THE CODE GAIA APPROACH TO DOUBLE MATERIALITY UNDER THE ESRS

A Whitepaper
June 2024

Phillip Blumenthal, Stefanie Höpler & Leonie Stumpf.
Updated June 2024

The Code Gaia Approach to Double Materiality under the ESRS: A Whitepaper

Phillip Blumenthal, Stefanie Höpler & Leonie Stumpf.

Updated June 2024

Acknowledgements:

The authors extend their gratitude to our colleagues at Code Gaia who have supported the research and interpretive efforts which have contributed to the development of this paper; in particular our fellow team members Lea Müller, Emma Gloe and our delivery partners who worked closely with us throughout this development.

Content of this Paper

This paper explains the Code Gaia Approach to Double Materiality under the Corporate Sustainability Reporting Directive ("CSRD") and the European Sustainability Reporting Standards ("ESRS"). The paper sets out the approach both in terms of methodology and process, providing details regarding the specific thresholds and measures that are applied, consistent with the requirements of the ESRS and consistent with Guidance provided by the European Financial Reporting Advisory Group ("EFRAG").

The paper is intended to provide explanation of the methods and assumptions used in materiality assessments carried out by and with Code Gaia. The explanations are intended also as a companion for methodological explanations which are required in ESRS 2: General Disclosures in so far as this methodology has been used in the Double Materiality process. This paper is not intended to, nor does it carry any authority to, prescribe practice in the market.

The Code Gaia Methodology has been developed by Code Gaia during the period June 2023 to June 2024, during which time it has been deployed in real world cases with undertakings who are conducting ESRS-aligned Materiality for the first time. The Approach therefore draws on this practice-based experience as well as Guidance documentation published by EFRAG and theoretical input from both Environmental Impact Assessment ("EIA") theory and from accounting. The approach is subject to ongoing refinement and therefore this whitepaper might be updated at any point.

The Code Gaia Approach is built on the following principles:

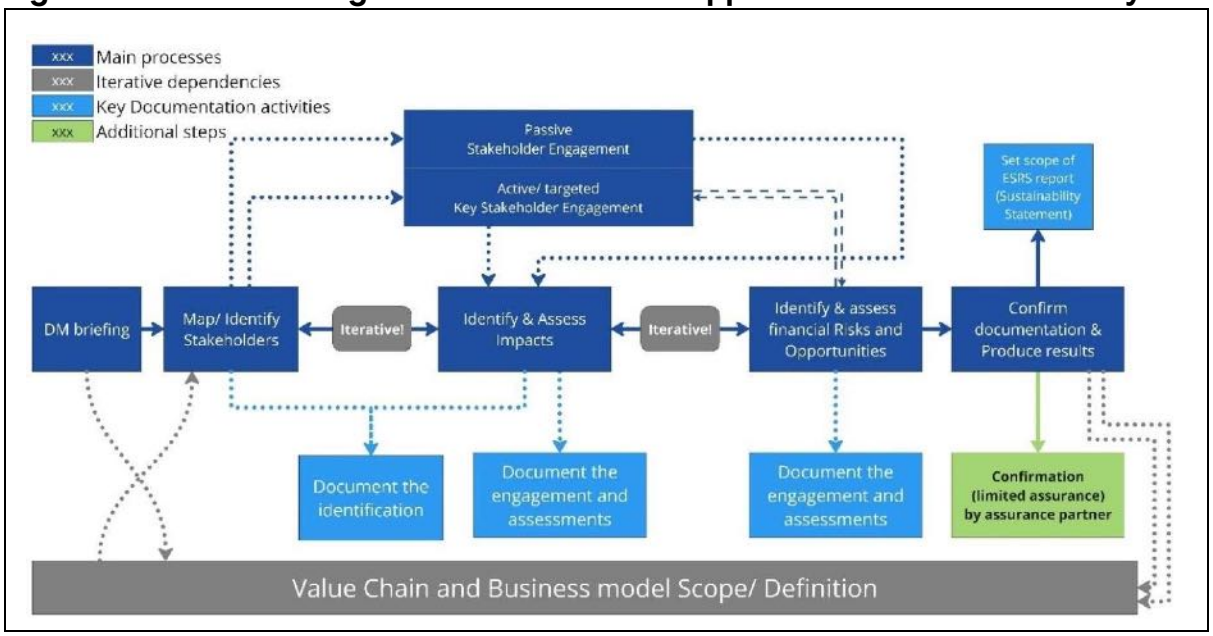
1. Consistency of application irrespective of sustainability topic or sector where possible. This "topic and sector agnostic" approach aims to provide "universal" or "singular" measures, scales, thresholds and terminology to limit the need, as far as is practicable, for confusion and unnecessary methodological changes within the process. Methodologies are of course adaptable to the requirements of any individual undertaking or topic.
2. Reference to existing methodologies and approaches is made where ESRS requirements allow for or require flexibility, or where the Guidance from EFRAG is ambiguous or confirms flexibilities.
3. The approach must be comprehensible and implementable at the Small and Medium Enterprise level, where a significant proportion of the new-entrant companies to Sustainability Reporting exist.

Section 1 - Summary of the Main Processes

A series of main process (or activities) is used in order to conduct materiality. The Code Gaia Approach considers that the sequential deployment of these processes could be appropriate in the period leading up to the first reporting year, but that these activities should be carried out simultaneously and continuously, recognising their iterative nature.

Figure 1 shows a diagrammatic representation of the materiality process, identifying these main processes as well as the iterative nature of materiality and the attendant activities which support, including documentation. This diagram does not represent a linear sequence of actions which must necessarily occur one after the other from left to right.

Figure 1 – Overview Diagram of the Code Gaia Approach to Double Materiality



DM Briefing

Whilst not reflective of methodological need, an organisational level briefing can be a valuable way to prepare internal teams and actors for the double materiality and reporting process as well as introduce sustainability due diligence understanding. This is usually carried out to scope organisation resources which might be needed and to clarify overall timelines and align resource needs.

Stakeholder Identification and Mapping

Likely Stakeholders are initially identified on the basis of:

1. Reviewing existing internal documentation,
2. Identifying key Business relationships (noting the suggested stakeholder groups in ESRS 1 AR6) and
3. The initial identification of impacts, in an iterative manner.

Stakeholders are mapped to the categories and criteria set out in the ESRS, and based on their centrality to the business and value chain. Key stakeholders, primarily those who are negatively affected, can also be identified at this stage.

Impact Identification and Assessment

The identification of impacts is made possible by:

1. Reviewing existing documentation both internally and at the sector level (comparing with other similar undertakings),
2. Identifying key business relationships,
3. With the use of a clear description of the business model and value chain and,
4. With support from a consistent approach to impact names and descriptions, and
5. Using the list of sustainability matters in the ESRS as a screening device to identify activities and connections.[1]

The naming and the "description" of an impact are considered important parts of the identification process. Together, these should seek to identify where in the business model and value chain the impact is realised and whether specific geographies, operations, entities or internal activities, products and services are primarily related to the impact as drivers.

The assessment of impacts requires the assignment of various impact criteria which are specified by the ESRS. That is, impacts are mapped to the relevant sustainability matters, and where relevant the directional nature, scale, scope, irremediable character, direction and likelihood characteristics of impacts are used to determine the materiality of any impact. Furthermore, the documentation of the decision to assign each criterion, for each impact, is provided for.

Iteratively, both impact identification and assessment are closely related to the identification and engagement of stakeholders (particularly key affected stakeholders).

[1] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023, para 174

Identification and Assessment of Financial Risks and Opportunities

The identification of Risks and Opportunities is made possible by:

1. Reviewing existing documentation both internally and at the sector level (comparing with other similar undertakings),
2. Directly involving internal risk management in the identification process,
3. Using the list of sustainability matters in the ESRS as a screening device to identify activities and connections[2].
4. Using the value chain and business model descriptions to identify key business operations, assets and supply chains which are critical and might therefore represent risk vulnerabilities,
5. With support from a consistent approach to risk and opportunity names and descriptions,
6. Iteratively with the impact assessment process, and with stakeholder validation.

Furthermore, the tests for financial materiality are applied to ROs in coordination with the undertakings financial and accounting functions, where financial-threshold information is usually held. Documentation of the decision to assign any criterion or threshold for each risk or opportunity, is provided for.

Stakeholder Engagement

Active engagement with Affected Stakeholders is focussed on the clarification of understanding how negatively affected stakeholders ("Key Stakeholders") are impacted. Further, active engagement is aimed at validating risk and opportunity assessment, where such validation is considered necessary to ensuring that Risk and Opportunity information meets the expected information quality characteristics outlines in Appendix B to ESRS 1.

Passive engagement is encouraged, in order to account for non-key stakeholders and others which might not have been identified at all (due to the non-exhaustive nature of this process). Passive engagement also allows for IRO information to be taken account of on an ongoing basis.

Confirmation of Documentation and Results

Whilst many aspects of Materiality and due diligence are considered to be continuous processes, there is obviously a need to determine a fixed set of material IROs which inform the preparation of the Sustainability Statement. This should occur with sufficient time to collect reporting data (metrics, narratives). The materiality process, for any specific reporting period, therefore should be "closed" and any Impact, Risk or Opportunity which was determined to meet the criteria for materiality

[2] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023, para 174

is then accepted as material and the subsequent Topics and Matters are included in the scope of the Sustainability Statement.

This closing should also include a review of all documentation which was used in support of the Materiality process and a final review of the business model and value chain descriptions which will be used for ESRS 2 disclosures.

It is recommended that involvement of third-party review (assurance, audit or similar review) is conducted at this point, with sufficient time to document additional process and methodology which might support the clarity and understandability of the Sustainability Statement.

Section 2 - Detailed Overview of Stakeholder Identification and Engagement

Note on first year reporting and "enhanced engagement":
EFRAG recommends[3] that Stakeholder engagement entails seeking input and feedback to understand the concerns and the evidence of Actual and Potential Impacts of the undertaking on people and the environment and it helps to substantiate the importance of the Sustainability Matters from the lenses of the Affected Stakeholder Groups.

It is likely that this "enhanced engagement" will form part of ongoing engagement processes in the period after the first Sustainability Statement has been published. At this point, Stakeholders are more likely to have had the opportunity to see how Impacts are dealt with in context (alongside the disclosure of policy, strategy, actions, metrics and targets). The Code Gaia Approach to Double Materiality can be adopted on an ongoing basis, by implementing the workshops and time-bound events as ongoing processes with continual oversight.

An internal workshop or similar process (usually in a one-off event format) is recommended in order to embed an organisational understanding of how to identify and map Stakeholders based on the identification criteria set out in the ESRS and based on company experience with sustainability related Stakeholders. If Impact identification processes have already occurred, the identification of "Key" Stakeholders can also begin at this point.

Code Gaia recognises that many organisations already have an established history of stakeholder engagement on sustainability topics and that existing records and reports can serve as an initial source of information. Code Gaia has developed a number of supporting tools to assist with Stakeholder identification, including the use of Large Language Models which can extract stakeholder information from existing company documentation (such as previous sustainability reports and internal policy documents). These tools can be deployed to ensure consistency with previous non-ESRS reporting, and to assist with the characterisation of existing documented stakeholders into the ESRS-regime.

The Code Gaia Approach also makes use of ESRS 1, AR6 which identifies "common" categories of Stakeholders. These categories are used as an initial screening categories to identify Stakeholders.

Common Stakeholders suggested by AR6:

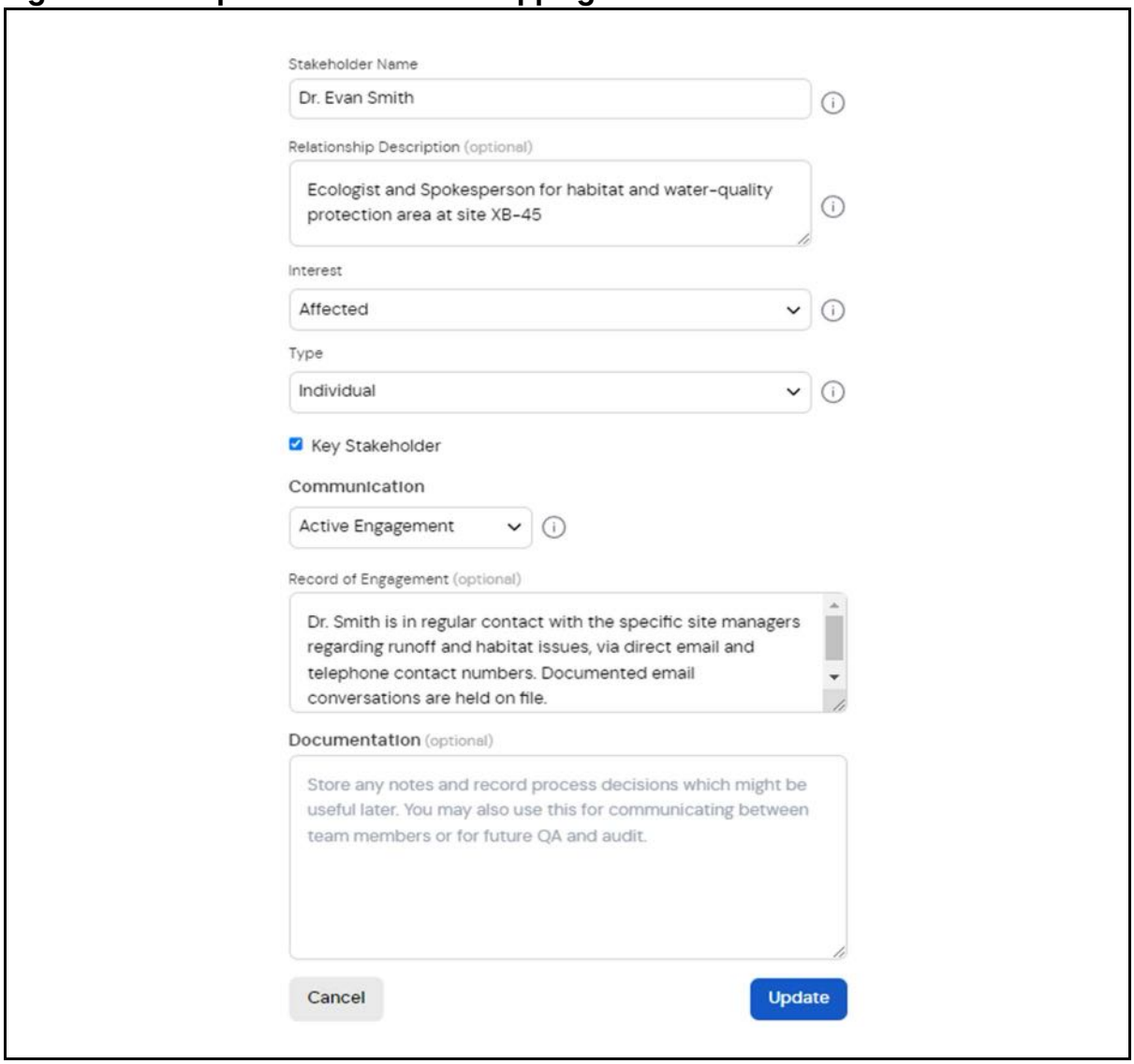
From ESRS 1, AR6: *"common categories of stakeholders are: employees and other workers, suppliers , consumers , customers, end- users , local communities and persons in vulnerable situations, and public authorities, including regulators, supervisors and central banks".*[4]

[3] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023
[4] ESRS 1, AR6

However, the identification of a Stakeholder alone is not the determining factor for engagement. Further steps to identify “Key” Stakeholders are considered critical, and it is the “Key” Stakeholders who are the focus on engagement efforts.

The results and content of this Stakeholder identification workshop/ process should be recorded, categorising all the Stakeholders which were identified and mapping them to both the business model (in terms of their relationship to the undertaking) and the Stakeholder categories identified in the ESRS. An example of how Stakeholders are categorised/mapped in the Code Gaia Approach is provided in *Figure 2 - Example of Stakeholder* Mapping. Figure 2 is a screen-capture of a Stakeholder mapping record that is provided directly in the Code Gaia Double Materiality software module.

Figure 2 - Example of Stakeholder Mapping



Digital Survey Tools

Code Gaia supports the Stakeholder validation of Impact information with the use of a digital pre-populated impact form. The form provides a description and discloses any already suggested measurement of the impact or impacts which are considered to affect the specific Stakeholder. The Stakeholder may then modify these characteristics and clarify any additional information, or simply accept the impact as described and measured. This request also enables Stakeholders to opt out of providing feedback, or to specify Impacts either Positive or Negative and to provide their opinion of the nature of these Impacts in accordance with the materiality tests specified in the ESRS.

Given the somewhat technical nature of ESRS Impact characteristics it is understood that many Stakeholders might not be able or willing to define Impacts to such a level of detail. Stakeholders may, therefore, stop the process of identifying and characterising any Impact at any point. This would then require the assessment

of Impacts process to include some interpretation of Stakeholder feedback, which would serve to fill any gaps in the characterisation provided by Stakeholders.

The use of context-free digital survey tools is, however, not recommended as a primary or initial approach to engagement. Such tools are more suitable for confirming specifics of impact information in a consistent manner at the conclusion of a period of engagement, as opposed to forming the basis of the engagement.

Prioritising Engagement with Key Stakeholders

Code Gaia is aware of the EFRAG Guidance which further indicates the following:

1. That the most critical Stakeholder to be engaged are likely to be those that are "affected". EFRAG make reference to both "Key" Stakeholders and to "relevant" Stakeholders in this respect.
2. That engagement does not need to cover all Sustainability Matters with all Stakeholders and that, in fact engaging with a Stakeholder with respect to matters where they are not impacted is not meaningful.
3. It is not necessary to engage a Stakeholder that is not affected, but engagement could clarify whether or not a Stakeholder considers themselves to be affected.
4. In light of points 1 to 3 above, it is reasonable to conduct some level of prioritisation of Stakeholders with respect to whether and how they will be engaged. Furthermore, such prioritisation reduces the risk of the Severity of Impacts being downplayed, which might be a motivation for non-affected actors.

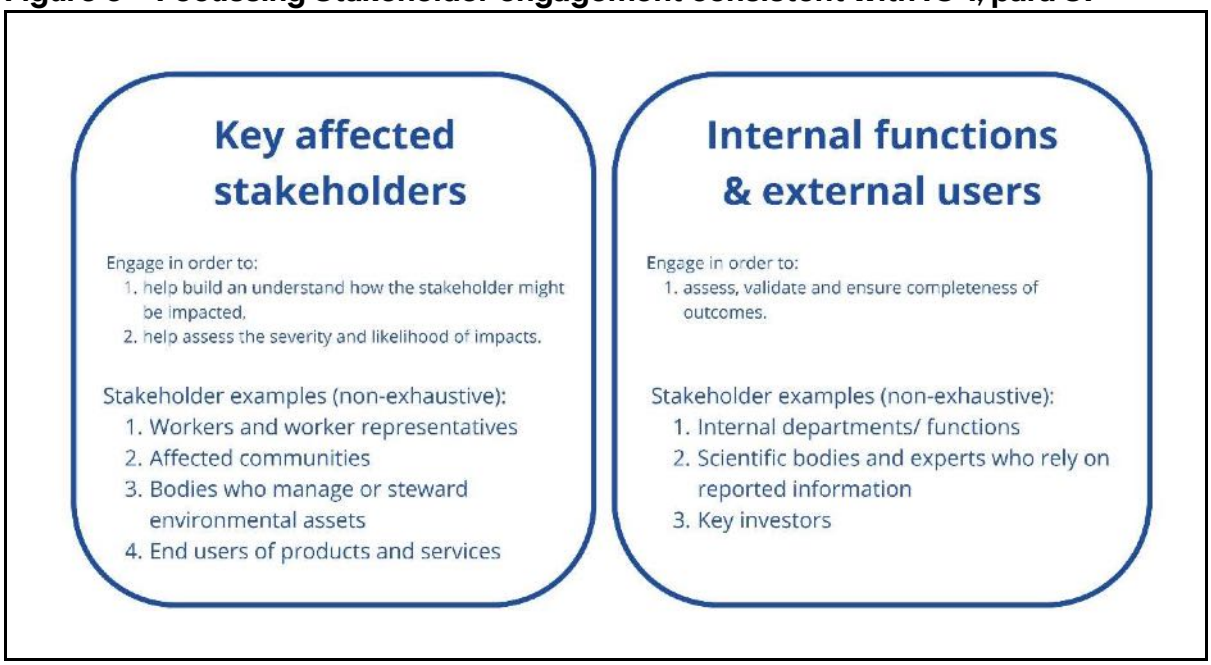
From EFRAG IG 1 Materiality Assessment Implementation Guidance, May 2024[5],

> Para 203; *"Engagement with stakeholders who are not affected by the specific sustainability matter is not meaningful."*
>
> Para 87, *"The purpose of engagement with key affected stakeholders (including workers and their representatives) is to help the undertaking understand how they may be impacted, and therefore, it may help the undertaking assess the severity and likelihood of impacts*"

Figure 3 below provides an illustration of how stakeholder engagement can be structured in a way that is consistent with paragraph 87 of IG 1. It is noted that this approach assumes a certain level of Identification and Assessment of IROs has already occurred prior to the engagement and that, outcomes of the assessment might be the focus of engagement.

[5] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023, paras 203 and 87

Figure 3 – Focussing Stakeholder engagement consistent with IG 1, para 87



Also from IG1:[6]

> *ESRS 1 paragraph 22(a) states: 'affected stakeholders: the individuals or groups whose interests are affected or could be affected – positively or negatively – by the undertaking's activities and its direct and indirect business relationships across its value chain'. The concept of 'key stakeholders' (or 'relevant stakeholders', per international instruments) rests on the idea that not all stakeholders will be equally affected by the undertaking's activities. Furthermore, the undertaking is to identify which stakeholders' views are to be taken into account in connection with a specific activity. It also builds upon the idea that the degree of impact on stakeholders may inform the degree of engagement specifically for prioritisation.*
>
> *203. …. Engagement with stakeholders who are not affected by the specific sustainability matter is not meaningful. Therefore, the undertaking may engage with different groups of affected stakeholders for different matters*.

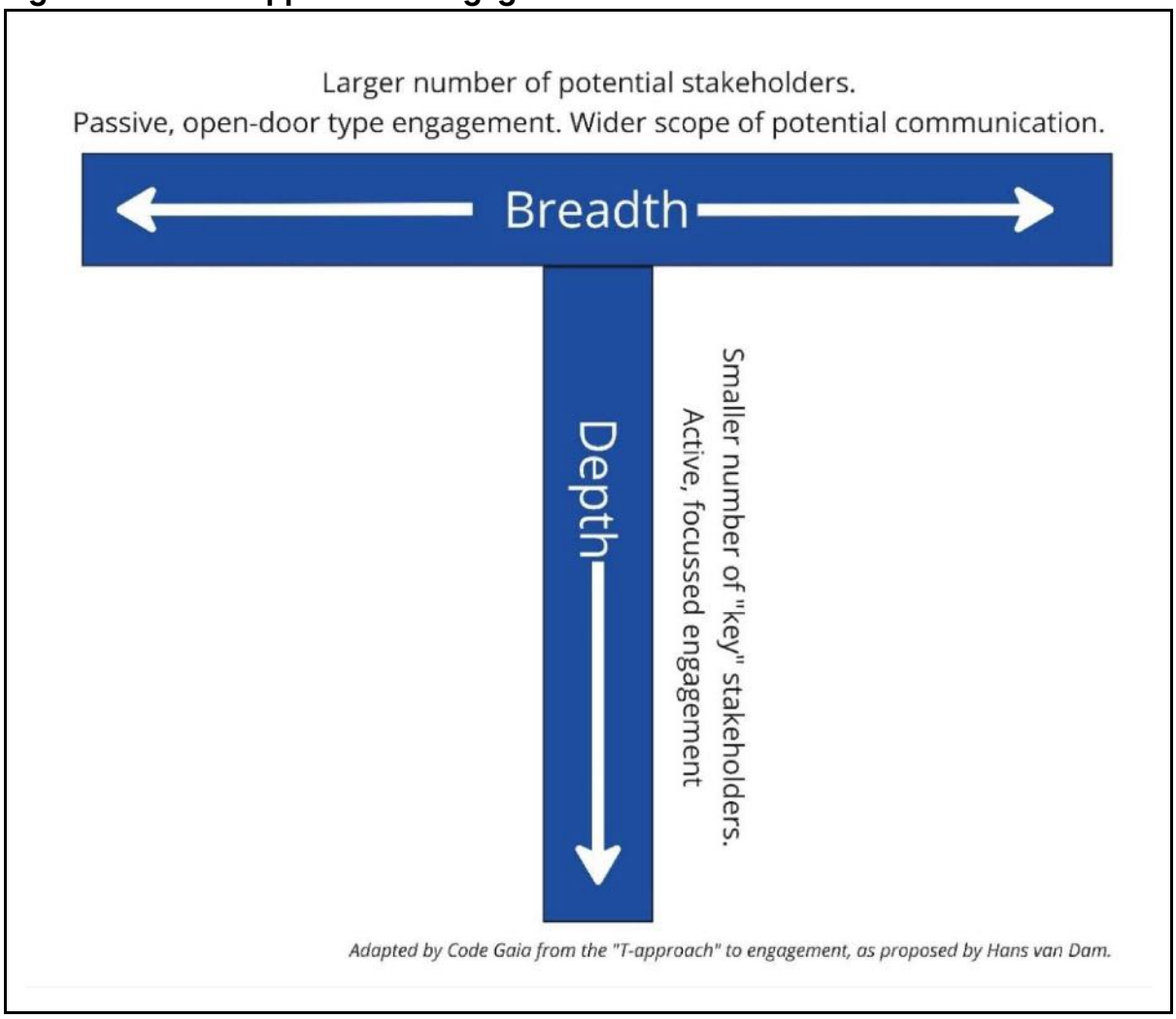
Prioritisation of Stakeholder engagement therefore follows a "T-approach" as proposed by Hans van Dam[7]. This approach is illustrated below in Figure 4. This approach prioritises "active" engagement with "Key" Stakeholders and passive engagement with others. This prioritises the pro-active engagement of those Stakeholders who might be negatively affected; and with those who would validate

[6] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023

[7] T-Approach to engagement as proposed by Hans van Dam, ESG Business unit lead at Legile, June 2024

the financial RO assessment, whilst allowing for additional Stakeholders to be identified and engaged with reactively.

Figure 4 – The T-Approach to Engagement



Section 3 - Identification and Assessment of Impacts

Impact Identification

Early 2023 drafts of EFRAG Guidance indicated[8] that the process for the Identification of Impacts "may" adopt a Top-down or Bottom-up approach. The Top-down approach starts with the Topic areas and Sustainability Matters to determine if any Impacts (or Risks and Opportunities) might potentially exist, whereas the Bottom-up approach starts with known and likely Impacts (or Risks and Opportunities) and matches them to the Matters and Topics of the ESRS. This specific text has now been replaced with IG1 paragraphs 174 and 175 which simply states that using the list of sustainability matters "*…is not a substitute for the process of determining material matters. This list is a tool to support the undertaking's materiality assessment. The undertaking still needs to consider its own specific circumstances when determining its material matters*" and "*The list in ESRS paragraph AR 16 is a good starting point for the identification of sustainability matters, but it should not be used as a checklist substituting a materiality assessment*."

The Code Gaia Approach maintains that both of these previously-named approaches are appropriate in tandem. In order to avoid confusion with other uses of the terms "top down" and "bottom up", these are hereby referred to as "AR16 list-based" and "undertaking based" approaches. It is recommended that combining the two allows for a more rounded and complete understanding of the Impacts that might be relevant for the Materiality Assessment process.

Similar to Stakeholder identification, the internal (own) identification of Impacts in the first reporting year is typically carried out in the form of an internal workshop or similar process (usually in a one-off event format). The workshop is conducted in order to draw on the list of matters, Topics and identification criteria set out in the ESRS (AR16 list based), as well as accounting for experience with sustainability related Stakeholders and Impacts, particularly with other reporting frameworks and previously published sustainability information (undertaking based).

Reference to a library/ list of Impact descriptions from peer undertakings can also be adopted as part of an undertaking based approach.

The Code Gaia Approach encourages the documentation of any previously relied-upon information that informs this process including input from experts, peer-reviewed publications and previously published sustainability-related information from the undertaking or peer undertakings.

[8] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023, paras 174 & 175

Code Gaia has developed supporting tools to assist with Impact identification, including the use of Large Language Models which can extract Impact information from existing company documentation (such as previous sustainability reports and internal policy and operating documents). These tools can be deployed to ensure consistency with previous non-ESRS reporting, and to assist with the characterisation of existing documented Impacts into the ESRS-regime. This is consistent with IG 1 paragraph 174, which explicitly mentions the use of previous sustainability reporting under other frameworks as a method to identify Impacts.

The ongoing nature of Impact identification means that any initial list of Impacts will not be exhaustive or even necessarily representative of the final reported Impacts. Undertakings are encouraged to add to, and refine, the list of identified impacts in conjunction with due diligence and as the overall experience of the economy in relation to ESRS assessment and reporting matures.

For Impacts, the name and the qualitative description of the Impact can provide important contextual information which can assist Stakeholders and the preparer of the Sustainability Statement with respect to comprehension and the provision of further disclosure information in the statement. Impact naming and description is therefore considered to be an important part of the identification process.

The ESRS itself does not prescribe a specific Impact description structure. However, there are clues to how this can be approached within the text of the standards. ESRS S2, AR37 provides the following:

> *The undertaking may disclose whether any initiatives or processes whose primary aim is to deliver positive impacts for value chain workers are designed also to support the achievement of one or more of the UN Sustainable Development Goals (SDGs). For example, through a commitment to advance UN SDG 8 to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" the undertaking may be providing capacity-building to smallholders in its supply chain, resulting in increases in their income; or it may be supporting training to increase the proportion of women able to take delivery jobs in its downstream value chain.*

From ESRS S2, AR37 it could be concluded that "*supporting training*" is an action, and that "*increasing the proportion of women able to take delivery of jobs in its downstream value chain" is an example of an impact description*. Furthermore, it is considered that this approach to Impact description provides important qualitative information regarding the nature of an Impact and its relationship to the environment (natural or socio-economic) beyond the metrics and categorisation which might be needed purely for the Materiality Assessment.

The Code Gaia Approach also takes guidance from *Aligning climate change mitigation and sustainable development under the UNFCCC: a critical assessment of the Clean Development Mechanism, the Green Climate Fund and REDD+*, by Horstmann and Hein[9] which provides a tabulated example of Sustainability Impacts. This table is reproduced in *Figure 5* – Sustainability Impacts as presented by Horstmann.***Error! Reference source not found.***

Figure 5 – Sustainability Impacts as presented by Horstmann

Table 2: Examples of positive and negative sustainable development effects of CDM activities from the literature sample

CDM project types	SD-dimension	Positive SD effects	Negative SD effects
Afforestation and reforestation (CDM A/R)	Environment	• increased vegetation cover • forest restoration; soil water infiltration • Increase in biodiversity reduced soil erosion • improved water quality • flood protection	• exotic species impact local biodiversity • monoculture plantations have negative impacts on soils and ground water recharge
	Social	• increased tenure security for land users participating in CDM activities • support through agricultural extension services/ technical assistance • employment/ alternative income	• lack of participation (e.g. local population involved as land owners or labourers and not in the project design phase) • reproduce/reinforce existing inequality (e.g. through creating mainly benefits for better-off community members)

Source: Horstmann, 2017

The Code Gaia Approach will typically consider the following when compiling/drafting an Impact description.

The Impact description:

- Ideally refers to a change / delta in the environment (natural, social or economic/governance)
- Contains a verb (increased, reduced, contributed towards, enabled…) which points to the direction of change
- Can represent an accumulated set of contributing Impacts
- Can be a secondary or primary Impact.

[9] Horstman, Aligning climate change mitigation and sustainable development under the UNFCCC: a critical assessment of the Clean Development Mechanism, the Green Climate Fund and REDD+, 2017

In addition to the above, the Impact description can be used to provide critical contextual information which is required by ESRS 2 SBM-3. This Disclosure Requirement specifies the following information be reported with respect to material Impacts (emphasis added):

> *"…a brief description of the material impacts, risks and opportunities resulting from the materiality assessment (see Disclosure Requirement IRO-1 of this standard), including a description of where in the business model, the own operations and the upstream and downstream value chain these* ***material impacts****, risks and opportunities are concentrated"*[10]

The description of each Impact should, where possible, include qualitative information which described where in the business model, the own operations and the upstream and downstream value chain these material Impacts are concentrated.

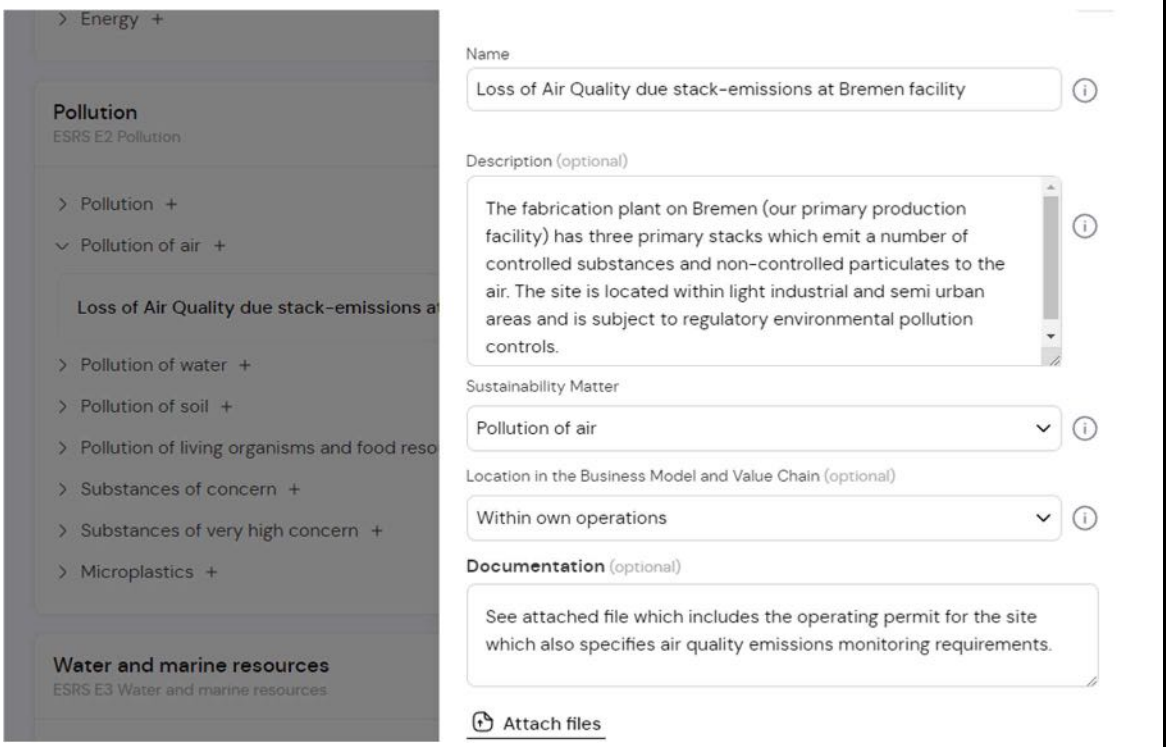
For example, Impacts might be described as follows:

- *Increase in concentration of GHG in the global atmosphere, from own, company-wide emissions (scope 1) and emissions from suppliers and customers (scopes 2 and 3).*
- *Loss of habitat for red-list species at [specific SSSI], located adjacent to operation [locational].*
- *Increased awareness of human rights, discrimination, fair working conditions, etc; Through the implementation of the company-wide Code of Conduct.*
- *Increased availability of pollution reduction technology in the wider market and subsequent potential improvements in air quality associated with sales of Particulate interception products.*

An example of Impact naming and description, as provided for in the Code Gaia Double Materiality software module is provided in *Figure 6 – Example Impact Naming and Description in Code Gaia Software* below.

[10] ESRS 2 (General Disclosures), SBM-3

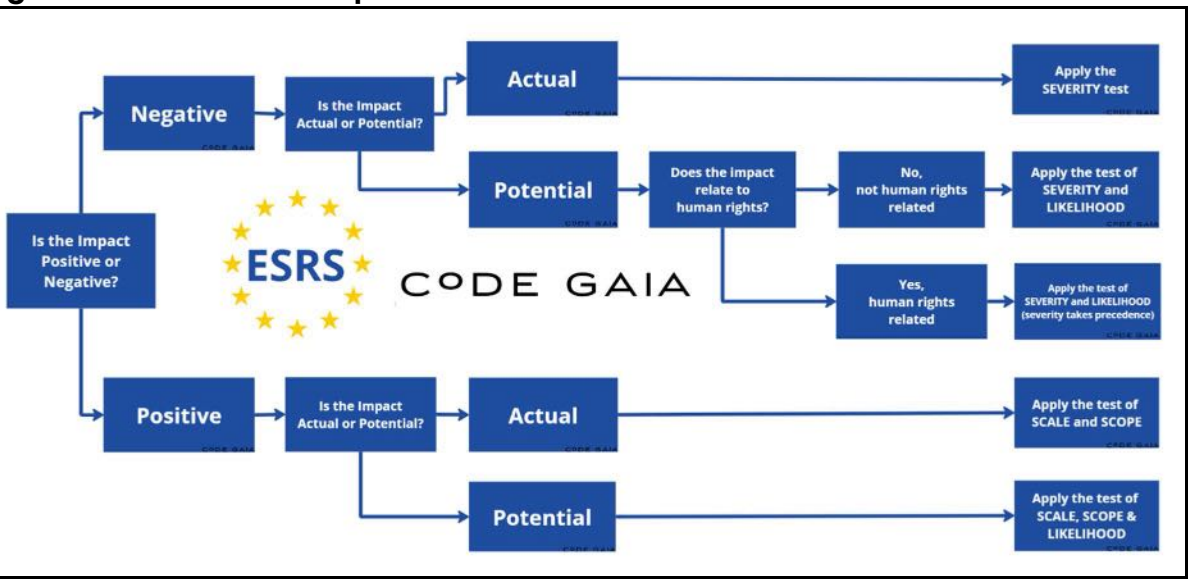
Figure 6 – Example Impact Naming and Description in Code Gaia Software



Impact Assessment

For the Materiality Assessment of an Impact to occur, the Impact must be sufficiently defined to be filtered through the process paths and assessment tests which are defined for this purpose in Section 3.4 of the ESRS. This process and the logical tests are shown graphically in *Figure 7 – Overview of Impact Assessment Process and Assessment Tests*.

Figure 7 – Overview of Impact Assessment Process and Assessment Tests



Under the Code Gaia Approach, an account of the characteristics of Impacts which inform the Materiality Assessment process is considered critical to inform both how the Impact can be described and what characteristics of the Impact need to be understood and explicitly documented, in order for the ESRS-mandated Double Materiality process to be followed.

The following characteristics are identified for each Impact. Certain characteristics have a defined scoring or set of sub-criteria within the Code Gaia Method. Where relevant, these definitions and criteria are explicitly described:

- Positive or Negative
- Actual or Potential
- Scale
- Scope
- Likelihood
- Irremediable Character
- Human Rights Relevant

It should be noted that not each characteristic applies to each Impact. Furthermore, the "Severity" test is a combination of a number of the other characteristics of an Impact.

Within the Code Gaia Method, the assessment of Impacts relies heavily on Environmental Impact Assessment ("EIA") approaches, in so far as both "receiving environment" and "magnitude of change" are used as descriptive criteria for Scale and Scope (as per ESRS 1 AR10) respectively. This allows for a consistent set of criteria which can be applied to all Impact types; and which is aligned with existing EU methodology (i.e. the identification of significant effects, consistent with EIA) with respect to Impact Identification and Assessment. The Code Gaia Approach is therefore "topic agnostic" in so far as it attempts to provide a consistent system for identifying and characterising Impacts that can be used irrespective of the Sustainability Matter or the topic to which it is relevant.

Further guidance on Impact Identification in the context of EIA is also provided by the European Commission in the publication "Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)"[11]. In this document the "Criteria for assessing significance" identifies two primary categories, namely the Sensitivity of the Receiving Environment and the Magnitude of the Impact. Within the first category (the Sensitivity of the Receiving Environment), the protection status and "the value of the receptor" are to be considered. In addition, vulnerability or sensitivity to change is considered. Within the second category (Magnitude of

[11] European Commission, Environmental Impact Assessment, Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

Impact) the spatial extent, direction (Positive or Negative) and the duration of an Impact are considered.

The above Impact descriptors from EIA can be mapped to the ESRS Impact assessment criteria where:

- Scale is synonymous with the value of the receptor, or the level at which is it recognised or protected,
- Scope is the magnitude of the Impact in terms of its extent relative to that receptor,
- Irremediable character is an indication of time timescales under which the affected environment will return to its baseline condition,
- Positive/ Negative descriptions are synonymous with the direction of the Impact, and
- Likelihood is also referred to as likelihood with EIA approaches.

Impact direction: Positive or Negative

The process of determining whether an Impact is to be described as "Positive" or "Negative" should consider the "direction" of an Impact towards a sustainability related goal or objective.

EIA scoping guidance[12] indicates that "*Intensity describes the physical dimension of a development and direction specifies whether the impact is negative ("–") or positive ("+").* Hence, if an Impact contributes towards a sustainability goal or objective then it can be considered Positive. Conversely, an Impact detracts or moves away from a sustainability goal or objective can be considered Negative.

Goals or Objectives might be determined by the undertaking, derived from stakeholder feedback or otherwise referenced from international or best practice policy and frameworks such as Climate Treaties or the UN Sustainable Development Goals.

Impacts: Actual or Potential

Based on the implications of EFRAG Guidance[13], which includes for an explanation of "Potential Impacts" under the heading "Current Impacts" a clarification of how "Actual" and "Potential" can be applied to the reporting and definition of Impacts can be arrived at.

An Actual Impact is an Impact which can be demonstrated to have occurred in the reporting period, or if it is the certain logical conclusion of actions taken in the reported period. Nothing however, that future impacts typically have uncertainties

[12] European Commission, Environmental Impact Assessment, Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

[13] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023

attached to them, and therefore most unrealised (future) Impacts are to be presumed to be Potential.

Potential Impacts are any Impacts which are not Actual, that is, they have a Likelihood of less than 1.

Impact Scale

Scale takes account of the degree of benefit or loss due to an Impact. This judgement, as per EIA theory and practice, requires an understanding of the value of the affected environment. The more valuable/ unique/ protected an environment (natural, cultural or economic) is the greater the Impact scale.

The Scale of an Impact is therefore represented as the change to an environment which enjoy recognition or protection at the three following levels:

- Supra-national;
    - the affected environment/ phenomena/asset is of global value or may be protected by multinational treaty requires multinational cooperation to manage and preserve. Examples include: Planetary boundaries and the global climate, human life and death, globally red-listed endangered species, world heritage areas and similar recognised cultural assets, supranationally-protected natural areas and multinational workforces.
- National;
    - the affected environment/ phenomena/ asset is under formal protection that is of national importance, or is important and valuable to an entire ethnic or cultural group. Examples include: national parks or nationally established regional parks, nationally significant cultural events, human health and well-being a single-country workforce sub-national cultural asset.
- Regional or Local/ Low level/ *Ad hoc;*
    - The affected environment/ phenomena/ asset has protection and value at the local or regional level. It is valued by local community groups, individuals and families or has some protection/status in local regulations. Examples include: local parks, a person's home, an unofficial walking trail, a temporary supplier relationship.

It is further noteworthy that the ESRS identifies, in the context of thresholds for ecologically-related target setting, that a delineation along these same three category levels is endorsed. From Disclosure Requirement E2-3 – Targets related to pollution AR 16 *"... Ecological thresholds can be local, national and/or global.*"

Impact Scope

The Scope of an Impact is considered within the context of the receiving environment (the scale). Using this approach, the dynamic nature of Impacts can be considered. Absolute geographic scopes alone do not account for physically small, yet highly valued environments. A Scope of Impact which is based on its relationship to the maximum extent of an affected environment overcomes such unwanted outcomes. An Impact can be described as "Partially" impacting or "Totally" impacting the receiving environment. Furthermore, in order to account for historically identified shortcomings associated with cumulative effect identification under many EIA regimes, the Code Gaia Approach also identifies the "De Minimis but Cumulative" Scope of Impact, which when combined with a receiving environment of large Scale (National or Internationally recognised) will result in a Material Impact. An example is climate and GHG emissions where an individual undertaking's emissions might be De Minimis, but Material nonetheless due to the global value of the climate. This is consistent with guidance from the Institute of Environmental Management and Assessment ("IEMA") in May 2012[14].

The Scope of an Impact is therefore relative to the Scale, and it represented as the change to an environment which is:

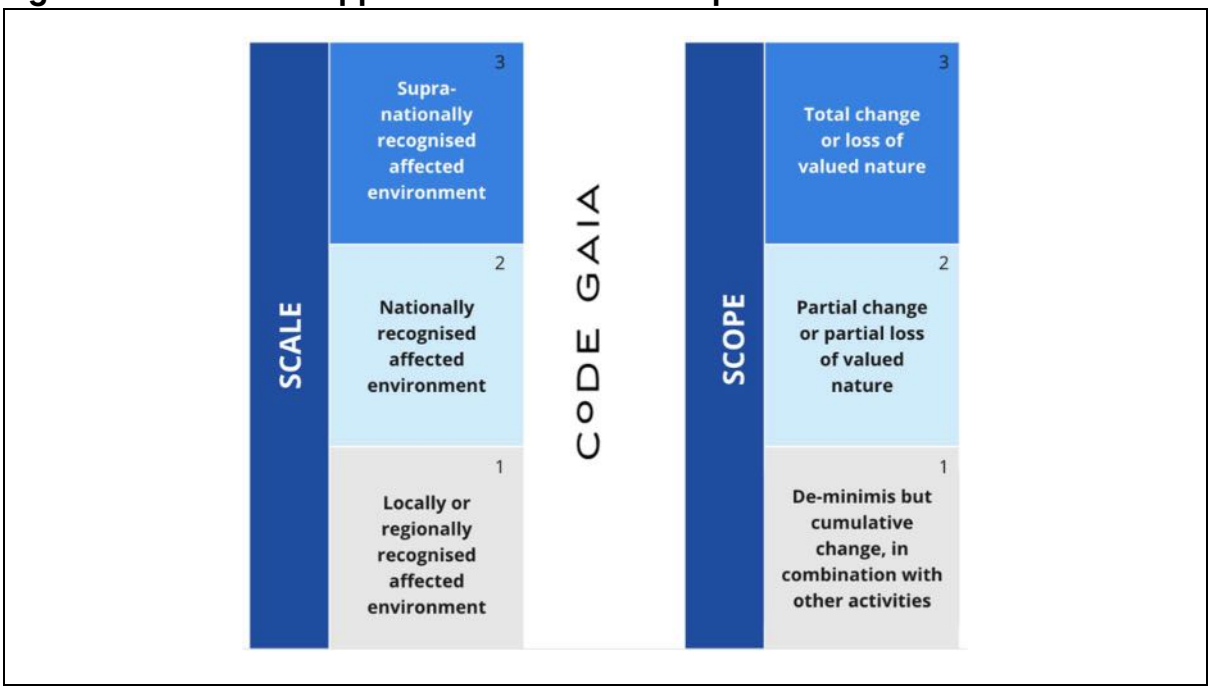
- Total: the fundamental nature, valued aspect or function of the receiving environment in its entirely is lost (or created/ established in the case of a positive impact).
- Partial: the receiving environment is changed in an observable or obvious way, but not to the degree of total loss/ total change.
- De minimis But Cumulative: the receiving environment is not changed above naturally observable variations by this specific Impact instance but is impacted similarly by other Impacts which accumulate in time or space to result in more than De Minimis Impact overall, e.g. in combination with other undertakings or human activity.

The term "receiving environment" can be applied to physical/ natural, social or economic phenomena and is therefore not restricted to Environmental topics under the ESRS reporting structure.

Both Scale and Scope under the Code Gaia Approach are demonstrated visually *Figure 8 – Code Gaia Approach to Scale and Scope.*

[14] IEMA, EIA and the search for significance, https://www.iema.net/articles/eia-and-the-search-for-significance

Figure 8 – Code Gaia Approach to Scale and Scope



Impact Irremediable Character

The time horizons which are specified in ESRS 1 Section 6.4 are taken to be the relevant time horizons for Irremediability. In this case, any known or implemented mitigation is considered. The remendability or Irremediability is considered in the context of how much time would be required for the affected environment to return to its baseline condition. The more remediable the Impact is, the faster it can and will return to the baseline conditions, low-irremediability (high-remediability) is therefore representative of effective remediation being available and deployable in the short term,

The specific time horizons adopted are:

- More than 5 years (Long term)
- 1-5 years (Medium term)
- Less than 1 year (Short term)

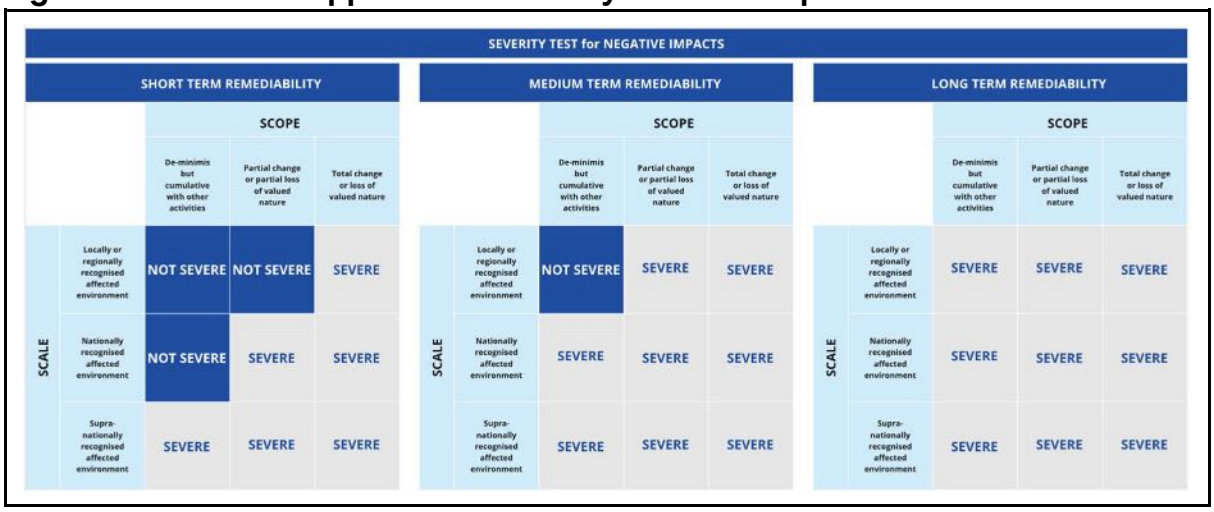
Impact Severity

Where Severity is required to be considered, the following formulation is used to determine how Scale, Scope and Irremediable character contribute:
An Impact is Not-severe IF all criteria are the minimum, OR, only one of the three criteria is more than the minimum AND no criteria are at the highest.

This is consistent also with ESRS AR11 which states that any one of Scale, Scope and Irremediable character can result in a Severe Negative Impact.

The Code Gaia Approach to the Severity test is demonstrated visually *in Figure 9- Code Gaia Approach to Severity Tests for Impacts*.

Figure 9- Code Gaia Approach to Severity Tests for Impacts



SEVERITY TEST for NEGATIVE IMPACTS

SHORT TERM REMEDIABILITY		SCOPE		
		De-minimis but cumulative with other activities	Partial change or partial loss of valued nature	Total change or loss of valued nature
SCALE	Locally or regionally recognised affected environment	NOT SEVERE	NOT SEVERE	SEVERE
	Nationally recognised affected environment	NOT SEVERE	SEVERE	SEVERE
	Supra-nationally recognised affected environment	SEVERE	SEVERE	SEVERE

MEDIUM TERM REMEDIABILITY		SCOPE		
		De-minimis but cumulative with other activities	Partial change or partial loss of valued nature	Total change or loss of valued nature
SCALE	Locally or regionally recognised affected environment	NOT SEVERE	SEVERE	SEVERE
	Nationally recognised affected environment	SEVERE	SEVERE	SEVERE
	Supra-nationally recognised affected environment	SEVERE	SEVERE	SEVERE

LONG TERM REMEDIABILITY		SCOPE		
		De-minimis but cumulative with other activities	Partial change or partial loss of valued nature	Total change or loss of valued nature
SCALE	Locally or regionally recognised affected environment	SEVERE	SEVERE	SEVERE
	Nationally recognised affected environment	SEVERE	SEVERE	SEVERE
	Supra-nationally recognised affected environment	SEVERE	SEVERE	SEVERE

Impact Likelihood

ESRS 1 section 3.4, paragraphs 45 and 46 identify the need for considering Likelihood when assessing the Materiality of Potential Impacts.

It is assumed that an Impact with no chance of occurring is not an Impact at all, and as such is excluded from the consideration of Materiality. An Impact that is certain to occur is assumed to be an "Actual" Impact and therefore not subject to any test of Likelihood.

Likelihood is categorised in a binary manner, using the following criteria:

- Less Than Likely
- More Likely Than Not

The IPCC[15] has suggested that a binary approach such as this, using the term "more likely than not" in reference to Likelihoods above 50% probability is suitable, especially in the context of the certainty broad qualitative probabilistic categories can provide.

In the case of adverse Impacts, and in accordance with ESRS section 1 paragraph 45, a Potential Negative Impact which does not relate to human rights is considered Material when it is both Severe and More Likely Than Not.

In the case of a Potential Negative Impact which does Relate to Human Rights, Less Than Likely but Severe Impacts are also considered Material. This is in accordance

[15] Stocker, T.F., et.al., Technical Summary. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press

with the requirement that, in such cases, Severity of the Impact takes precedence over its Likelihood.

A note on Impact-related engagement

Consistent with paragraph 87 of IG 1, one of the primary puposes of engaging affected stakeholders is to clarify impact understanding. Stakeholder-provided information can therefore be seen as an important vehicle for determining the severity (scale, scope, irremediablity) and likelihood of impacts. This information vehicle should not be overlooked when imacts are being identified and assessed.

Determining Impact Materiality

Figure 10 visualises the full schematic for determining the materiality of any individual Impact. This visualisation is similar to that provided in EFRAG Guidance IG 1. It should be noted that this is not a "materiality matrix" in the traditional sense which displays the full results of the materiality of all IROs against two continuous variables. Code Gaia considers that such a visualisation is not meaningful.

Figure 10 - Visualisation of the Materiality Test for Impacts

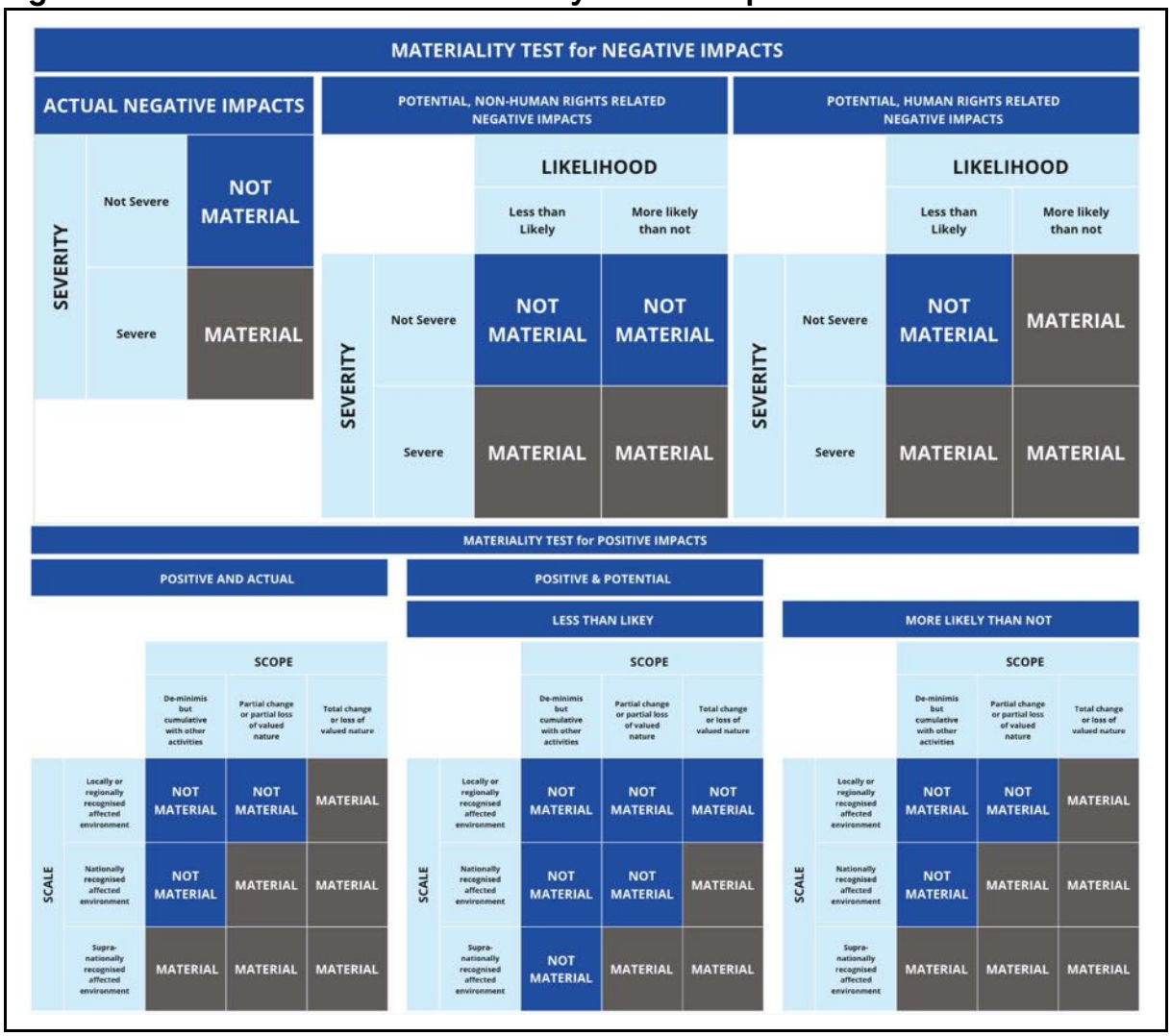


Figure 11 - Functional Representation of Materiality Test for Impacts presents the Materiality determination for any impact as a mathematical formula. This is the same decision process as provided in the visualisations, merely expressed as a written function. In order to simplify the formula, the three gradations for scale and scope have each been numbered 1, 2 & 3, in ascending order (where the smallest scale and scope is 1).

Figure 11 – Functional Representation of Materiality Test for Impacts

$$
\begin{aligned}
&ActualPositiveImpact = NotMaterial \Leftrightarrow (\\
&(Scale = 1 \land Scope = 1)\\
&\lor (Scale = 1 \land Scope = 2)\\
&\lor (Scale = 2 \land Scope = 1)\\
&\lor)\\
&PotentialPositiveImpact = Material \Leftrightarrow (\\
&(Likelihood < 50\% \land Scale = 2 \land Scope = 3)\\
&\lor (Likelihood < 50\% \land Scale = 3 \land Scope = 2)\\
&\lor (Likelihood < 50\% \land Scale = 3 \land Scope = 3)\\
&\lor (Likelihood \geq 50\% \land Scale = 3)\\
&\lor (Likelihood \geq 50\% \land Scope = 3)\\
&\lor (Likelihood \geq 50\% \land Scale = 2 \land Scope = 2)\\
&\lor)\\
&NegativeImpactSeverity = 0 \Leftrightarrow (\\
&(Irremediablity = 1 \land Scale = 1 \land Scope = 1)\\
&\lor (Irremediablity = 1 \land Scale = 1 \land Scope = 2)\\
&\lor (Irremediablity = 1 \land Scale = 2 \land Scope = 1)\\
&\lor (Irremediablity = 2 \land Scale = 1 \land Scope = 1)\\
&\lor)\\
&PotentialNegativeImpact = NotMaterial \Leftrightarrow (\\
&(HRRelated = 0 \land Severity = 0)\\
&\lor (HRRelated = 1 \land Severity = 0 \land Likelihood < 50\%)\\
&\lor)\\
&NegativeActualImpact = Material \Leftrightarrow Severity = 1
\end{aligned}
$$

Section 4 - Identification and Assessment of Financial Risks and Opportunities

Identification of Risks and Opportunities

The Code Gaia Approach encourages the documentation of any previously relied-upon information that informs this process including input from experts, peer-reviewed publications and previously published sustainability-related information from the undertaking or peer undertakings. This includes reviews of internal risk management systems, company policies and management reports which already describe sustainability related risks. To assist with this, Code Gaia has dedicated language-based models which can extract such information from existing documents and compile this in a manner that is suitable for use as a first-screening for existing ROs. The same approach can be used to review published documents from similar companies in the market to ensure that commonly-identified ROs in the sector and among peer undertakings are less likely to be overlooked.

Consistent with Impact identification, both the AR16-list based and the undertaking-based approaches are used to screen or prompt topic areas where risks and opportunities might be identified, or might have already been identified and managed by the organisation.

Risk management and Financial controlling staff are encouraged to participate in risk identification workshops which cover Doubler Materiality theory and the topical coverage of the ESRS. Consulting these critical internal functions can provide relevant information that can inform the identification and assessment of ROs

Naming and Description of Risks and Opportunities

As with Impacts, the naming and description of any RO can aid in comprehension. Clarity can be further advanced by stating the source or nature of the RO itself in the description.

Qualitative aspects of ROs such as the categories of Magnitude and reference to the relevant Transitional and Physical RO sub-characteristics are drafted into the description of the RO itself. These characteristics do not necessary determine the outcome of Materiality (i.e. they do not in-and-of-themselves influence the logical tests outlined in the Materiality process) however they do provide important contextual information about the RO which can be crucial for Stakeholder comprehension and for clarity in the subsequent Sustainability Statement.

Code Gaia has also developed a description and naming tool which can be used to standardise these descriptions. This tool does not substitute the need to correctly

assess ROs, it acts purely as a tool to standardise the language used to communicate.

Whilst not currently adopted as of June 2024, as experience with the ESRS Double Materiality Process grows, sets of standardised IRO descriptions will no doubt be adopted. The Code Gaia Approach allows for the selection and inventorisation of such descriptions from across the market into a library. This would enable undertakings to select from pre-drafted IRO descriptions which represent best practice and can then adapt these descriptions to their own circumstances and the specifics of their undertaking and Stakeholder needs.

ROs are also subject to ESRS 2 SBM-3. This Disclosure Requirement specifies the following information be reported with respect to material Risk and Opportunities (emphasis added):

> *"…a brief description of the material impacts, risks and opportunities resulting from the materiality assessment (see Disclosure Requirement IRO-1 of this standard), including a description of where in the business model, the own operations and the upstream and downstream value chain these material impacts, **risks and opportunities** are concentrated"*

For example, a Risk might be described as follows:

- *Physical Risk to Production Facility in Passau from increased flooding frequency and volume, leading to a negative deviation from an expected change in capitals of up to 10 million euro.*

ESRS E2 (recognising that this is the Pollution Topic Standard) provides further details regarding how Risks and Opportunities can be identified and described. ESRS E2, Appendix A, AR7 lists two broad RO categories with sub-characteristics under each. The Code Gaia Approach adopts this universally for all topics and deploys the use of these identifiers within the description of Risks and Opportunities where relevant.

Table 1 – Risk and Opportunity Categories outlines the two main categories (Transitional and Physical) and the sub-characteristics of each in the Topic Standard E2 - Pollution.

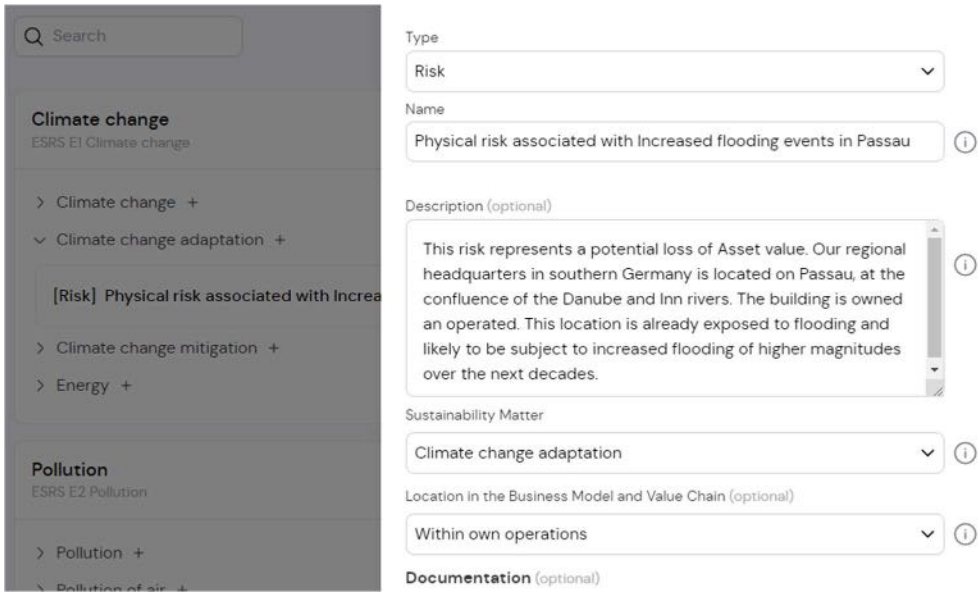
Table 1 – Risk and Opportunity Categories

Transition Risks and Opportunity Category	Physical Risk Category	Systemic Risks
i. policy and legal: e.g., introduction of regulation,	i. **Acute physical risks**: e.g. by natural disasters like floods,	**i. ecosystem collapse risks** that a critical natural system no longer

exposure to sanctions and litigation (e.g., negligence towards ecosystems), enhanced reporting obligations; **ii. technology**: e.g., substitution of products or services by products or services with a lower Impact,transition away from substances of concern; **iii. market**: e.g., shifting supply, demand and financing, volatility or increased costs of some substances; and **iv. reputation**: e.g., changing societal, customer or community perceptions as a result of an organisation's role in pollution prevention and control;	wildfires, sudden interuption of access to clean water, acid rain, other pollution incidents; ii. **Chronic physical risks**: e.g. by water shortage, biodiversity loss, ecosystem degradation, increasing water temperature;	functions, e.g., tipping points are reached and the collapse of ecosystems resulting in wholesale geographic or sector losses (summing physical risks); **ii. aggregated risk** linked to fundamental impacts of biodiversity loss to levels of transition and physical risk across one or more sectors in a portfolio (corporate or financial); and iii. **contagion risks** that financial difficulties of certain corporations or financial institutions linked to failure to account for exposure to biodiversity-related risks which spill over to the economic system as a whole.
	Source: ESRS E2, Appendix A, AR7 and ESRS 2, IRO 1	

Figure 12 – Example of Risk Name and Description in Code Gaia Software shows an example of a Risk name and description and the pre-assessment details as inventorised in the Code Gaia software.

Figure 12 – Example of Risk Name and Description in Code Gaia Software



The validation of Risk and Opportunities may, either during or after identification, include validation from stakeholders who have a specific interest in them. In particular, a majority investor or financial regulator might have existing documentation of methods for identification and description. Such engagement is recommended on a case by case basis where specific input from such stakeholders is considered prudent.

Assessment of Financial Risk and Opportunity Materiality

The characteristics which should be identified for each RO are listed below and then further described:

- Duration,
- Magnitude relative to financial Materiality (i.e. the monetary value which is relevant for accounting purposes)) threshold(s), and
- Likelihood.

In the case of ROs, all characteristics apply to each RO.

Subsequent to the identification of the above, and for each RO, a consistent record of the characteristics of that RO is compiled. *Table 2**Error! Reference source not found.*** presents an example of such compilation, which is then further suitable for the specific RO Materiality tests.

Table 2 - Example of Tabulated Compilation of Risks and Opportunities

Name/ description of RO	Risk or Opportunity	Magnitude as measured	Above Magnitude Threshold (Yes/No)	Likelihood	Duration/ persistence
Physical Risk (loss and damage) to Production Facility from increased flooding frequency and volume, leading to a negative deviation from an expected change in capitals of up to 10 million euro.	Risk	3% total asset value	Yes	Less than Likely	Medium Term

RO Duration

The duration of a Financial RO is taken into consideration using the same Time Horizons which are used for Impact Irremediability. The time horizons which are specified in ESRS 1 Section 6.4 are taken to be the relevant time horizons for Financial RO duration. The specific time horizons adopted are:

- More than 5 years (long term)
- 1-5 years (medium term)
- Less than 1 year (short term)

ESRS 1, Appendix A, AR14 states that "*The identification of risks and opportunities that affect or could reasonably be expected to affect the undertaking's financial position, financial performance, cash flows, access to finance or cost of capital over the short-, medium- or long-term is the starting point for financial materiality assessment.*"

RO Magnitude

The Magnitude of a Risk or Opportunity requires, in most cases, expert opinion from internal financial controllers/ accounting staff. The methods for measuring or estimating the financial effect of any Sustainability RO are, within the Code Gaia Approach, therefore largely left to the discretion and judgement of accounting professional and methods.

It is noted that Risks and Opportunities should, in accordance with ESRS 1, Appendix A, AR14, be categorised consistent with the following:

For Risks

- contributing to negative deviation in future expected cash inflows, or
- increase in deviation in future expected cash outflows and/or
- negative deviation from an expected change in capitals not recognised in the financial statements.

For Opportunities

- contributing to positive deviation in future expected cash inflows or
- decrease in deviation in future cash outflows and/or
- positive deviation.

Accounting decision-making thresholds for Magnitude can be set by the undertaking based on their own internal policies, guidance and rules. However, in the absence of any such internal thresholds, the Code Gaia Approach recommends the use of the "rules of thumb" as specified in McKee as shown in *Figure 13 – McKee Single Rule of Thumb*.

Figure 13 – McKee Single Rule of Thumb

Single rules are "rules of thumb" use a single financial variable for computing materiality. Typically, as a matter of policy, an audit firm would provide three or four such rules and allow the auditor in an individual audit to choose the most appropriate rule. Depending on his/her assessment of qualitative factors, an auditor would select the single rule that was judged to be the most appropriate way to compute materiality for a specific client. Examples of possible common single rules are:

- 5% of pre-tax income
- 1/2% of total assets
- 1% of equity
- 1/2% of total revenues

Source: McKee, T. E., & Eilifsen, A. (2000). Current materiality guidance for auditors.

RO Likelihood

Consistent with "Impacts" Likelihood is categorised in a binary manner, using the following criteria:

- Less Than Likely
- More Likely Than Not

ESRS 1, Appendix A, AR15(b) endorses the use of a binary approach to Likelihood with respect to Financial Risks and Opportunities, stating that "*(b) potential financial effects related to sustainability matters deriving either from situations with a below the "more likely than not" threshold or assets/liabilities not, or not yet, reflected in financial statements*".

The materiality assessment for ROs is visualised in *Figure 14*. This visualisation is similar to that provided in *Figure 5* of EFRAG Guidance IG 1. It should be noted that this is not a "materiality matrix" in the traditional sense (i.e. as used in pre-2021 iterations of the Global Reporting Initiative) which displays the full results of the materiality of all IROs against two continuous variables. Code Gaia considers that such a visualisation is not meaningful.

Figure 15 presents the materiality determination for any one Risk or Opportunity as a mathematical formula. This is the same decision process as provided in the visualisations, merely expressed as a written function where "ADT=1" is an RO which is of sufficient monetary magnitude to meet the Accounting Decision-making Threshold. In order to simplify the formula, the three gradations for duration have

each been numbered 1, 2 & 3, in ascending order (where the shortest-term duration is 1).

Figure 14 - Visualisation of the Materiality Test for Risks and Opportunities

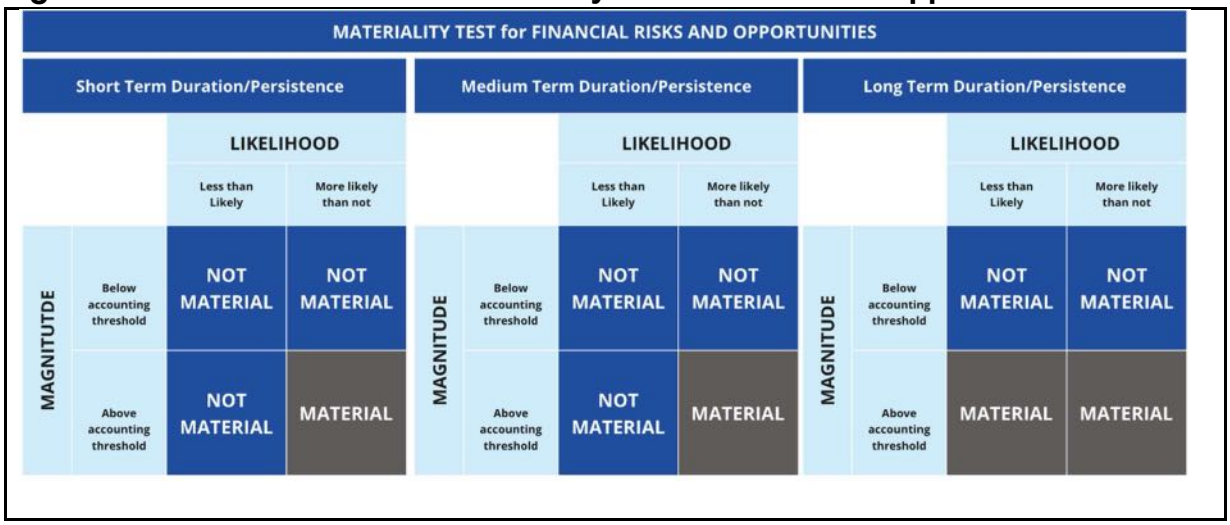


Figure 15 – Functional Representation of Materiality Test for ROs

$$
\begin{aligned}
&Financial RO = Material \Leftrightarrow (\\
&(ADT = 1 \wedge Duration = 1 \wedge Likelihood \geq 50\%)\\
&\vee (ADT = 1 \wedge Duration = 2 \wedge Likelihood \geq 50\%)\\
&\vee (ADT = 1 \wedge Duration = 3)\\
&)
\end{aligned}
$$

Section 5 – Collation of all IROs, Materiality Assessment and Documentation

The outcome of the assessments of all IROs determines the Sustainability Matters and Topics which are Material and therefore are to be included in the Sustainability Statement. The assessments themselves can be conducted simultaneously with, or subsequent to, identification. The primary determinant of when IROs can be assessed is the availability of adequate information to measure the IROs against the relevant thresholds. Obtaining the relevant information might require expert opinion or stakeholder engagement, depending on the specific information that is required.

Collation of Impacts from Stakeholders with Internally-identified Impacts

As stated in Section 2 – Detailed Overview of Stakeholder Identification and Engagement of this paper, many stakeholders might not be able or willing to define Impacts according to the specific characteristics which the ESRS prescribes for Materiality assessment. Furthermore, Stakeholder information relating to Impacts might vary from Impacts which are identified internally, both qualitatively and quantitatively. In order to provide a single concise list of all Impacts which have been assessed, and to recognise the cumulative nature of Impacts which are identified by multiple sources, it is necessary to adopt an approach (or approaches) to how these various descriptions can be collated and combined together. The set of approaches below are therefore deployed during the Impact Identification and Assessment process. Multiple approaches may be adopted during the process.

No-netting of Positive and Negative Impacts.

It is critical to note that, as per EFRAG guidance[16], Although netting and compensation/offsetting are different concepts, these are not allowed to be considered in the assessment of impact materiality.

Gross Negative and gross Positive Impacts must be considered independently for the purposes of materiality. This is important to note for the purposes of collating Impact descriptions.

Simplification Approach: Notwithstanding the "no-netting" requirement, in order to try to reduce the total number/ range of Impacts as much as possible, Impacts are collapsed down to the relevant Sustainability Matters using verbs which are as generic as practicable (increased, decreased, enabled). This approach is often used at the outset of the compilation in order to reduce duplication and redundancies in the process.

[16] EFRAG, Implementation guidance for materiality assessment (IG 1), 2023

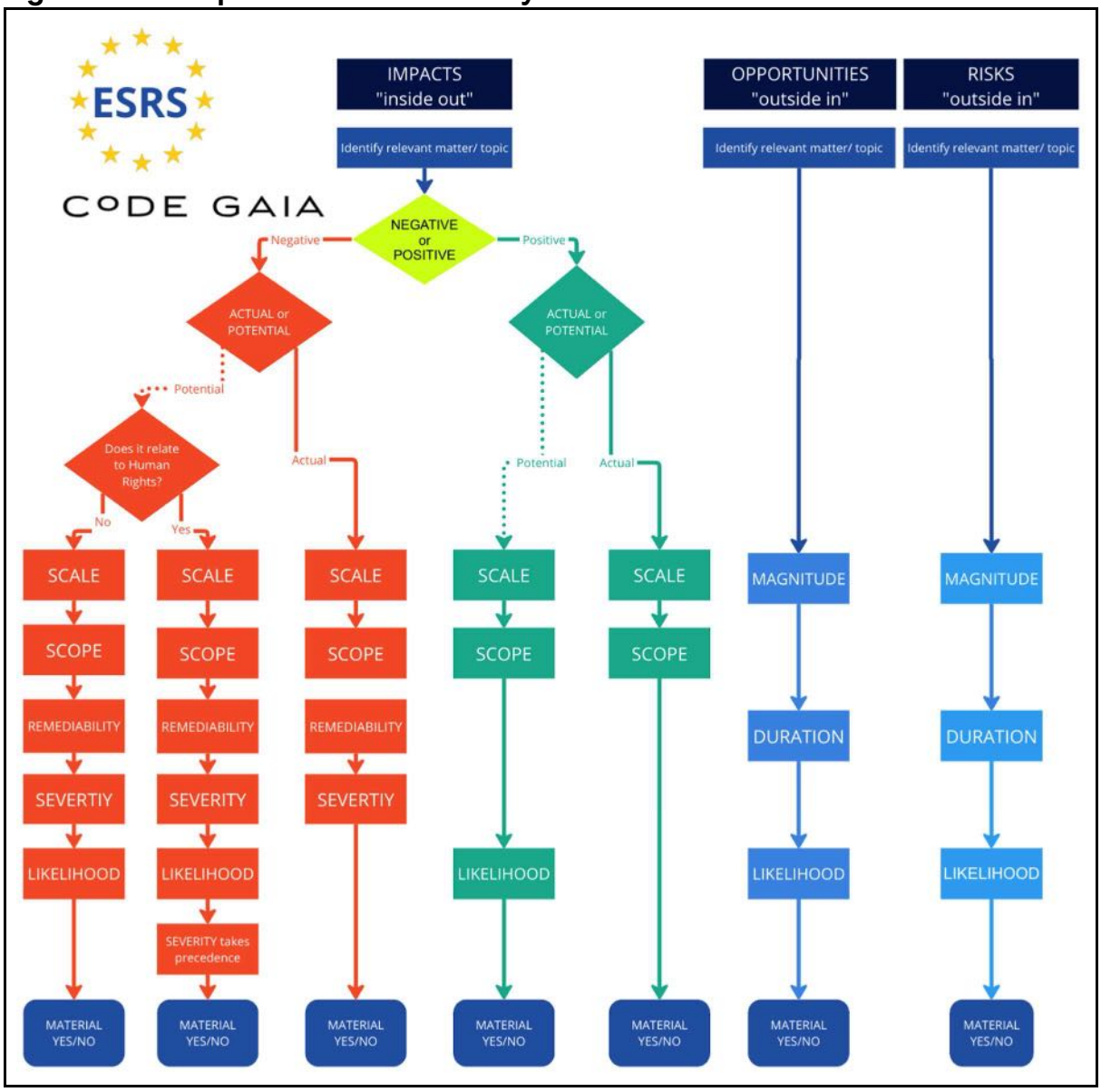
Precautionary Approach: In this approach, the worst-case scenario (Impact description) is taken in any case when two Impact descriptions are at variance on any one characteristic. “Worst-case” means the least Positive Impact, or the greatest negative Impact, on any characteristic.

Expert / Evidence Based Approach: In this approach, the description that is best aligned with peer reviewed or expert opinion is adopted when two Impact descriptions are at variance on any one characteristic. When this approach is adopted, reference should be made to the specific description that is being used as the exemplar.

Accumulation Approach: This approach is used to account for cumulative Impact identification. Under this approach, the final description of the Impact will increase the overall Scope, or Likelihood to the next-highest value when multiple Impacts of the same nature are identified by various sources. The presence of a high number of Non-Material IROs might indicate that an accumulation of some IROs is necessary, in order to avoid the situation where cumulative effects are not correctly assessed.

Figure 16 - Complete Double Materiality IRO Assessment Paths summarises and contextualises the Materiality Assessment tests above in a process flow diagram. This flow diagram presents the complete Materiality Assessment path for any individual Impact, Risk or Opportunity subsequent to its identification as provided for by the Code Gaia Approach.

Figure 16 – Complete Double Materiality IRO Assessment Paths



List of References

EFRAG, Implementation guidance for materiality assessment (IG 1), 2023

ESRS 1, AR6

ESRS 2 (General Disclosures), SBM-3

European Commission, Environmental Impact Assessment, Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

Horstman, Aligning climate change mitigation and sustainable development under the UNFCCC: a critical assessment of the Clean Development Mechanism, the Green Climate Fund and REDD+, 2017

IEMA, EIA and the search for significance, https://www.iema.net/articles/eia-and-the-search-for-significance

Stocker, T.F., et.al., Technical Summary. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press

T-Approach to engagement as proposed by Hans van Dam, ESG Business unit lead at Legile, June 2024