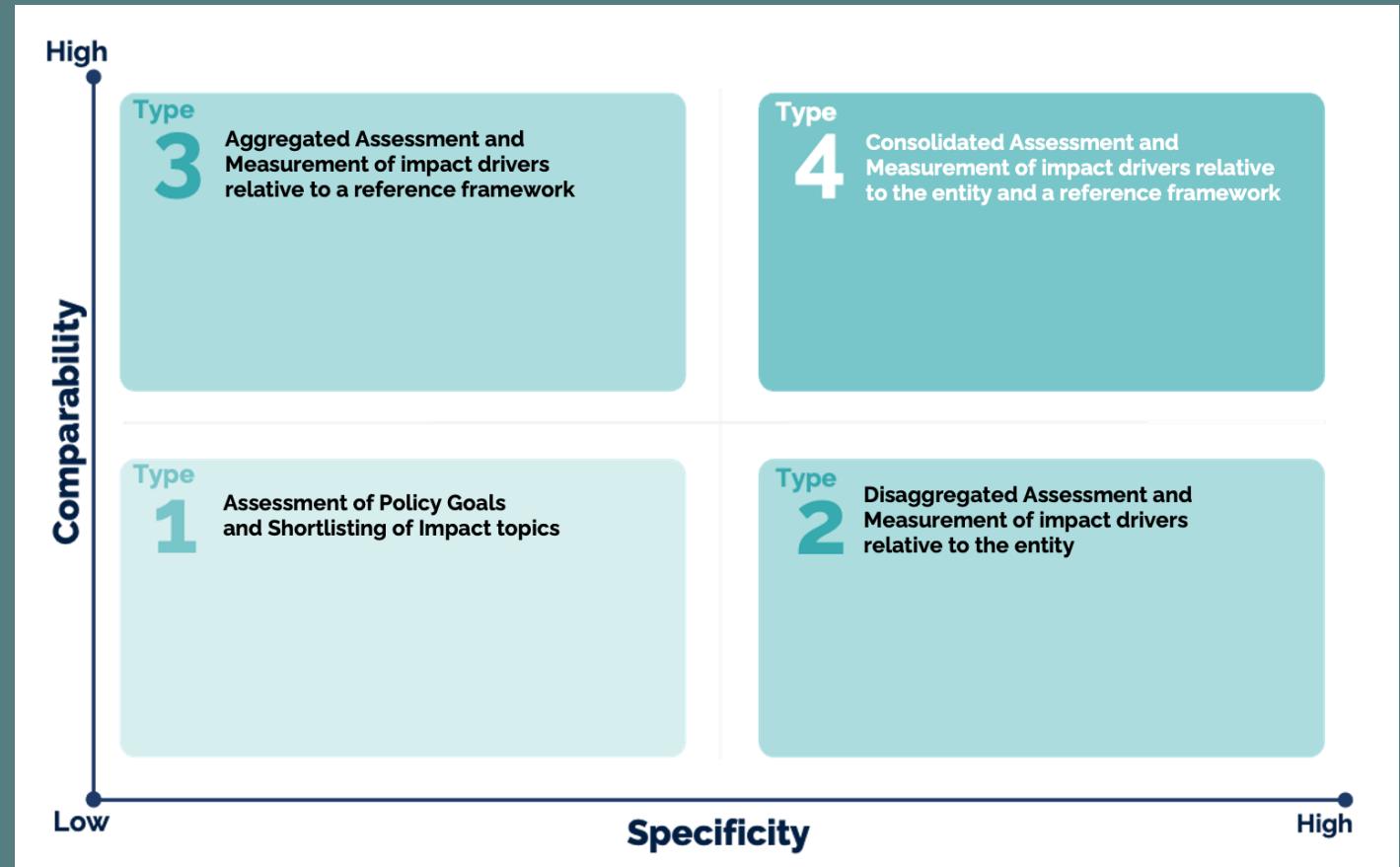


Usability Matrix for Materiality Threshold Methods

Type 1 (T1) – Assessment of Policy Goals and Shortlisting of Impact Topics: T1 assessments for initial, qualitative determination of materiality are based on expert assessment. The threshold is set by the expert. Methods in this category are rated as low regarding comparability and low in terms of entity specificity.

Type 2 (T2) – Disaggregated Assessment and Measurement of Impact Drivers relative to the Entity: T2 assessments introduce a quantitative and entity-specific information approach which can be operationalized with the professional implementation of measurement methods. T2 impact valuation uses thresholds based on impact drivers to evaluate materiality across relevant sustainability topics, including environmental and social factors. However, disaggregated measures are highly specific to the entity and—on their own—are of limited use for external information users. Methods in this category are rated as high in terms of entity specificity and low in terms of comparability.

Type 3 (T3) – Aggregated Assessment and Measurement of Impact Drivers relative to a Reference Framework: T3 assessments provide quantitative assessments based on historical or sectoral data or cross-sectoral data. Information gathering is methodology-based or data-driven, but the data goes beyond the specific context. Methods in this category are rated high in terms of comparability and low in terms of entity specificity.



Type 4 (T4) – Consolidated Assessment and Measurement of Impact Drivers relative to the Entity and a Reference Framework: T4 assessments provide a robust basis for setting thresholds using companies' data management structure and a sector or cross-sector data universe as benchmarks. Thresholds methods are based on transparent data and aligned with topical, universal, regional, or industrial benchmarks. Thresholds are weighted, rated, or monetized across sectors, industries, and regions. T4 assessments are rated as high both in terms of comparability and specificity.

The complete mapping is part of work-in-progress available on the [Github Repo](#) and on [Mural](#).

3.2 Specific Approaches for Thresholds and Benchmarks

This section provides various examples of thresholds of corporate impacts that can be applied in specific contexts, both with and without publicly available benchmarks.³² Many of the approaches build on each other and are not mutually exclusive. They may have different emphases and change over time, making it challenging to delineate specific methodologies.

Technical Note

Thresholds are impact driver-specific and are derived from biophysical and/or socio-economic models. In some cases, thresholds of impact have been established scientifically and mandated by law. In other cases, thresholds may be proposed or used in one context but may not be operationalizable in another context. Some are internationally recognized, and others are only nationally applicable. Some drivers and impacts do not occur in the same location. In the same way, some risks are not spatially or temporally bounded. Some thresholds are set at the location of the input, activity, and/or output, and others at the location of impact.

Therefore, this section provides an overview of approaches and a non-exhaustive list of examples focused on materiality assessment under CSRD from a usability perspective: i.e., how thresholds are identified and how methodologies are used. As we advance, this work will help us better understand what is required in order to develop and apply thresholds and how to enhance the usability of relevant norms and reporting data for corporate decision making.

A) Classification-based

In classification-based approaches, thresholds are derived from cross-sectoral or topical and sector-specific reference points. They may refer to other classification systems' business activities. For sustainability activities, those may be the EU Taxonomy (e.g., DNSH and specific thresholds in technical screening criteria). For economic activities, those may be generally used industry classifications by data, benchmark, and ratings providers or public agencies.

A.I) Cross-Sector Thresholds and Benchmarks

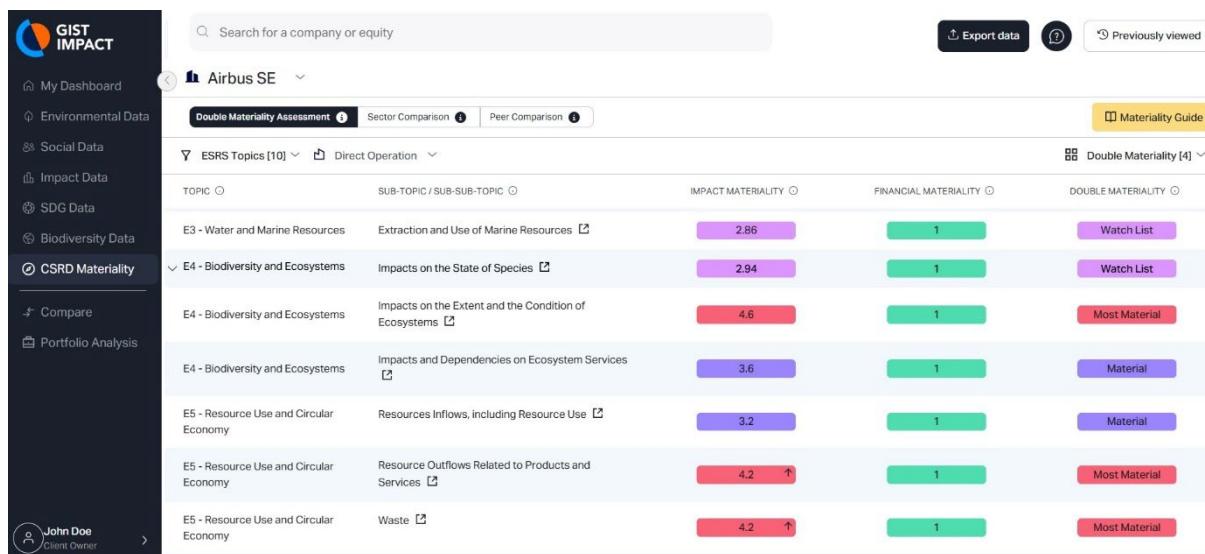
How thresholds are identified: As a classification-based approach, thresholds are derived from databases focused around topics and impact drivers that span different sectors (the 'universe'). Various information sources include measured, reported, estimated, and modelled information, data from industry benchmarks, peer comparisons, and other external reference points. Cross-sector thresholds and benchmarks are drawn from systems based on scoring,

³² See <https://github.com/Greenings/transitionvaluation>

rating, or valuation methodologies. Topical standards may also refer to science-based targets and trajectories that consider sector-specific contexts.³³

How methodologies are used: The specific methodology for all these different systems is key to deriving suitable T3 or T4 thresholds. In the example below, thresholds are identified following an impact valuation methodology. The thresholds relate to the industry of the specific entity. The thresholds are impact intensities for high, median, and low impacts.

Using Airbus as an example, the snapshots below show the materiality of CSRD ESRS E5: Waste Generation, with scores based on the impacts of its reported hazardous and non-hazardous waste disposal. These figures are processed through GIST Impact's Impact Valuation Engine³⁴, which quantifies science-based, location-specific impacts of Airbus's waste generation practices. CSRD scores are determined by comparing Airbus's impact valuation numbers to sector and company thresholds, ensuring both absolute impact and sector relevance.

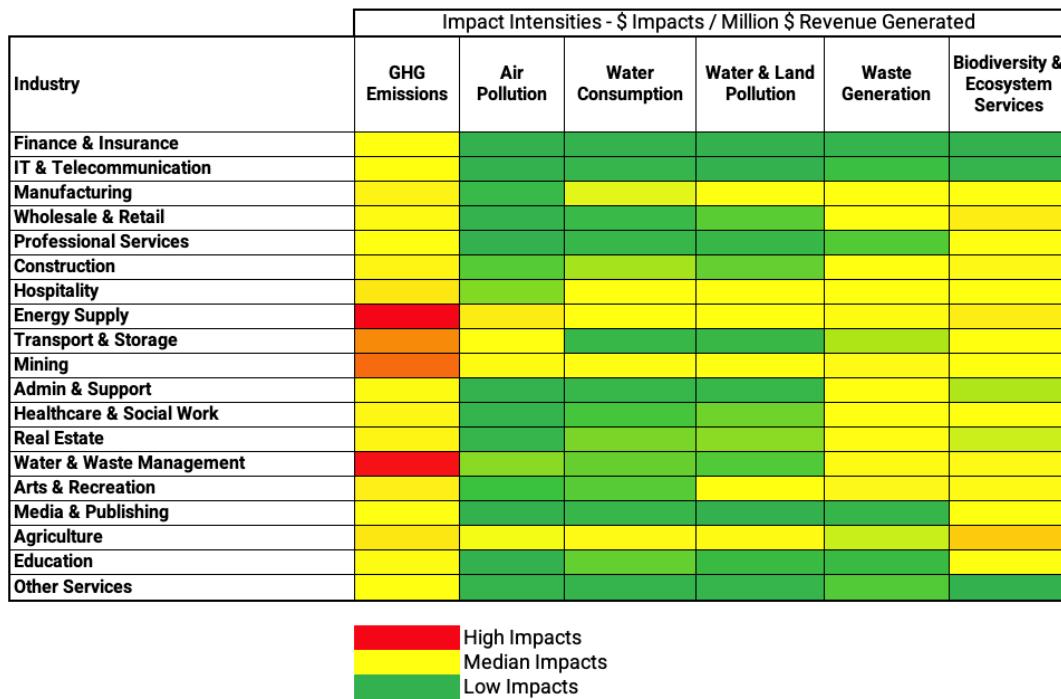


Source, GIST Impact, CSRD Materiality, based fixed universe such as MSCI DM / ACWI, 2025, www.gist-impact.com.

³³ See, e.g., ESRS E1, AR 13; ESRS E2, AR 16; ESRS E3, AR 22; ESRS E5, AR 14.

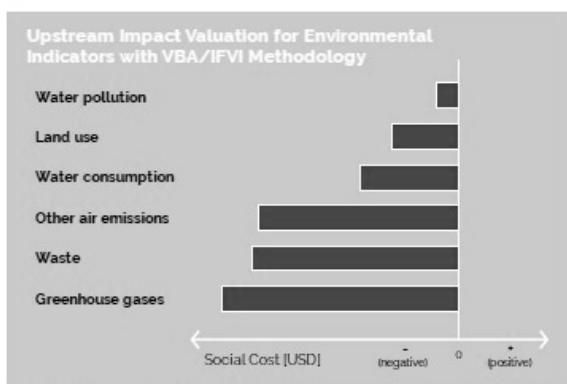
³⁴ GIST Impact's CSRD Double Materiality Assessment Tool streamlines compliance with a science-driven, data-backed approach. The platform generates CSRD-aligned double materiality scores for over 16,000 globally listed companies, using impact valuation and sector and peer benchmarks as thresholds. These scores are built on publicly reported sustainability data by listed companies, covering all European stock indices, ensuring full traceability to data sources and audit readiness.

Another example for impact intensities using impact valuation:



Source, GIST Impact, Impact Intensities, fixed universe such as MSCI DM / ACWI, 2025, www.gist-impact.com.

In the ZF Case, the thresholds were defined for each value chain stage using expert opinions and impact accounting.³⁵



³⁵

VBA/ZF, Case Study: Understanding the Value Chain & Material Impacts of ZF Group, December 2024, <https://www.value-balancing.com/en/publications.html>.

A.II) Sectoral Thresholds and Benchmarks

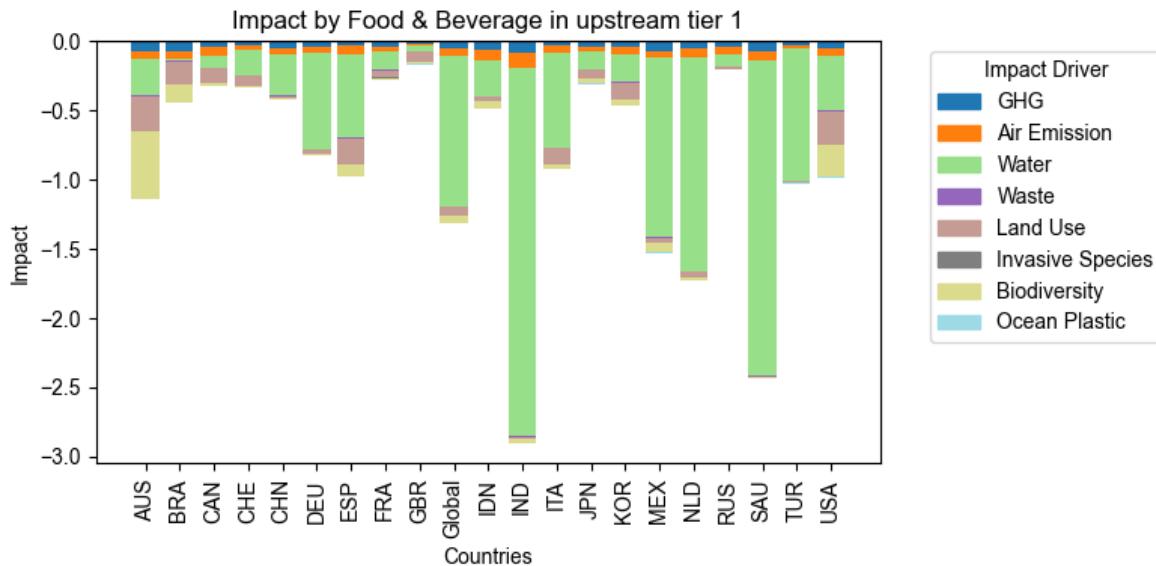
How thresholds are identified: ESRS refers to topic-specific applications that permit sector- and industry-based comparisons based on the specific topic. These contexts can relate to sector-based benchmarks focused on industry-specific sustainability issues to align with norms and enable peer comparisons. In particular, where impact is specific to regions or demographics, companies are encouraged (but not required) to provide additional information based on accessible methodologies that permit peer-based thresholds to compare companies' performance against competitors.³⁶ Sectoral thresholds are also dependent on industry classification and a number of assumptions around the common characterization of impacts in that sector. However, such thresholds may be insufficient on their own. They need to make transparent whether they represent a relative *best-in-class* or *state-of-the-art* approach. Depending on the type of ambition and reference point, those benchmarks yield different results and are more (or less) useful for specific information users.

How methodologies are used: Sector benchmarks, such as those from the World Benchmarking Alliance (WBA) aligned to the SDGs, evaluate both positive and negative effects. They can stand as type 4 thresholds providing entity-specific assessment and comparability of assessments. Companies can set thresholds using WBA benchmarks, including defined metrics for each SDG, assess their performance against these standards, and prioritize actions in critical areas.³⁷ The WfOR benchmarks show intensities per average sector and country, which serve as a basis to determine if a company's performance lies below or above the suggested intensity average.

³⁶ See, e.g., ESRS E3, AR 29 and AR 31.

³⁷ <https://www.worldbenchmarkingalliance.org/>





Source: VBA, Financial Market Chapter, Benchmarks, forthcoming.

One possibility is to set a threshold aligned to the ‘percentage of highest impact’ method. Here, materiality thresholds are based on the relative significance of an impact compared to the highest impact identified. This involves setting the highest impact as the 100% level and establishing percentage-based thresholds (e.g., <5% immaterial; >10% material). While this approach prioritizes actual impacts and allows for the identification of non-financially significant impact issues, it can be problematic due to threshold shifts. If the highest impact is reduced, the entire scale shifts, potentially leading to previously immaterial issues becoming material without any actual increase in their impact.

Another option, in financial accounting and auditing, is to set a materiality threshold using a percentage of a base level, such as net income. This method suggests using a 5-10% range, where amounts less than 5% are considered immaterial and those above 10% material—and those in between require discretion.

ITB suggests targets based on various categories. The suggested threshold for annual reduction in CO₂e intensity is set at 7% commencing from 2023, in addition to other criteria.

The following table summarises all minimum technical standards for ITB and ITBex:

Minimum standards	ITB	ITBex
Risk oriented minimum standards:		
Year-on-year self-decarbonisation of the benchmark	At least 7% on average per annum reduction in CO2e intensity until 2050 commencing from a 2023 notional launch except to the extent that CapEx securities received an environmentally sustainable CapEx decarbonisation holiday.	
Investable Universe Pre-Filters	Controversial Weapons UNGP+ social violators Tobacco	Controversial Weapons UNGP+ social violators Tobacco
Activity Exclusions	None	Coal (1%+ revenues and CapEx) Oil (10%+ revenues and CapEx) Gas (50%+ revenues and CapEx)
Opportunity oriented minimum standards:		
Scaling Environmentally Sustainable Taxonomy CapEx	At least 5 percentage points increase in Taxonomy-aligned CapEx per annum for EMEA Developed ³ universes, and at least 1.5% Cumulating Continuously Compounded (CCC) Annual Growth for Global, Americas, APAC and EMEA Emerging universes. Commencing from a value 5 percentage points above the weighted average Taxonomy-aligned CapEx of the underlying investable universe (applicable to all CapEx securities).	
Environmentally Sustainable CapEx Decarbonisation Holiday	Benchmark administrators may at their discretion reduce the 7% decarbonisation target of the proportion of CapEx securities in the benchmark at the end of year 'n' by multiplying it with one minus the weighted average percentage of Taxonomy-aligned CapEx of all CapEx security constituents at the end of year 'n'.	

Source: Sustainable Finance Platform recommendations, https://finance.ec.europa.eu/system/files/2023-12/231213-sustainable-finance-platform-draft-report-eu-ITB-aligning-benchmarks_en.pdf.

B) System-based

B.I) Local and Regional Boundaries

How thresholds are identified: Ecology-based thresholds are grounded in scientifically recognized ecological limits to prevent significant environmental damage. Companies align with ecological limits for areas such as emissions budgets, water consumption, pollution, and biodiversity, often using frameworks. This ensures that impacts approaching or exceeding these thresholds are considered material.³⁸ This approach covers the critical environmental issues that are location-specific, e.g., water stress, carbon sequestration, and water demand. Here, expertise is required to identify and operationalize the thresholds, which can lead to stricter assessments while complementing other sustainability matters.³⁹

How methodologies are used: The thresholds and the respective methodology refer to the IUCN Red List or the WWF Water and Biodiversity Risk Filter. These thresholds are based on the listed species and require the expertise of the individual applying them to the company. Responsibilities are aligned with the established compliance structure. IUCN Red List and WWF Water and Biodiversity Risk Filter-specific target setting. ESRS requires a site- or asset-

³⁸ Science Based Targets Network, 'Science-Based Targets for Nature' (2020): <https://sciencebasedtargetsnetwork.org/> – accessed 7 December 2024.

³⁹ Guidance provided in ESRS E2, paragraph 24, and ESRS E2, Appendix A, AR 16.



specific understanding of material impacts, risks, and opportunities.⁴⁰ Depending on the available site-specific information, the threshold is either a type 2 or type 3 threshold.

B. II) Planetary Boundaries

How thresholds are identified: The planetary boundaries framework identifies nine critical earth system processes that regulate the stability and resilience of the planet.⁴¹ Exceeding these boundaries could lead to irreversible environmental changes ('tipping points'), threatening the conditions that have allowed human societies to thrive. Economic damages have been extensively reported, with their valuation reflecting the chosen economic model for addressing environmental constraints and quantifying the depletion of natural capital in monetary terms.⁴² To set thresholds aligned with the tipping points of planetary boundaries, companies must identify planetary boundaries, evaluate impacts, and establish region- and sector-specific limits. These boundaries may offer a benchmark for companies to set thresholds for their operations but operationalizing beyond qualitative assessment requires robust data.

How methodologies are used: Companies can integrate planetary boundaries into sustainability reporting as data becomes available. It anchors assessments to scientific limits promoting long-term sustainability and avoiding irreversible damage. The threshold is derived from planetary boundary models and identifies the key components relevant to setting the threshold. Experts are required to undertake additional work to translate the model into an operationalized threshold, either through more specific models or qualitative assessments. Responsibilities are aligned with the general accountability framework. Planetary boundaries are type 1 per se, their focus on qualitative mapping policy goals and shortlisting impact topics with experts to include understanding a corporations' plan and capacity to adapt its strategy and business model in alignment with tipping points, biosphere integrity and land-system change.⁴³

⁴⁰ See, e.g., ESRS 1, para. 54.

⁴¹ L. Caesar*, B. Sakschewski*, L. S. Andersen, T. Beringer, J. Braun, D. Dennis, D. Gerten, A. Heilemann, J. Kaiser, N.H. Kitzmann, S. Loriani, W. Lucht, J. Ludescher, M. Martin, S. Mathesius, A. Paolucci, S. te Wierik, J. Rockström, 2024, Planetary Health, Check Report 2024. Potsdam Institute for Climate Impact Research, Potsdam, Germany, https://www.planetaryhealthcheck.org/storyblock-cdn/f/301438/x/a4efc3f6d5/planetaryhealthcheck2024_report.pdf

⁴² Pavan Sukhdev from 2007 to 2011, The Economics of Ecosystems and Biodiversity (TEEB) - <https://www.unep.org/topics/teeb>. Dasgupta P, The Economics of Biodiversity: The Dasgupta Review (HM Treasury 2021) <https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review>; accessed 2 December 2024; Stern N, The Economics of Climate Change: The Stern Review (Cambridge University Press 2007) https://webarchive.nationalarchives.gov.uk/ukgwa/20130129110402/http://www.hm-treasury.gov.uk/stern_review_report.htm; accessed 2 December 2024.

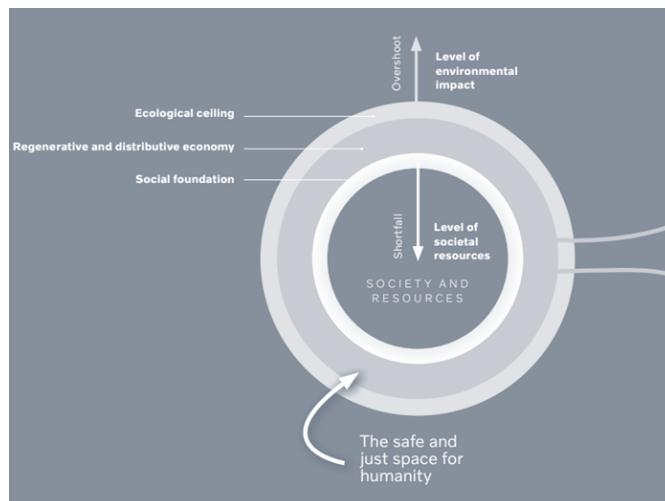
⁴³ ESRS E4, para. 1 (c)(i).



B. III) Social-Ecological Boundaries

How thresholds are identified: The social-ecological approach sets thresholds by identifying social and ecological boundaries relevant to a business's operations in two categories: The first represents the *foundations* necessary for production (e.g., living wages, healthcare, education) and the second represents ecological *ceilings* (e.g., climate change, biodiversity, water scarcity). Companies assess their performance relative to these boundaries. Inclusive wealth concepts,⁴⁴ or the Doughnut concept,⁴⁵ serve as a guide for decisions to increase positive impacts on value creation, social cohesion, and respect for planetary limits. The approach may initially serve operational as a qualitative assessment.

How methodologies are used: Companies can address data gaps, adopt appropriate methodologies, simplify complexities, and manage the costs to integrate them into benchmarks and thresholds across entire value chains. The model requires additional steps to identify thresholds or select methodologies, as the *doughnut*, on its own, cannot be operationalized for threshold setting for business.



Source: Volvo, Sustainability Report, 2019, p 9 ([Link](#)).

C) Scenario-based

Scenario-based thresholds define the targets to be achieved under specific scenarios. For example, transition pathways to net zero emissions should align with reference scenarios with these reference scenarios, drawing on environmental contexts outlined in IPCC reports, or providing very specific guidance, for example, from the International Energy Agency (IEA).

⁴⁴ UNEP, Inclusive Wealth Report 2023, 2023, pp. 23 et seq.

⁴⁵ Raworth, Kate, Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist, 2017.

C. I) Reference Scenario-based

How thresholds are identified: Companies can utilize scenarios based on science from international reports, e.g., IPCC 1.5°C, Kunming-Montreal Framework, to set targets and assess their operations' actual and potential impacts. These scenarios establish baselines that are aligned with global sustainability goals.

How methodologies are used: Generally, reference scenarios require further operationalization to enhance entity-specificity and comparability. IPCC RCP and SSP-based scenarios per se are the basis for a type 1 threshold for a company that needs additional qualitative assessment. Such models can stand as a type 4 threshold if a central bank implements them by integrating additional valuation throughout their portfolio, such as in stress tests.⁴⁶

C. II) Interpretative Scenarios

How thresholds are identified: Companies may align their reference scenarios with configurations provided by IEA and similar institutions that offer sector specific guidance.

How methodologies are used: These scenarios can reflect configurations used in other models such as integrated assessment models (IAMs).⁴⁷ IEA Net Zero sector pathways can qualify as a type 3 threshold offering the possibly for industry-specific comparison. Another interpretative scenario is NGFS, which can be used by regulators and firms in the financial sector. The link between targets and scenarios requires further operationalization. This is needed to ensure entity-specificity and comparability.

C. III) Corporate Pathways

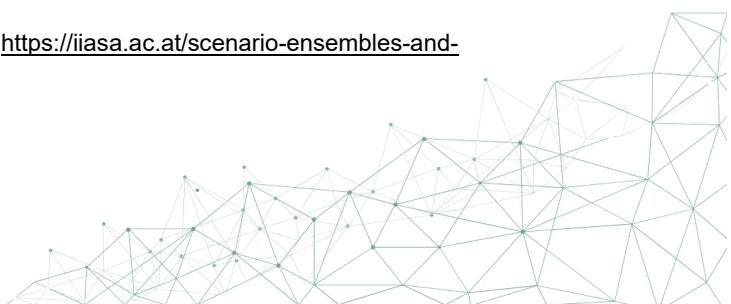
How thresholds are identified: The Transition Pathways Initiative (TPI) evaluates corporate pathways for decarbonization, focusing on how companies in high-emission sectors are managing the transition to a low-carbon economy. TPI uses management quality, which tracks governance practices on climate risks, and carbon performance, which measures emissions reductions against sector-specific benchmarks aligned with the Paris Agreement. TPI's framework supports investors in assessing progress towards net-zero targets and incorporates generally accepted data.

How methodologies are used: The sectoral decarbonization approach allows for type 3 and 4 thresholds. Moreover, carbon prices are context-specific, based on accessible methodologies aligned with science-based trajectories, and qualify as type 4.⁴⁸ This includes

⁴⁶ ESMA and EIOPA Stress Test framework.

⁴⁷ IIASA, Scenario ensembles and database resources, <https://iiasa.ac.at/scenario-ensembles-and-database-resources>

⁴⁸ As disclosed in ESRS E1, paras. 62-63.



detailling calculation methodologies, critical assumptions, and alignment with science-based carbon pricing trajectories. The thresholds may qualify as type 3 if sector-specific or cross-sector emission pathways compatible with a 1.5°C target are used as reference points for assessing GHG reduction targets across Scopes 1, 2, and 3.⁴⁹

D) Target-based

D. I) SDG Targets

How thresholds are identified: SDGs provide a framework as a basis to set environmental, social, and policy goals. Goals provide a common direction for corporates and policy makers, as opposed to more precise targets. Companies may steer operations towards SDGs following the 169 targets that can adapted to local indicators at national or regional levels.⁵⁰

How methodologies are used: The SDGs per se require qualitative analysis to be incorporated in the assessment. This approach relates to type 1 thresholds. It is important to note that the UN Statistics Division follows an SDG indicator framework, which classifies the indicator underlying each goal and target. For operationalization, companies may relate their contributions to the targets and may use the data from national statistics offices or public databases, e.g., the various SDG trackers.⁵¹

D. II) Science-based Targets

How thresholds are identified: Companies can align with frameworks like the Science-Based Targets initiative (SBTi), Science-Based Targets Initiative for Nature (SBTN), and Nature Positive Initiative to set environmental targets by addressing ecosystem degradation, resource efficiency, and biodiversity restoration. Industry-specific targets such as water use reduction, zero deforestation, and sustainable supply chains can be established to support global efforts to reverse biodiversity loss.⁵² The targets are set in relation to a specific baseline and can take the following form:

- *Absolute Targets* – Companies align their reporting to absolute reporting generally required under topical-specific information.
- *Relative and Intensity Targets* – Companies enhance the comparability of KPI-based thresholds by adjusting for operational size and scale, expressed as intensity, and set targets for operational efficiency and relative impacts.

⁴⁹ ESRS E1, Appendix A, AR 26.

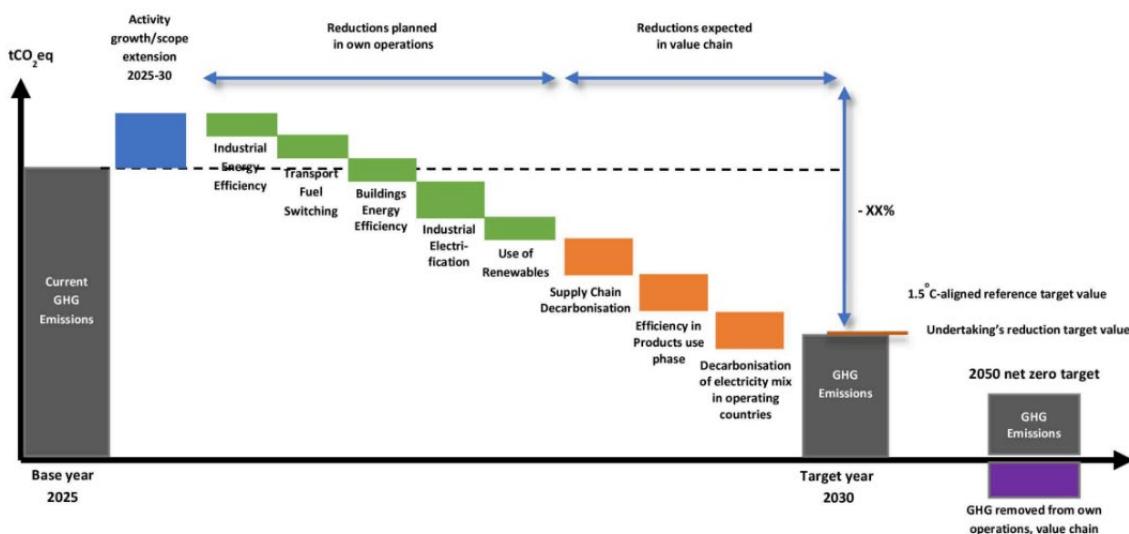
⁵⁰ <https://sdgs.un.org/goals>; van Zanten, Joris A and van Tulder, Robbert, 'Analyzing Companies' Interactions with the Sustainable Development Goals through Network Analysis: Four Corporate Sustainability Imperatives' (2021) 30 Bus Strat Env 1480, pp. 2399-2415.

⁵¹ <https://ourworldindata.org/sdgs>

⁵² Transition Pathway Initiative, <https://www.transitionpathwayinitiative.org/> and NetZero Tracker <https://zerotracker.net/>



How methodologies are used: The ESRS provide discretion to companies to use experts to set site-specific thresholds and methodologies and assign responsibilities accordingly. For example, ESRS E2, Appendix A, AR 15: “Where relevant to achieve its pollution-related policy objectives and targets, the undertaking may provide information on site-level action plans.” Or, ESRS E2, Appendix A, AR 18: “Where relevant to support the policies it has adopted, the undertaking may provide information on the targets set at site level.” The Science-Based Targets Initiative for Nature (SBTN) and similar frameworks, which use ecological thresholds at local, national, or global levels, qualify as type 3 thresholds.⁵³ These targets require measurable, time-bound data, often sector-specific trajectories, and must disclose absolute or intensity values, allowing for progress tracking against defined benchmarks.⁵⁴ The ESRS may further include target setting for current and future years.



Source: ESRS E1, AR 31.

	Base year (e.g., 2025)	2030 target	2035 target	...	Up to 2050 target
GHG emissions (ktCO2eq)	100	60	40		
Energy efficiency and consumption reduction	-	- 10	- 4		
Material efficiency and consumption reduction	-	- 5	-		
Fuel switching	-	- 2	-		
Electrification	-	-	- 10		
Use of renewable energy	-	- 10	- 3		
Phase out, substitution or modification of product	-	- 8	-		
Phase out, substitution or modification of process	-	- 5	- 3		
Other	-	-			

Source: ESRS E1, AR 31

⁵³ See, e.g., ESRS E2 AR 16; ESRS E3 AR 22; ESRS E5 AR 14.

⁵⁴ See, e.g., ESRS 2 para. 80; ESRS E1 para. 34; ESRS E3 para. 27.

E) Norm-based

How thresholds are identified: Norm-based thresholds are public or private norms for corporate sustainability performance on specific impact drivers.⁵⁵ Examples for negative impact thresholds are legal limits to air, water, and land pollution; food and product safety such as thresholds of toxins; and pollution permits and certificates in regulatory trading schemes and voluntary carbon markets. Examples of positive impacts certificate of origins for renewable energy sources.

How methodologies are used: The EU uses benchmarks under the Best Available Techniques (BAT) reference documents for agro-industrial activities to develop thresholds. This includes the emission levels under Industrial Emissions Directive (IED) whereby environmental performance is assessed. BAT-associated emissions levels (BAT-AEL) and BAT-associated environmental performance levels (BAT-AEPL) qualify as Type 3 thresholds.⁵⁶

The UNRSID suggests measuring the performance of companies in terms of impacts on vital capitals relative to what the standards or sustainability norms must be to ensure the well-being of stakeholders. The suggestion is to measure the sustainability performance in actual impacts against normative impacts. The guidance suggests a sustainability quotient whereby the sustainability performance (S) equals the actual impacts on carrying capacities of vital capitals (A) divided by normative impacts on carrying capacities of vital capitals (N). These quotients need to be calculated for each impact driver.⁵⁷

The Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 sets legal basis to set thresholds for financial instruments. The questions about identifications, methodology, entity specificity, and responsibility are defined through a legal analysis of that regulation. This work needs to be done through an expert that qualifies the different options for the specific instruments, and therefore, these thresholds stand as a type 1. Similarly, the EU Biodiversity Strategy for 2030 reflects Type 1 thresholds based on a qualitative analysis.⁵⁸ These thresholds lack standardized methodologies for comparison.

⁵⁵ Compare: <https://eippcb.jrc.ec.europa.eu/reference>.

⁵⁷ UNRSID, Authentic Sustainability Assessment: A User Manual For The Sustainable Development Performance Indicators, p. 7; The UNRSID provides specific examples of these norms-based thresholds for various indicators, such as GHG emissions and living wage gaps, see UNRSID, Authentic Sustainability Assessment, A User Manual for the Sustainable Development Performance Indicators, 2022, p. 15.

⁵⁸ ESRS E4, paras. 1(c)(iii) and 32(b).



3.3 Issues for Implementation and Assurance

3.3.1 Operationalization of Thresholds

The effectiveness of thresholds and benchmarks depends on the quality, consistency, and comparability of the underlying data. However, sustainability data often faces challenges such as missing values, inconsistent reporting methodologies, lack of primary data from value chains, and varying levels of verification across industries. Benchmarks relying on industry averages may suffer from outdated or incomplete data, making them unreliable for setting forward-looking thresholds. Therefore, materiality assessments must integrate data quality checks, third-party verification, and standardized methodologies to ensure thresholds remain robust and actionable.

Organizational processes are already built into the legislative approach to thresholds in materiality assessments. As part of the threshold-setting process, businesses need to demonstrate how responsibility for respecting thresholds is allocated across business functions, divisions, and units. This is, in the first instance, relevant for first-time adoption, and in the second instance, for the structure and process of internal audit and external assurance.

Impact valuation plays a key role in the operationalization of thresholds. Fundamentally, the practice of impact measurement and valuation comprises methods, processes, and standards for monetizing impacts—impacts are first measured in their fundamental measurement unit and then multiplied by a value factor that yields a unit of account for the relevant impact driver expressed in a denominated currency. Impact valuation thus provides *information gains* in at least two ways:

Firstly, in the *construction* of thresholds: Impact materiality assessments are made comparable across impact drivers that are otherwise measured only by their impact driver-specific units. This connectivity among impact drivers enhances the robustness of thresholds as decision-weights for information users.

Secondly, in the *application* of thresholds: The monetized impacts can be used for further analysis of the links between financial materiality (already expressed in monetary terms) and impact materiality. This enhances interoperability and bridges the gap between reporting systems based on different concepts of materiality.

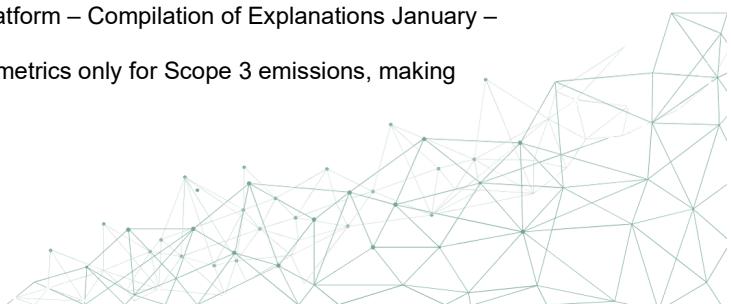
Thresholds and benchmarks provide a structured way to compare companies' sustainability performance. To harness this information gain through impact valuation, the following considerations must be addressed:



- **System and entity boundaries:** The logic model and system dynamics are critical for determining relevant negative and positive impacts across the most significant parts of a company's value chain. Relevant impacts of affiliates or joint ventures within the value chain are not limited by the share of equity held by the company.⁵⁹ The concept of operational control can play a role in assessing impact materiality within value chains and portfolios, with the degree of control over equity, entity, or asset determining assignment of positive or negative impacts to the appropriate tier of the value chain.
- **Value chain stages:** A company's position within its value chain influences applicable thresholds as cut-off points in the reference system. Data requirements may vary across value chain stages; tier 1 suppliers and end-user customers often provide direct data, while deeper value chain stages may rely on proxies or estimates. Large companies can use regional or sector averages, EEIO modeling, or data providers to address data gaps.
- **Intensity-based metrics:** In addition to absolute metrics, intensity-based metrics offer relative insights into larger value chains, diverse portfolios, and conglomerates.⁶⁰ For example, they enable resource use or emissions comparisons relative to production output or revenue. These intensity-based metrics highlight variations in performance across assets or regions, identifying areas for targeted sustainability improvements. They also facilitate benchmarking between assets or units of different sizes and activities. A major limitation arises from the relative nature of these metrics if the denominator is not chosen carefully. Exogenous effects may misrepresent the true performance and render the indicator less decision-useful when it comes to pursuing absolute changes on a transition pathway. Appropriate use of intensity metrics is exemplified by the Sectoral Decarbonization Approach, as this method ties sector contributions to the absolute reduction pathway in the overall economy through carbon budgets.
- **Granularity and skewness:** Distribution among divisions in conglomerates and diverse portfolios can blur an impact assessment, which makes choosing the right level of granularity all the more important (see section 2.3 above). To provide additional rigor in the evaluation, the *intensity layers* method uncovers potential 'hotspots', i.e., areas of disproportionately high impact within a value chain or portfolio. Certain subsidiaries, assets, or investments can have more impact than others, even if their relative performance within their sector appears favorable. By considering both the intensity and absolute effects, companies ensure a more accurate view of impact materiality, preventing potentially significant impacts from being overlooked due to skewed or otherwise biased distributions.

⁵⁹ See EFRAG, ESRS 1 para. 67; ESRS E1, paras. 46 and 51; and Question ID 208 - GHG emission calculation in EFRAG, ESRS Implementation Q&A Platform – Compilation of Explanations January – November 2024, 2024, p. 130.

⁶⁰ ESRS status 2025 require value chain information in metrics only for Scope 3 emissions, making intensity-based disclosures largely limited.



Assurance under the CSRD

According to par 60 et seq. CSRD, limited assurance is needed to evaluate “compliance of the sustainability reporting with sustainability reporting standards, the process carried out by the undertaking to identify the information reported under the sustainability reporting standards.”

Limited Assurance:

Definition: “Limited assurance engagement—An assurance engagement in which the practitioner reduces engagement risk to a level that is acceptable in the circumstances of the engagement but where that risk is greater than for a reasonable assurance engagement. The practitioner’s conclusion is expressed in a form that conveys that, based on the procedures performed, nothing has come to the practitioner’s attention to cause the practitioner to believe the subject matter information is materially misstated. …” (ISAE 3000 8(a)(i)b)

Reasonable Assurance:

Definition: “Reasonable assurance engagement—An assurance engagement in which the practitioner reduces engagement risk to an acceptably low level in the circumstances of the engagement as the basis for the practitioner’s conclusion. The practitioner’s conclusion is expressed in a form that conveys the practitioner’s opinion on the outcome of the measurement or evaluation of the underlying subject matter.” (ISAE 3000 8(a)(i)a)

- **Cost-benefit considerations:** Cost-benefit considerations for information users influence judgements about materiality thresholds in the assessment process. Companies are expected to make reasonable efforts to gather information but are not required to incur undue costs. This influences the precision of materiality assessments. Thresholds, once set, are influenced by data availability or cost but remain distinct from the assessment process.

- **Size of the reporting entity:** The scale and complexity of a company’s operations can influence the specific information needed and the data available for specific sustainability topics and impact drivers. Data constraints in the value chain may lead to differing approaches among companies of size and leverage. Listed SMEs fall within the scope of the ESRS; some are subject to simplified, less complex requirements.⁶¹

3.3.2 Integrating Impact Valuation into Implementation and Assurance

By adhering to the proper sequence—assessing impacts, applying thresholds, and aggregating significant impacts—entities can eliminate irrelevant data and ensure that materiality thresholds are addressed accurately. Thorough documentation of the materiality assessment process is crucial for aligning with ESRS standards and providing clear reasoning for decisions. Implementing the results within the business context requires a blend of detailed analysis and qualitative assessments to effectively inform targets, actions, and strategies.

⁶¹

See consultations of EFRAG for LSME ESRS and VSME (V=Voluntary) ESRS.



DMAs occur at the IRO level,⁶² where the application of impact valuation approaches may vary. For a data-driven materiality approach, companies should collaborate with advisors and data service providers to assess the coverage and limitations of relevant topics. While data gathering takes time, the analysis itself is completed in seconds, providing scientifically supported and objective assessments. These assessments are then integrated into the CSRD program workflow to enrich and support stakeholder engagement by validating stakeholder opinions or challenging and enriching discussions with stakeholders through impact data-led observations.

Sustainability disclosures should align with the assurance level of the overall statement.⁶³ Audit practitioners can use impact valuation approaches to assess materiality determinations, validate alignment, and address differences. ESRS, including ESRS E1, allow referencing assured information from other reports, such as corporate governance statements, to avoid duplicate reporting.⁶⁴ Debates exist on whether auditors should evaluate the process (EU Commission FAQ view) or its description (e.g., German IDW).

3.3.3 Approaches and Options for Integration

Auditors focus on entity-specific and contextual information to ascertain whether material impacts have been identified by the principles, procedures, and methods that the preparing company has set out. Such assurance of materiality assessments does not serve to validate the data *per se* or give an opinion about the effectiveness of the monitoring systems, i.e., whether they enable effective sustainability management for changes in positive impacts and actual outcomes.

Under the CSRD, companies obtain one of two levels of assurance⁶⁵:

- *Limited assurance*: A moderate level of verification where assurance practitioners conclude that no material misstatements about sustainability information were found.
- *Reasonable assurance*: An advanced level of verification where assurance practitioners conclude that the sustainability information is prepared, in all material respects, in accordance with the applicable criteria.

As reporting practices mature, regulators are expected to transition from limited to reasonable assurance, increasing expectations for audit-quality data and impact valuation.

⁶² For impact materiality assessment at the I-level.

⁶³ ESRS 1, Section 9.1

⁶⁴ ESRS 1, paras. 119 & 120.

⁶⁵ See: IAASB ISSA 5000 General Requirements for Sustainability Assurance Engagements; ISAE 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information; ISAE 3410, Assurance Engagements on Greenhouse Gas Statements.



Regulatory bodies are expected to enhance the assurance level from limited to reasonable assurance in the future, aiming to align financial and sustainability reporting by 2028, when EU assurance standards for sustainability reporting are implemented.⁶⁶ IAASB's standard ISSA 5000, finalized in 2024, serves as the basis for EU assurance standards.⁶⁷

Two options exist in terms of how impact valuation can drive the audit process:

- **Top-down:** Audit firms collaborate through industry associations to standardize impact valuation. Some highlight how impact valuation benefits audits by aligning financial metrics with reporting practices.
- **Bottom-up:** Impact valuation providers work with sustainability teams and advisors to integrate impact valuation into double materiality assessments, as highlighted by ZF, KPMG, and the World Economic Forum,⁶⁸ as well as Deloitte.⁶⁹ Solution providers⁷⁰ enable assurance-ready impact valuation for CSRD through advanced data and software platforms.⁷¹ Companies should ensure that any solution suits the need for internal control and auditable data flows, end-to-end.

3.3.4 Impact Data and Management Systems (IDMS)

Impact valuation complements Impact Data and Management Systems (IDMS) for both limited and reasonable assurance engagements. Existing IDMS enable detailed testing and validation of output and impact data, increasing confidence in the accuracy of reported information and estimates. Impact measurement and valuation play an important role in supporting the disclosure of transparent methodologies and processes, which are essential for both limited and reasonable assurance engagements.

Auditors can conduct more extensive testing and validation procedures with reliable IDMS to assess data accuracy. This can be resource-intensive and requires closer collaboration with the company. Without IDMS, companies face challenges in assurance and impact valuation, potentially hindering their ability to meet evolving regulatory expectations. While fragmented output data (manually collected or poorly documented, with challenges in traceability and accuracy) may still suffice for limited assurance, companies can strengthen the reliability and accuracy of reported information by incorporating monetization, impact accounting, measurement and valuation using widely accepted methodologies and processes.

⁶⁶ CSRD, para. 60.

⁶⁷ The European Commission is expected to adopt these standards by October 1, 2026, as mandated by the Corporate Sustainability Reporting Directive (CSRD).

⁶⁸ WEF, (KPMG and ZF), How impact valuation helps companies meet the latest sustainability reporting requirements, 19.04.2024, <https://www.weforum.org/stories/2024/04/impact-valuation-sustainability/>; VBA and ZF, Understanding the value chain & material impacts of ZF Group, 2024, https://www.value-balancing.com/_Resources/Persistent/3/1/6/b/316b7f7b7c2ca7d2f7e877d0d1b347b538831ddd/202411_IMV%20in%20DMA%20use%20case_ZF_Final%20version.pdf

⁶⁹ Deloitte, Advancing Double Materiality through Impact Valuation, 10.06.2024, <https://www.deloitte.com/ch/en/services/risk-advisory/perspectives/advancing-double-materiality-through-impact-valuation.html>

⁷⁰ Solution providers like GIST Impact, S&P Global, Upright Project, WifOR, RGS. E.g. <https://gistimpact.com/>.



4 Outlook and Future Sprints

As for impact accounting in CSRD audits, market participants are learning from assurance engagements for financial year (FY) 2024 (reported in 2025), with this initial cohort driving global implementation and audit capabilities, while embedding best practices across sectors. By FY 2025 (reported in 2026), more companies will need to reach this stage. Impact valuation can face limitations when value factors are unavailable for material impacts, if the factors fail to address potential or non-consolidated outputs, when disaggregated disclosure is required, or if the process is driven by risks or opportunities. These challenges must be addressed in future Sprints.

We encourage further research and development relating to the usability, presentation, and relevance of thresholds and benchmarks for different information user groups. It is crucial to distinguish between policy and technical challenges when constructing thresholds and benchmarks. As practitioners, regulators, and stakeholders intensify cross-sector collaboration in the coming years, future Sprint themes and tasks can include:

Policy Tasks:

1. **Interoperability and connectivity:** Policymakers, standard-setters, professional services, and civil society organizations should engage in cross-sector partnerships to ensure interoperability among conceptual frameworks of different standards and connectivity between financial and sustainability reporting in developing, setting, and applying thresholds and benchmarks.
2. **Best practices in valuing impact materiality:** It would be desirable to develop generally accepted standards on using impact valuation so companies can set thresholds independently and auditors have clarity on what is included in an assurance engagement. As auditors cannot audit the approaches they are proposing in advisory or engagements, there need to be adequate provisions to ensure independence and avoids conflicts of interest.
3. **Advisory and pre-audit consultations:** Early auditor involvement streamlines assurance by enabling pre-audit consultations to improve data infrastructure, process documentation, and disclosure approaches, reducing efforts and costs.
4. **Scaling capacity building and learning:** Engaging early with assurance providers builds capacity, improves data management, and strengthens credibility, preparing companies for mandated assurance requirements despite added complexity.
5. **Risk of material misstatements:** Inadequate data infrastructure heightens the risk of material misstatements in sustainability reporting under CSRD. Assurance providers must highlight these risks and limitations to governance bodies.
6. **Presentation of decision-useful and relevant data:** Effective sustainability reporting relies on presenting clear, decision-useful data tailored to stakeholder needs. Companies must align disclosures with materiality thresholds and communicate impacts in a format that supports informed decision making by stakeholders.



Technical Tasks:

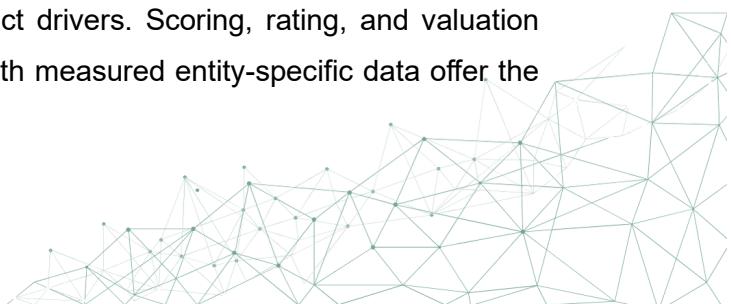
1. **Interoperability and connectivity:** The technical development of thresholds of different maturity levels require collaboration spanning multiple disciplines from natural sciences, engineering, to social sciences, and professional services from the perspective of information users.
2. **Method-standard-process fitness:** Testing, feedback, and calibration of methods to ensure appropriateness for different maturity levels and impact drivers.
3. **Additionality of positive impacts:** Ensuring that positive impacts are truly incremental, leveraging the business model to align investments and activities with sustainability objectives beyond business-as-usual.
4. **Attribution rules:** Establishing clear attribution rules at the nexus of entities and their actual and potential impacts based on the current state of the art and science.
5. **Temporality:** Enabling management systems to adjust thresholds over time (e.g., tipping points); adaptation of benchmarks over time.
6. **Treatments of interdependencies:** Addressing how interconnected impacts, risks, and opportunities are managed and assessed in sustainability reporting.

5 Conclusion

This report pursued three objectives. First, to clarify and specify the concepts of thresholds and benchmarks for materiality assessment under the CSRD from a usability perspective. Second, we developed a framework to evaluate the extent to which different threshold approaches and methods meet the criteria of comparability and entity-specificity. Finally, we provide an overview of and begin to test the usability of different threshold approaches and methods. This work is based on a collaborative sprint involving leading solution providers and users of impact valuation around the world.

Our key insights are relevant for decision-makers and experts in business, policy, and civil society. The first contribution is related to the construction of thresholds. Since the threshold approaches and methods vary widely in terms of scale, scope, and likelihood, it is important to determine the maturity level of each impact driver independently. And as materiality thresholds are decision weights, the selection of threshold methods should be based on the specific information user experience: their usability, relevance, and presentation. This process needs to be connected to a technical assessment of the fundamental physical flows (and stocks) that are specific to each of the impact drivers, either on inputs, activities, outputs, or a combination of them.

From this follows the second insight that pertains to the application of thresholds in materiality judgments. The usability of thresholds and benchmarks depends on the ability to aggregate and disaggregate different measures across impact drivers. Scoring, rating, and valuation approaches to impact materiality in combination with measured entity-specific data offer the



highest degree of entity-specificity while allowing for comparability across entities (type 4). This high degree of operationalization not only exceeds the minimum disclosure obligations for material disclosures under the CSRD but also allows for forward-looking information on positive impacts that are both entity-specific and comparable.

Third, the usability matrix allows pathways for combining different methods, namely when and how to combine them. Consolidating aggregate and disaggregate measures may not be possible in all cases, and data may be insufficient given the cost-benefit constraints of information preparers and users. As sustainability reporting evolves under the CSRD and other global standards, companies seeking to move from compliance to innovation should consider the use of impact valuation.

Furthermore, the interdependence of impact drivers and, in turn, materiality thresholds require approaches and methods that ensure the connectivity across financial, natural, social, and human capitals. For thresholds to become meaningful and decision-useful, they need to translate data on physical flows and stocks into standardized impact information. To achieve this, the market participants require structured data governance as well as sector-specific or product-specific benchmarks. Emerging best practices and evolving regulatory expectations will continue to shape how sustainability performance is assessed, requiring companies to stay adaptive and forward-looking.

Additionally, while benchmarks serve as valuable reference points for assessing sustainability performance, they must be carefully contextualized with regulatory thresholds, scientific findings, and stakeholder considerations to ensure that materiality assessments drive meaningful action. Benchmarks alone do not establish materiality; instead, they provide comparability that must be adjusted to reflect product-specific, sector-specific or geographic risks, emerging sustainability priorities, and evolving legal frameworks. Companies that effectively integrate benchmarks into a structured threshold-setting approach will be better positioned to align with investor expectations, sustainability reporting obligations, and long-term value creation.

Many sustainability disclosures rely on estimated figures, sector averages, or self-reported data, creating potential inconsistencies that impact comparability and reliability. Companies can enhance data governance, integrate third-party verification, and refine methodologies to align sustainability disclosures with assurance requirements, ensuring credibility and consistency. Robust data management systems, including Impact Data and Management Systems (IDMS), will play a vital role in preparing organizations for the transition toward reasonable assurance under the CSRD.



Further work is necessary to enhance the usability of impact information given the cost-benefit constraints of preparers and users. Understanding data quality requires testing for “standard-method-process fitness” specifies data for concrete decisions from the information user experience. This approach to decision-usefulness should be given precedence over seeking an abstract and unachievable data quality standard irrespective of the decision user case. Therefore, the verifiability of material, decision-useful impact information expands the knowledge base from traditional financial audit to professional expertise founded in the natural sciences, engineering, and social sciences.

As sustainability standards mature and assurance requirements increase, companies that take early steps to integrate impact valuation, data-driven materiality assessments, and robust assurance processes will be best positioned to demonstrate accountability and transparency. Moving forward, cross-sector collaboration, regulatory alignment, and continuous learning will be critical in refining how thresholds and benchmarks shape sustainable business practices, ensuring that corporate activities translate into meaningful decreases of negative impacts and increases of positive impacts in social and ecological systems.



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Commission Delegated Regulation (EU) 2023/2027: Establishes the European Sustainability Reporting Standards (ESRS)

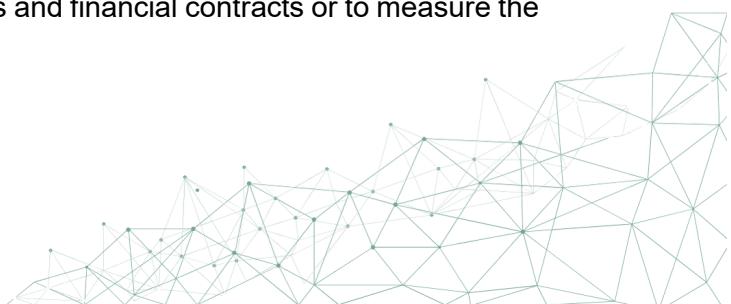
Regulation (EU) 2021/1119: Relates to the European Green Deal and climate neutrality objectives

Regulation (EU) 2019/2088: Concerns sustainable finance and disclosures

Regulation (EU) 2020/852: Deals with sustainable economic activities (taxonomy)

Regulation (EU) 2019/2089: Focuses on sustainability-related disclosures in the financial services sector

Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds



Directive 2013/34/EU: The previous Non-Financial Reporting Directive (NFRD), which the CSRD amends

International Standards and Frameworks

ESRS (European Sustainability Reporting Standards)

GRI Standards (Global Reporting Initiative)

OECD Guidelines (Organization for Economic Co-operation and Development)

UNGPs (United Nations Guiding Principles on Business and Human Rights)

IFRS Sustainability Disclosure Standards (International Financial Reporting Standards)

SDGs (Sustainable Development Goals)

Paris Agreement

IIRC's concept of integrated reporting (International Integrated Reporting Council)

SASB's industry-specific standards (Sustainability Accounting Standards Board)

TNFD (Taskforce on Nature-related Financial Disclosures)

TCFD (Task Force on Climate-related Financial Disclosures)

SBTi (Science Based Targets initiative)

ISAE 3000 (Revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information International Framework for Assurance Engagements



Annex

1. Technical Note

Impact accounting provides a quantitative and qualitative approach to assessing a company's impact on the environment, society, and the economy. This information supports the effectiveness of materiality assessment for validating statements made in sustainability reports and conducting audits, especially in the context of double materiality assessments under CSRD and upcoming regulations like ESRS and ISSA 5000. ISSA 5000 is an assurance standard for assurance providers, while ESRS is a reporting standard for entities in the scope of CSRD. As a data-driven process, impact accounting can translate impacts into comparable financial metrics, offering concrete evidence to substantiate claims about positive or negative contributions. This strengthens the credibility of sustainability reports, fostering trust with stakeholders. In this context, impact accounting assists in identifying and prioritising material impacts, ensuring that reported information focuses on issues that genuinely matter to the company and its stakeholders. Companies can thus track progress over time by quantifying and monetizing impacts, demonstrating accountability and commitment to improvement.

By linking WfOR's ESRS-impact driver mapping (below) to materiality thresholds and impact benchmarks, users can create a scalable matrix that differentiates between various threshold types and benchmark scopes. Each row represents a specific impact driver (e.g., forced labor, carbon emissions), with the following two new columns to classify the threshold type and benchmark scope based on impact driver characteristics. Threshold type distinguishes between binary thresholds (e.g., zero-tolerance for forced labor) and gradual thresholds (e.g., phased reductions for carbon emissions). The benchmark scope column specifies whether the benchmark applies locally (e.g., air and water pollution) or globally (e.g., carbon emissions).

Decision-makers provide ongoing, crowd-sourced, updated mapping for consistent integration and comparability. Where industry or stakeholder consensus exists, impact accounting frameworks populate the usability matrix per impact driver with appropriate thresholds and benchmarks. Where no consensus exists, solution providers may tailor their approach by sector or industry, indicating areas requiring further alignment. The mapping extension categorizes thresholds by impact intensity and reach, adapted to the specific value stage or portfolio. Specificity is assessed case by case: binary thresholds with local scope address immediate, severe local impacts (e.g., forced labor), while gradual thresholds with a global scope enable progressive management of broader challenges (e.g., carbon emissions).

Example:

Impact Driver	Key Indicators	Calculation Unit	ESRS Reference	Approaches and Methods to Thresholds and Benchmarks
GHG	The absolute value of total Greenhouse gas emissions reduction	Table/ GHG Emissions	E1 34a + 34 b	
Health and Wellbeing	Number of cases of recordable work-related ill health of non-employees	Integer	S1 89	
...



Full table available at: <https://github.com/Greenings/transitionvaluation/blob/main/indicators>

Link to Excel List of Repository: <https://github.com/Greenings/transitionvaluation>.

2. Sprint Report

Sprint Goal: Understanding existing methodologies to establish thresholds and benchmarks as well as international standards and regulations that set requirements for thresholds and benchmarks relevant to the CSRD

Duration: 2 months (Sessions in Q3 2024)

Timeline	Tasks and Completion	%
Week 1 : Last Week August 20 Aug. 2024	<ul style="list-style-type: none"> Explain Project Scope and Sprint Setup Provide all the participants an understanding on how Sprints are conducted and the procedure developpes 	100
Week 1 : Tuesday 03 Sep. 2024 – 13:00-14:00 (Paris)	<ul style="list-style-type: none"> International Standards and Regulations Review of International Standards and Regulations for Thresholds and Benchmarks Discuss and finalize the comprehensive list of international standards and regulations, summarizing their key requirements 	100
Week 2: Tuesday 13:00-14:00 (Paris)	<ul style="list-style-type: none"> Methodologies for Establishing Benchmarks Analyzing and Validating Thresholds and Benchmark Methodologies Present and evaluate detailed feedback on various methodologies, ensuring they are analyzed and validated by industry experts 	100
Week 3: Tuesday 13:00-14:00 (Paris):	<ul style="list-style-type: none"> Use Cases, Preferences, and Roles applying Thresholds and Benchmarks Identifying and Confirming Use Cases, Preferences, and Roles Outline and review different use cases, preferences, and roles for thresholds or benchmarks with potential users, gathering confirmation and feedback 	100
Week 4: Tuesday 13:00-14:00 (Paris):	<ul style="list-style-type: none"> Value Chain (owns operations, upstream, downstream) and Portfolios Mapping Value Chain and Portfolios for Benchmark Assessment Validate the mapping of value chain categories and portfolios relevant to thresholds or benchmarks, ensuring completeness and accuracy 	66
Week 5: Tuesday 13:00-14:00 (Paris):	<ul style="list-style-type: none"> Market Participants and Benchmark Concepts Categorizing Market Participants and Defining Benchmark Concepts Categorize market participants and define benchmark concepts, reviewing and approving the comprehensive benchmark definition with the project team and stakeholders. 	33
Week 6: Tuesday 13:00-14:00 (Paris):	<ul style="list-style-type: none"> Addressing Comparability and Consistency Challenges Resolving Comparability and Consistency Challenges in Benchmarking Document and test solutions for comparability and consistency challenges, creating and reviewing implementation guidelines 	66
Project Closure	<ul style="list-style-type: none"> Conclude with a team debrief and communication to stakeholders Final project report and debrief completed, with communication to stakeholders and feedback collected. 	100



3. Public Repository

Link to Public Repository: <https://github.com/Greenings/transitionvaluation>





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