



Product Portfolio Resilience and Innovation Accelerator (PPRIA)

*Turning product impact into portfolio decisions
that drive business performance*



World Business
Council
for Sustainable
Development

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WBCSD would like to thank the following companies and organizations that have supported or contributed to the development of PPRIA method:



Foreword

Dear Business Leaders,

A changing world is reshaping what customers value, what markets reward and where companies can innovate for advantage. For senior business leaders, the question is no longer whether sustainability matters, but where it changes margin, growth, resilience and competitive positioning across the portfolio.

The advantage will lie with companies that can identify where value is being created or eroded, and act before redesign, resourcing and repricing become forced responses rather than strategic choices. Credible sustainability criteria are shifting from preference to condition of supply, with products marked as sustainable increasing in market share and delivering market growth.²

Customers, buyers, regulators and supply chain partners are increasingly translating sustainability expectations into purchasing criteria, contract requirements, cost exposure and access to markets. World Business Council for Sustainable Development (WBCSD) members are seeing the shift in both B2B and retail markets. Opportunity and exposure are therefore shifting product by product.

The same logic applies on the downside. Products that cannot meet emerging customer, regulatory or supply chain expectations may become more costly to sell, harder to insure, harder to source, or less attractive to buyers. Portfolio resilience therefore depends not only on finding the next growth opportunity, but on identifying where current value may be exposed before that exposure appears in revenue, margin or market access.

The challenge, as we see it across the many companies we work with, is one of value translation. Most have a sustainability strategy and many have invested in product-level data and tools. Yet few can connect those inputs to the decisions that determine portfolio performance: where to grow, where to redesign, where to price differently, where to shift capital and where to reduce exposure. Sustainability is too often managed as a side process for cost and compliance, when it needs to operate as a business discipline for performance and resilience.

This is the gap PPRIA — the Product Portfolio Resilience and Innovation Accelerator — is designed to close. It connects product-level sustainability performance to the decisions that shape commercial outcomes: which products to scale, which to transform, where to direct capital and innovation, where to protect margin, and how to defend credibility with customers, investors and regulators. Its value is not another score or framework in isolation, but a shared decision method that helps leaders compare options, test trade-offs and move sustainability from analysis into portfolio action.

PPRIA has been built for leaders driving business strategy and the functional leaders who influence and support them. It is the operating layer that turns existing sustainability data into truly decision-useful information for value creation: connecting it to corporate strategy, sharpening decisions on capital and innovation, making trade-offs visible, and providing a fact base that holds up to external examination.

It rests on more than a decade of pioneering business practice, two years of co-creation and testing in real business settings with 25 companies, over 60 experts and our lead partner, Accenture. It is designed to work with the level of information companies actually have today: a range or an informed judgement can improve a decision, and precision develops with use.

Ultimately, this is a question of remaining relevant and resilient. The companies with a mindset and capacity to embed sustainability into the product portfolio decisions that matter will be better placed to innovate and ultimately compete in a changing world. PPRIA is built for the decisions already in front of you. Get started with a single portfolio question, work through the method with your teams and engage to iterate, improve and scale. PPRIA v1.0 is available now; to discuss where to start, contact

ppria@wbcscd.org.



Fiona Watson
Vice President, Corporate Performance & Accountability, WBCSD

Executive summary

Volatile supply chains, shifting customer expectations, the accelerating impacts of climate change and nature loss, and tightening regulations are reshaping the economics of product portfolios. These risks are no longer on the horizon – they are influencing financial performance today. The companies best positioned to respond are those that can clearly see where their exposure lies and where business opportunities are the greatest.

Most companies have a sustainability strategy. Embedding it in decisions that protect and grow business value has proven far harder. Several leading companies have developed approaches to assess the sustainability performance of their product portfolios and reported tangible business benefits. Yet using these practices to provide customers and financial markets with the base they need to reward sustainability performance remains uneven across organizations. A harmonized, credible method that investors, customers and regulators can rely on has been missing.

Companies set their sustainability targets at the corporate level. Their product-level tools – life-cycle assessments, eco-design frameworks, green revenue taxonomies – generate insights of their own from the bottom up. The connective layer between the two, where portfolio strategy and financial decisions are made, has lacked the structured, comparable intelligence needed to ground both ambitions and choices in product reality. Without that connective layer, sustainability signals remain fragmented and priorities misaligned across functions, leaving the transition to move more slowly than business and stakeholders can afford.

We developed PPRIA – the Product Portfolio Resilience & Innovation Accelerator – to address this gap. It creates the structured, bottom-up process that connects product sustainability performance to the portfolio level where capital, innovation and commercial decisions are made. This empowers business leaders to innovate and provides financial markets with the consistency and comparability basis to value sustainability.

The method

PPRIA is a structured method that connects product sustainability impacts across value chain stages to business decisions that drive financial performance. It is the operating layer for business leaders, portfolio managers, and sustainability implementation leaders to steer resilience, capital allocation and innovation.

Developed over two years of co-creation and testing with WBCSD member companies, it draws on over a decade of pioneering practice by leading companies, and more than 50 established frameworks, standards and scientific references.

Through four steps, PPRIA guides companies in segmenting the portfolio, assessing environmental and social impacts, translating them into forward-looking material financial opportunities and risks, and integrating the results into decisions that shape the portfolio: which products to scale, which to transform, where to direct capital and innovation, and where to double down on supplier and customer engagement. And then they start again.

PPRIA takes a holistic approach and assesses five sustainability themes across the full product life cycle – climate, nature, social impacts, the circular economy, and product safety. Each theme is evaluated on its own terms; strong performance in one does not compensate for weaker performance in another. The method is sector-agnostic and applicable in any geography, at any stage of data maturity.

The process

Step 1 – Scope, boundary and segmentation. Define what to assess and why. Identify the business decision use case, map the stakeholders who will provide inputs and use the results, and segment the portfolio into SPARcs: supply – production – application and end-of-life – region combinations. SPARcs are the units of analysis that reflect how sustainability performance varies across the portfolio.

Step 2 – Environmental and social impact. Assess material impacts across five sustainability themes and their respective topics. This step provides structured approaches, ranging from expert judgement through to quantified assessment, depending on data availability, topic specificities, business decision and use case requirements. Each SPARc receives an A–E performance rating for each material sustainability topic, providing a consistent, comparable basis for portfolio-wide analysis.

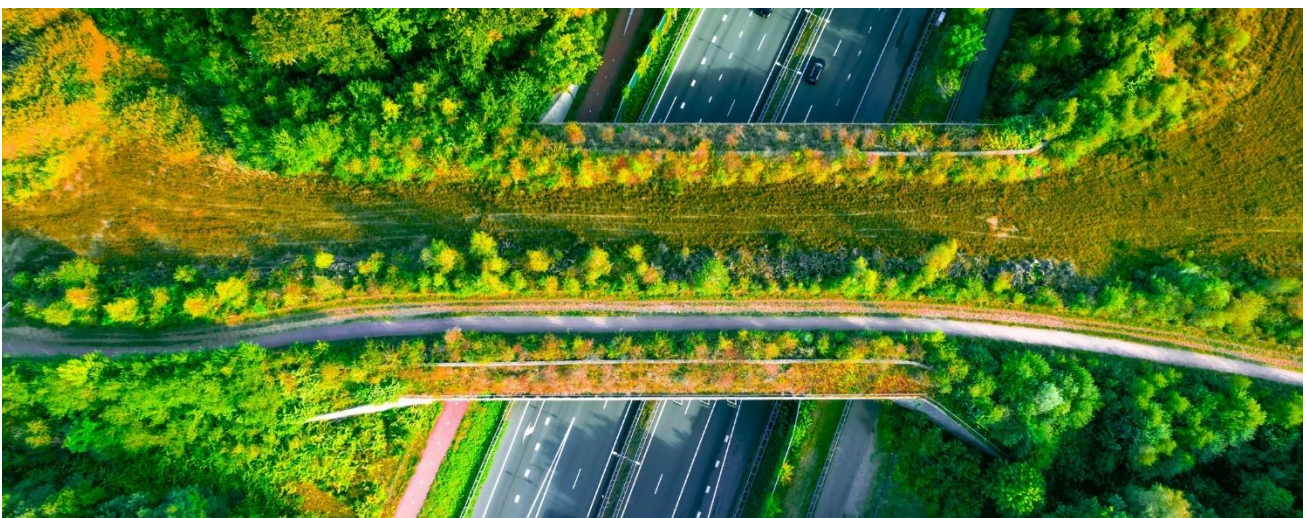
Step – Business opportunities and risks. Translate environmental and social impact ratings into forward-looking financial consequences for business – gross and net – across defined time horizons and scenarios. This step brings sustainability impacts into the language of business, strategy and finance: transition risk, physical risk, regulatory exposure, market opportunity, and the financial case for portfolio transformation.

Step 4 – Result integration. Connect analysis to business decisions. This step brings the environmental and social impacts and financial findings together into a clear view of which products to scale, improve or reposition. It aggregates results for those who will use them and at the organizational level where each decision is made – product, site, business or group – using the same evidence base. It flags what matters enough to act on using thresholds and keeps high risks visible. It gives each SPARc a single rating. This is where PPRIA drives business action.

Progressing up the adoption ladder

The PPRIA Method runs as a cycle – assess, prioritize, decide, act, progress – that goes deeper with every pass. The adoption ladder is the self-assessment guiding the company along its tailored path to progress. It has three levels of maturity (entry, intermediate and leading), expanding coverage, building analytical depth, and deepening integration into governance and decision processes over successive cycles.

The starting point matters less than the commitment to progress. Wherever a company is starting from, there is a structured way to achieve the level of practice that customers, financial markets, policymakers and other stakeholders will increasingly require.



List of abbreviations

Abbreviation	Full term
CapEx	capital expenditure
COGS	cost of goods sold
CSDDD	EU Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
E&S	environmental and social
EIA	environmental impact assessment
ENCORE	Exploring Natural Capital Opportunities, Risks and Exposure
EoL	end-of-life
ERM	enterprise risk management
ESG	environmental, social and governance (ESG)
ESPR	Ecodesign for Sustainable Products Regulation
ESRS	European Sustainability Reporting Standards
EU	European Union
EU ETS	European Union Emissions Trading System
FAO	Food and Agriculture Organization of the United Nations
GHG	greenhouse gas
GHG-P	Greenhouse Gas Protocol
GHG-P LSRS	Greenhouse Gas Protocol Land Sector and Removals Standard
IAM	integrated assessment modelling
IBAT	Integrated Biodiversity Assessment Tool
IEA	International Energy Agency
IFRS	International Financial Reporting Standards
ILO	International Labour Organization (ILO)
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change

IUCN	International Union for Conservation of Nature
PPRIA	Product Portfolio Resilience and Innovation Accelerator
ISO	International Organization for Standardization
ISSB	International Sustainability Standards Board
KRM	key raw material
LCA	life-cycle assessment
LEAP	Locate, Evaluate, Assess, Prepare (TNFD assessment approach)
MECE	mutually exclusive and collectively exhaustive
NGFS	Network for Greening the Financial System
O&R	opportunities and risks
OECD	Organisation for Economic Co-operation and Development
OEM	original equipment manufacturer
PSA	portfolio sustainability assessment
SBTi	Science Based Targets initiative
SPAR	supply – production – application and end-of-life – region
SPARc	supply – production – application and end-of-life – region combination
TCFD	Task Force on Climate-related Financial Disclosures
TISFD	Taskforce on Inequality and Social-related Financial Disclosures
TNFD	Taskforce on Nature-related Financial Disclosures
UN	United Nations
UNEP	United Nations Environment Programme
WBCSD	World Business Council for Sustainable Development
WID	World Inequality Database
WRI	World Resources Institute

Introduction

The challenge: a gap at the level where decisions are made

Volatile supply chains, rising customer expectations and new regulatory requirements are increasingly shaping product and portfolio decisions, as companies progressively price in environmental and social impacts.

Pressure to account for environmental and social impacts is intensifying across environmental and social dimensions. There are now 80 carbon pricing instruments worldwide.¹ Regulatory frameworks across nature, social impacts, the circular economy and product safety are adding further layers of compliance and disclosure pressure. New product stewardship and due diligence requirements have extended these dynamics to the product level.

As a result, companies must integrate environmental and social performance into product portfolio decisions, including which products to invest in, which assets to retain or divest from, how to allocate R&D budgets across an innovation pipeline, and how to sequence capital expenditure given constrained budgets.

Many companies have implemented product-level tools – such as life-cycle assessment, ecodesign frameworks and green revenue taxonomies – but lack portfolio-level data and insights, which is where companies often make strategic and financial decisions.

Companies typically set sustainability targets top-down, without grounding them in product and value chain realities. Although portfolio-level assessment methods exist, they have not been connected to product-level sustainability data or strategic portfolio decisions.

This creates a structural gap: companies set ambitious targets but lack the infrastructure to manage the required changes in their product families and commercial portfolios. As a result, they risk misallocating capital to offerings with high transition exposure, building commercial forecasts on regulatory assumptions that may not hold, and overlooking opportunities to scale parts of the portfolio with genuine sustainability advantage.

The solution: embedding sustainability into portfolio decisions

The Product Portfolio Resilience and Innovation (PPRIA) is the response to a practical management need: companies require a structured, bottom-up process to assess the environmental and social performance of their product portfolios, be they goods or services, and to translate that performance into financial risks and opportunities that they can integrate in portfolio decisions.

We have designed the method to work across different business models and portfolio structures, connect with company data infrastructure and governance processes, and provide a sufficient level of granularity to support management decisions. It connects a company's existing product and value chain data with the portfolio level where it makes investment, innovation and strategic choices.

PPRIA transforms sustainability into a core performance lever, driving resilience, competitiveness and long-term value creation across the organization and its value chains. It creates value across business divisions and corporate functions. In strategy and finance, it supports prioritizing investments in product segments with stronger long-term positioning, while guiding the redesign or phasing out of segments where the business case is eroding due to environmental and social pressures. In innovation, it helps identify priority areas for sustainability-driven innovation, enabling more targeted and commercially grounded decisions. In external communication, it provides a robust way to report portfolio-level sustainability performance to investors, customers and regulators.

The method helps identify the business case for sustainability, which has become a key driver for business growth. According to the NYU Stern Center for Sustainable Business, products marketed as sustainable grew 2.3 times faster than conventional products, with a five-year compound annual growth rate of 12.4% compared to 5.4% for the others.² This is proof that companies that can identify and scale their most sustainable offerings are better placed to capture this opportunity.

Core principles and requirement keywords

PPRIA has two sets of principles – foundational and practical – and aligns with broadly recognized standards and established bodies of practice, including the GHG Protocol’s accounting principles, established environmental impact assessment (EIA) methodologies, International Organization for Standardization (ISO) 31000 and Committee of Sponsoring Organizations of the Treadway Commission (COSO) risk management concepts.

The following **foundational principles** define the conceptual backbone of the method, ensuring that its application is robust and consistent.

Life-cycle thinking: PPRIA applies a life-cycle perspective, assessing impacts from cradle to grave.

Holistic sustainability and no substitution: PPRIA assesses sustainability across environmental and social impact themes and topics, without allowing impacts in one area to mask or offset impacts in another. It assigns equal weight to the five core sustainability themes: climate, nature, social impacts, circular economy and product safety. It preserves the ability to differentiate performance across supply – production – application and end-of-life – region combinations (SPARc). Concerns related to product safety or regulatory compliance take precedence over broader sustainability performance; a strong profile in other themes does not reduce the significance of unresolved issues in these areas.

General applicability: PPRIA applies across industries, business models and geographies.

Method comparability: The method makes the assessment approaches of different companies comparable.

Integrated assessment: The method explicitly links environmental and social performance with forward-looking financial opportunities and risks by incorporating transition, physical, regulatory and market dynamics where relevant.

Verifiability and auditability: Assessments are grounded in traceable evidence. Companies record inputs, assumptions, benchmarks, methodological choices or rationale supporting expert judgement in a way that allows them to review and reproduce results and, where required, have them independently audited and verified. It captures data gaps, assumptions, uncertainties and limitations to avoid overstating confidence in results.

The following **practical principles** define how companies apply the method, ensuring its implementation is efficient, scalable and directly supports decision-making.

Usefulness and relevance: The method informs decision-making by embedding sustainability into product-, portfolio-, business- and corporate-level management, as well as innovation processes.

Practicality, focus and efficiency: PPRIA is practical and efficient, building on existing data and knowledge and prioritizing the most material sustainability topics, value chain stages, and portfolio segments to ensure focus and decision value.

Consistency: The company can apply the method consistently across all units of analysis in scope, sustainability themes, life-cycle stages, and regions. PPRIA allows the comparison of assessment approaches across companies and portfolio segments over time and

accommodates different levels of maturity. Standardized assessment logic and categorization rules ensure companies can meaningfully compare portfolio performances.

PPRIA requirement keywords

The PPRIA Method uses specific words to highlight binding requirements, recommended practices and permissible options. This terminology is aligned with ISO drafting conventions to ensure the method's consistent application. Appendix I provides definitions of the terminology used throughout the method.

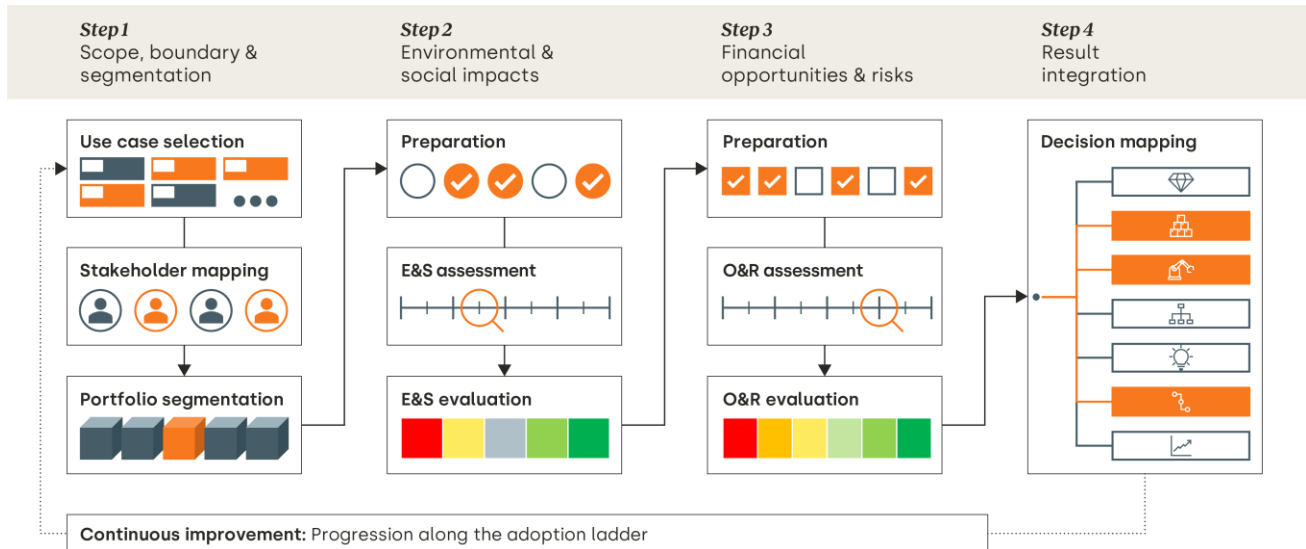
- **"Shall"** indicates a requirement
- **"Should"** indicates a recommendation
- **"May"** indicates that something is permitted
- **"Can"** indicates that something is possible



The PPRIA Method

The method follows four steps that help define the scope, assess environmental and social impacts, translate those impacts to financial risks and opportunities, and integrate the results to inform decision-making.

Figure 1: PPRIA Method: four-step process from scoping to decision-mapping



Step 1 – Scope definition

This step sets the objective, engages the right stakeholders, and segments the portfolio into useful units of analysis. The company determines the relevant use cases, identifies the required stakeholders to engage, and defines the units of analysis based on the product data infrastructure used by business today and based on similar sustainability performance.

Step 2 – Environmental and social impact (E&S)

This step involves a holistic assessment of environmental and social impacts across the portfolio to set the basis for identifying business opportunities and risks in Step 3. The company identifies material E&S impacts along five themes (climate, social, nature, circular economy, and product safety) and analyzes them based on existing data and assessments. Each theme has a dedicated guideline (appendices A to E) outlaying the principles to follow when conducting the analysis.

Step 3 – Business opportunities and risks (O&R)

The environmental and social impacts are translated into forward-looking financial risks and opportunities. The company assesses the gross and net financial impact across defined time horizons, creating a structured link between E&S performance and financial value.

Step 4 – Result integration

Step 4 guides the structuring of PPRIA findings – impacts, financial exposure and leverage – to input governance processes and portfolio decision-making where they inform prioritized actions. Consistent with the business decision use cases defined in Step 1, the company typically integrates the results into portfolio optimization, capital allocation or resource prioritization, and aggregates findings at a level that enables robust, comparable and actionable steering.

The method runs on a continuous cycle: the company assesses the portfolio, prioritizes the results, makes decisions and acts on them, then reassesses the portfolio as the context evolves.



Each of the method's four steps provides both foundational setup activities with iterative analytical cycles and ongoing application activities.

1. Foundational setup (Step 1, Step 2 and Step 3)

Defines scope, segmentation and process governance, and establishes the methodological approach for the E&S and O&R assessments. This includes selecting the approaches, deciding how to apply benchmarks and thresholds, how to structure opportunities and risks, and how to build resources specific to assessment. These elements require an upfront effort, are established once and are updated only periodically as the portfolio, use cases or method evolve.

2. Core analytical cycle (steps 1 to 4)

The SPARc assessment reviews SPARc granularity, identifies environmental and social impacts and translates them into business opportunities and risks, and categorizes results by performance. The company periodically reviews and updates the outcomes.

The integration and use of results (Step 4) into decision processes and external communication follows the specific cycles of these processes.

Transparency, documentation, deviations

Transparency

Transparency is a core enabler of PPRIA's robustness and credibility, ensuring that assessment and results stand up to scrutiny and companies can confidently use them for decision-making. It is the means to balance the flexibility inherent to a global sector-agnostic method, ensuring comparability and verifiability.

It requires systematic documentation, from input to portfolio insight. This transparency is what makes outcomes comparable over time and across business units – by exposing underlying choices, it prevents “black box” assessments and enables like-for-like interpretation. The “comply or explain” approach preserves methodological integrity while allowing pragmatic application across different maturity levels. Appendix H lays out disclosure expectations to operationalize this and anchor consistent, credible use of PPRIA across organizations.

Documentation

Documentation is a governance mechanism that preserves methodological integrity and external credibility, enables the comparability of results over time within a company, and ensures that the company can confidently use sustainability insights in business decision-making.

All PPRIA assessments *shall* be evidence-based, transparently documented, and traceable. Companies *should* therefore document, in a proportionate manner:

- Methodological choices, including any deviations from the method;
- Assumptions, estimates, evidence and rationale supporting expert judgement when used;
- Benchmark or point of reference selection and rationale;
- Data sources, uncertainties, limitations or gaps;
- Key drivers supporting the final assessment outcome.

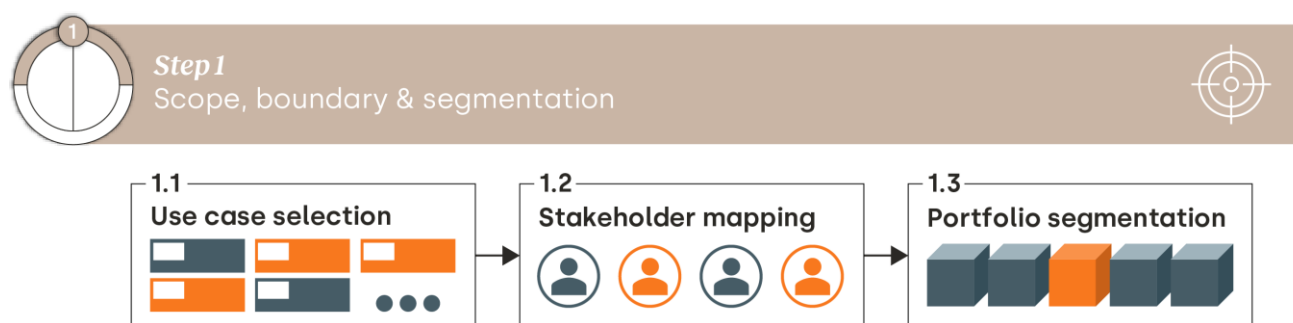
The level of documentation *should* be sufficient to enable internal review, reproducibility of results and relevant external verification. The company captures data gaps, assumptions, uncertainties and limitations to avoid overstating confidence in results.

Handling deviation: comply or explain

Where a company departs from PPRIA methodological requirements, the company *shall* document it transparently, explain the rationale and demonstrate how it delivers outcomes comparable to those of the PPRIA Method. These are the minimum requirements to safeguard the PPRIA methodological standards, enabling credible adoption across companies at different stages of maturity while preserving the integrity, comparability and transparency of results for internal and external stakeholders.



Step 1: Scope, boundary & segmentation



PPRIA is a product portfolio performance management process that informs business decisions. Step 1 anchors this by defining what the company will assess, why and at what level of granularity. It strikes the balance between too broad a scope to manage or too narrow to inform meaningful decisions. This step ensures that effort is proportionate, responsibilities are distributed, and results can be embedded into portfolio management.

Step 1 has three sub-steps:

1. **Business use case identification (recommended)** clarifies the business decisions the PPRIA Method is intended to inform, e.g., capital allocation, portfolio optimization, risk management. The business use case guides and prioritizes the effort, it has an implication on the level of result aggregation and interpretation (Step 4).
2. **Stakeholder mapping (recommended)** clarifies which functions must provide data, interpret findings, and make decisions. This reduces the possibility of delays and helps ensure alignment throughout the process.
3. **Portfolio segmentation (mandatory)** into units of analysis is the **foundational and mandatory** element of Step 1. It defines the supply – production – application and end-of-life – region combination (**SPARc** – product segments) that the company will assess in the next steps. Proper segmentation ensures analytical consistency and comparability across the portfolio. It also determines the level of granularity, which directly influences the data requirements, scalability and usefulness.

Box 1: SPARc

A SPARc (supply – production – application and end-of-life – region combination) is the defined unit of analysis of the method. It is a portfolio unit defined according to the business product hierarchy and four **four segmentation dimensions** (SPAR) that capture the main drivers of sustainability impacts across the value chain.

- **Supply:** Upstream inputs and sourcing characteristics (e.g., raw materials, supplier base, upstream energy mix, labor conditions, supplier practices where relevant);
- **Production:** How the product is manufactured (e.g., process type, manufacturing footprint, energy intensity, working conditions where relevant);
- **Application and end-of-life:** How the product is used and treated at the end of its life (e.g., use-phase impacts, disposal, recovery or recycling pathways, user and community impacts where relevant);
- **Region:** Geographic context affecting impacts (e.g., grid mix, logistics, waste management, social context).

A SPARc group's products share sufficiently similar characteristics across these dimensions to establish units of analysis with comparable sustainability assessment outcomes.

1.1 Use case identification

Use cases describe the business intent and shape how the company implements and uses the method. They have a direct influence on which stakeholders to engage and how to act on the results. They guide the level of depth and effort applied in the analysis. For example, applications focused on internal management may rely more extensively on qualitative insights, whereas external communication or disclosure may require higher levels of evidence, documentation and reproducibility.

Identifying use cases informs:

- Which decisions, priorities and applications the assessment must support;
- Which stakeholders must be involved;
- What level of depth and rigor is required;
- How companies will integrate and act on the results.

Table 1 sets out seven illustrative business decision types, covering the principal business use cases PPRIA informs. Each type identifies the questions it addresses, the use cases it supports, and the outputs PPRIA provides to enable them. Step 4 develops the types in full.

Table 1: Seven illustrative business decision types

Business decision type	Business use cases	PPRIA's added value
Enterprise value & materiality Where is the group's enterprise value most exposed and is the company's capital expenditure reducing this exposure? Chief financial officer, chief sustainability officer, head of strategy	• Product portfolio sustainability performance management and portfolio steering • Innovation strategy • Strengthening the external disclosure process and brand value • Anticipating regulatory and market pressure across value chains • Engaging investors with structured portfolio exposure insights and access to capital	A bottom-up assessment of the portfolio's environmental and social performance and the financial opportunities and risks it drives – evidence that rating agencies, lenders and investors can scrutinize.
Business portfolio management What strategic role should each business play – harvest, grow or restructure – and what transition and resilience capital does it need? Group strategy or business division leadership	• Strategic business portfolio management • Portfolio transformation and M&A due diligence • Capital allocation and investment justification • Sustainability target-setting and performance tracking	SPARc-level sustainability intelligence aggregated to business-unit level, linked to financial scenarios, so each business's strategic role is set with a clear view of its transition exposure.
Manufacturing asset management What is the future of this site and how should the company secure its value and license to operate? Site director & operations, head of strategy, group human resources	• Manufacturing asset and operations management • Site-level license to operate • Energy and feedstock transition planning	SPARc-level exposure translated to site and product group level, allocated economically, so capital expenditure (CapEx) decisions are grounded in each product group's actual sustainability risk and competitiveness.

Business decision type	Business use cases	PPRIA's added value
Product portfolio Which products should the company scale, mitigate, transform or study further? Business line manager	- Rebalancing the portfolio toward more resilient product segments - Identifying segments exposed to regulatory, transition or supply chain risks - Product pricing and margin management	A consistent E&S performance rating (defined in PPRIA appendices A–E) and O&R exposure card at the SPARc level, drillable to value chain stage and scorecard levels – so product decisions are anchored in comparable, portfolio-wide evidence rather than fragmented data.
Innovation management Where should the company direct innovation so tomorrow's products clear future E&S constraints? Group/business head of innovation	- Innovation management; prioritization and decision-making processes - Product design	A forward look at where the value chain and market system are heading, translated into minimum E&S performance requirements for stage gates – so innovation resources go where advantage endures.
Sourcing Which suppliers carry the company's exposure and how does it engage and select them? Head of procurement, heads of business lines	- Supplier engagement - Defining sustainability requirements for sourcing and product design - Targeting remediation or collaboration initiatives	Supplier and product E&S impact tied to cradle-to-gate SPARc performance, with a credible, reviewed basis for supplier engagement and selection – and a clear view of where supply chain pressure points sit beyond direct suppliers ("tier 1").
Sales growth How does the company turn E&S performance into a credible customer and brand story? Head of sales & marketing, head of marketing communication	- Customer engagement - Substantiating sustainability claims with documented evidence - Strengthening brand positioning through credible transparency	Consistent, traceable evidence based on product environmental and social performance – so claims, bids and brand positioning rest on documented data that stands up to customer and assurance scrutiny.

Across all types, PPRIA results support internal alignment by creating a shared, comparable fact base for cross-functional discussion, explicit trade-off framing, and structured reporting to governance forums.

To identify use cases, companies *may* initiate a structured dialogue in their organization before starting the assessment. This typically includes:

- Reviewing corporate strategy, sustainability commitments and risk exposure to identify where portfolio-level transparency would create decision value.
- Leveraging existing analyses, such as double materiality assessments, to identify priority impact areas, risks and opportunities that may require portfolio-level insights or action.
- Engaging strategy, finance, sustainability and business leaders to clarify expected outcomes and integration points. Examining, with the stakeholders listed above, how the company can use PPRIA results in governance processes for the business decision use cases considered.

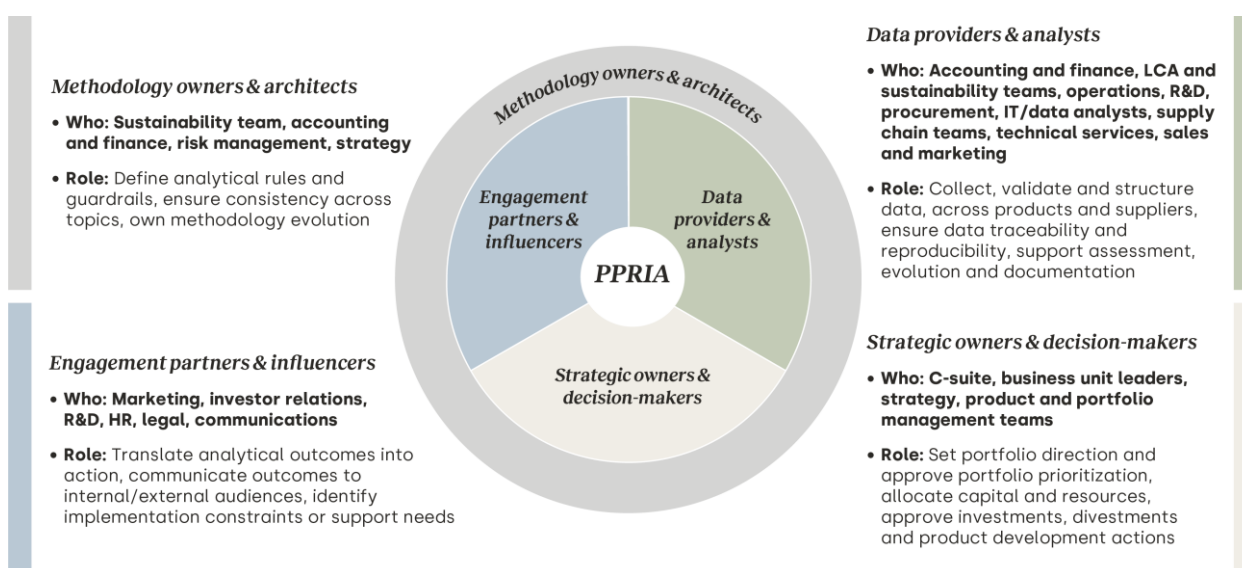
1.2 Stakeholder mapping

Engaging the relevant stakeholders ensures clear ownership and accountability, increases acceptance of findings across functions, and secures decision authority for subsequent actions. Stakeholder mapping *should* have a clear governance role structure, which can speed up the implementation and lead to less friction.

Core stakeholder categories

Stakeholder mapping considers the categories of stakeholders ([Figure 2](#)) related to each of the use cases.

Figure 2: PPRIA stakeholder overview



The level and nature of stakeholders involvement varies by business decision use case, organizational structure, and stages of the process. Defining their roles ensures clarity on decision authority, data ownership, and responsibility for implementation.

To enable effective execution, companies *should* anchor the method in existing functions and governance systems – leveraging established processes such as product stewardship, enterprise risk management, life-cycle analysis (LCA) and environmental data governance, regulatory monitoring and procurement due diligence.

Companies *should* identify how these structures contribute to the assessment and integrate responsibilities into existing decision-making forums. Failing to do so risks duplication, unclear ownership and bottlenecks.

Best practice also shows the value of assigning clear responsibility for assessment documentation, verification and assurance.

In practice, defining the relevant stakeholders to involve includes:

1. Identifying those who are directly linked to the selected use cases.
2. Defining, for each use case:
 - Who provides data;
 - Who interprets results;
 - Who approves decisions;

- How approval authority is shared or escalated across functions (e.g., chief sustainability officer, chief finance officer, chief human resources officer, strategy, business leadership, innovation/R&D, procurement, sales/marketing);
- Who implements follow-up actions.

3. Mobilizing and aligning stakeholders by:

- Defining the value proposition for each stakeholder group;
- Confirming roles (data provision, review, validation, escalation);
- Communicating the expected level of effort;
- Clarifying governance and decision forums (e.g., strategy reviews, investment committees, risk management cycles), including how to resolve cross-functional trade-offs;
- Agreeing on milestones and review points.

4. Informing stakeholders early about expected timelines and engagement moments.

1.3 Portfolio segmentation

This step provides guidance on defining the **units of analysis**. The objective is to strike the right balance between granularity and feasibility. Segmentation should be as granular as necessary and as aggregated as feasible to bring to the surface material differences in sustainability performance without creating unnecessary analytical complexity:

- Segment too broadly, and products with materially different sustainability profiles get grouped together, producing averaged results that mask risks or dilute opportunities;
- Segment too narrowly, and the assessment becomes disproportionately resource-intensive and harder to compare across the portfolio.

The resulting product segments are dynamic and might change with (for example) the introduction of new products, portfolio transformations, new regulations or better data availability. Once the company has implemented the method, it *should* review it periodically and update it where necessary.

The company *shall* design periodic reviews to maintain the method's applicability and inform business decisions with up-to-date SPARc performance data. In addition, reviews *should* assess whether the defined units of analysis remain sufficiently similar across the SPARc criteria. If not, the company *should* further split or redefine the SPARc to remain consistent and relevant.

Segmentation follows two main steps:

1. Start with how the business is segmenting the portfolio

To start, segmentation *should* be based on and align with the organization's existing product data structure and internal processes. This ensures that the unit of analysis is familiar and anchored in existing ways of working. It supports clear accountability, alignment with existing data structures and processes, an obvious link to financial and operational structures (e.g., profit and loss (P&L), reporting units), and consistency in reporting, benchmarking and external comparison.

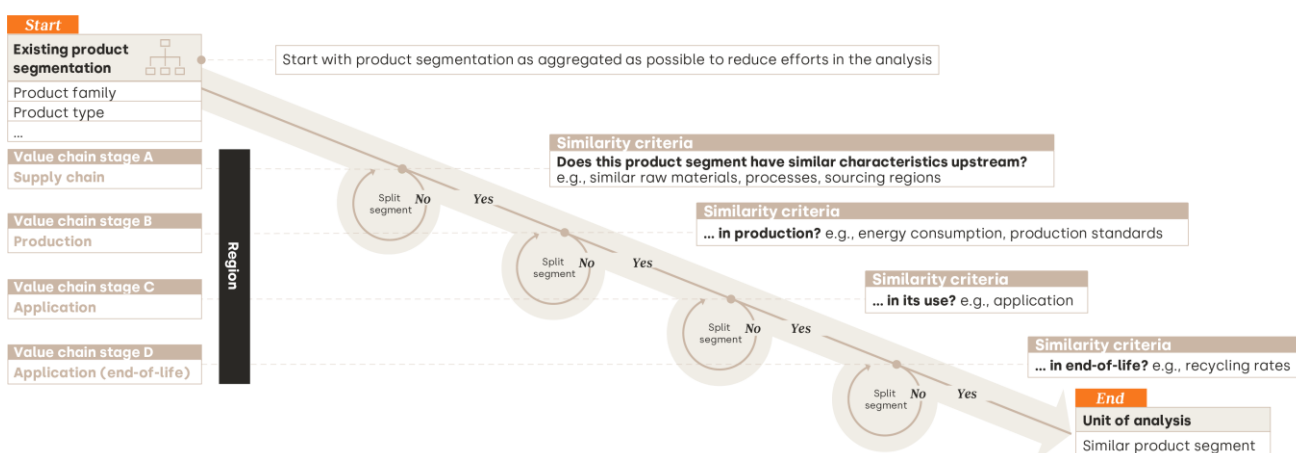
Typical starting points include segmentation by product category, platform, application or region, depending on how the business is structured. It helps to involve relevant product teams and sustainability or technical experts to test the segmentation and to confirm that it reflects both business reality and underlying sustainability drivers.

2. Further segment the portfolio to reflect similar sustainability performance

Secondly, segmentation *should* be based on units of analysis with a relatively similar sustainability performance across the value chain. This is required to produce a meaningful and relevant assessment. It ensures the company captures material differences in sustainability performance, that it does not overlook key opportunities and risks, and that its results remain credible under external scrutiny.

Segmentation by sustainability impacts is based on the four dimensions: supply, production, application and end-of-life region (see [Box 1](#)). A unit of analysis *should* be split where differences within a dimension can significantly change the assessment outcome, such as a different topic rating or risk classification ([Figure 3](#)).

Figure 3: PPRIA SPARc segmentation flow diagram



The organization *should* only introduce geographic splits where they materially affect sustainability performance (e.g., grid mix, water stress). In addition, where grouping spans heterogeneous conditions (e.g., multiple regions or production setups), best practice is to be conservative and use the worst-performing case. Where this is not suitable, the company *may* instead use a representative case (e.g., a volume- or capacity-weighted average across the grouped conditions), provided a robust and documented rationale supports this choice and does not mask impacts or risks.

Updating the SPARc segmentation

Material differences can sometimes come to the surface later, during the assessment of sustainability impacts, risks and opportunities. In that case, the company *shall* revisit SPARc segmentation and further split it up where needed. Step 2: Environmental & social impact tests the resulting units of analysis to verify whether they are representative of similar impacts across the value chain and feasible for the actual assessment.

Example 1: Brand B's shampoo for daily use and regular hair for the North American market

Typical product hierarchy: A high-volume rinse off cleanser / hair care / shampoo / mass market / brand / product line / stock keeping unit (SKU)

Table 2: Segmentation drivers for a shampoo

Segmentation drivers	Description
Supply	Type of ingredients (sourcing original, product safety consideration)
Production	Large-scale blending production, fast innovation cycle
Application	Frequent hair washing, contact with body
End-of-life	Packaging type; biodegradability (rinse-off)
Region	Global

**Example 2:** Reinforcing specialty filler for use in thermoplastic

Typical product hierarchy: division / business unit / product line / end market segment / product grade or variant / SKU

Table 3: Segmentation drivers for a thermoplastic additive

Segmentation drivers	Description
Supply	Main raw materials from multiple suppliers, virgin origin
Production	Specific chemical process, in 3 different production plants (EU, Asia-Pacific, North America)
Application	Use in plastic parts to create shock-absorbent functionality for structural component of a train (regulated transportation market)
End-of-life	Embedding in the plastic part, end managed through dedicated industrial recycling systems, outside of SPARc producer
Region	Sold in European market



1.4 Summary of Step 1 outputs

Use case documentation (*recommended*) — A documented and agreed list of business use cases, linked to specific decision contexts and governance forums. Where completed, this output guides the depth of analysis applied in steps 2 and 3 and shapes how results are aggregated, interpreted and acted upon in Step 4. Companies that skip this step should be aware that the absence of a documented use case may reduce the relevance and uptake of results in business decision-making.

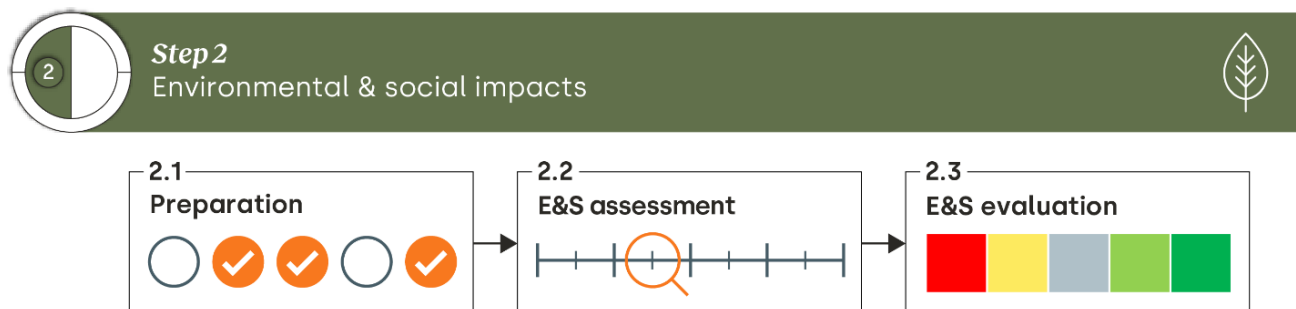
Stakeholder map (*recommended*) — A documented stakeholder map setting out defined roles for each function involved: data provider, reviewer, decision-maker and implementer. Where completed, this output reduces friction and delays at later stages by establishing clear ownership and approval paths before the analytical work begins. It is not a prerequisite for proceeding, but its absence increases the risk of bottlenecks and contested findings.

SPARc list (*mandatory*) — A defined list of product segments (SPARcs), each with a unique name or identifier and a clear description of the products it includes. This is the essential input to Step 2 (environmental & social impact assessment) and Step 3 (opportunity & risk assessment), which are conducted at the SPARc level. Without a completed SPARc list, the assessment cannot proceed.

The SPARc list *should* be treated as a living output: if material differences in sustainability performance emerge during steps 2 or 3, the segmentation *should* be revisited and refined before results are finalized.



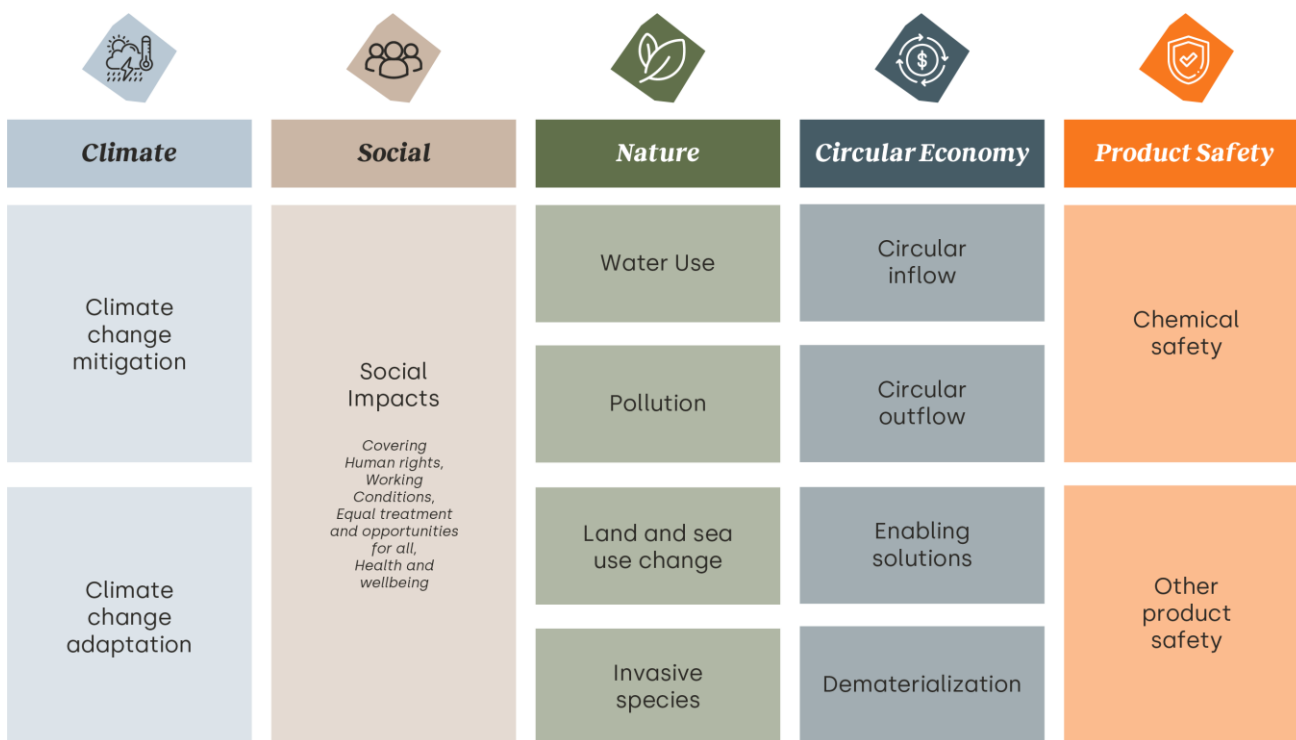
Step 2: Environmental & social (E&S) impact



Step 2 identifies and assesses the E&S impacts of each product segment (SPARc) across its full value chain and across five themes (Table 4 for further details).

The five themes are **climate**, **nature**, **circular economy**, **social impacts** and **product safety**. The review of more than 50 leading institutions frameworks, an analysis of how companies currently assess the environmental and social performance at product and portfolio level, and their alignment with established standards and global references informs them.³

Figure 4: PPRIA environmental and social themes



Assessing the SPARc provides the necessary input for Step 3, where impacts are translated into forward-looking financial opportunities and risks (O&R) and for Step 4, where the integration of E&S and O&R results support decision-making, ranging from the portfolio level to enterprise value and materiality.

Table 4: PPRIA environmental & social impacts themes

Themes	Topics
Climate Covers greenhouse gas emissions across the full product life cycle. It includes both climate change mitigation and adaptation	• Climate change mitigation • Climate change adaptation*
Nature Covers impacts and dependencies on ecosystems and natural resources across the value chain, and follows the structure of key drivers for nature ⁴ loss (water use, pollution, land- and sea-use change, and invasive species).	• Water use • Pollution • Land- and sea-use change* • Invasive species*
Circular economy Covers material flows across product life cycles within technical and biological cycles	• Circular inflow • Circular outflow • Enabling solutions • Dematerialization*
Social impacts Covers impacts on people across the value chain, including workers, communities, consumers and society; includes human rights, working conditions, equal treatment, health and well-being	• Human rights • Working conditions • Equal treatment and opportunities for all • Health and well-being
Product safety⁵ Covers inherent hazards and exposure risks associated with a SPARc's composition, use and end-of-life and the resulting impacts on human health and the environment across the life cycle; addresses whether products meet regulatory and societal expectations for safe use and life-cycle management	• Chemical safety* • Other product safety-related topic**

* The guideline for this topic will be available in a later version of this method. In the meantime, companies may apply state-of-the-art practices.

** Placeholder, should additional relevant product safety impacts be identified for integration in PPRIA.

Box 2: E&S themes, topics, indicators, metrics

Each theme contains one or more topics. Indicators describe the topics; metrics measure the indicators.

Theme → Topic → Indicator → Metric

Appendices A to E of this method offer a dedicated detailed guideline including indicators and metrics for topics under each E&S theme.

Topic: Themes contain corresponding topics. For example, nature includes water use, pollution, land- and sea-use change, invasive species. The company assigns a rating for every topic, aggregated from its respective indicator ratings.

Indicator: Several indicators describe each topic, e.g., the air pollution indicator for the Pollution topic. The company assigns a rating in the evaluation step based on their metrics.

Metric: One or more metrics can assess each indicator, e.g., amount of nitrogen oxides (NO_x) and ammonia (NH₃) for air pollution.

Step 2 follows three sub-steps to identify and assess environmental and social impacts: preparation, assessment and evaluation.

1. **Preparation** of the E&S assessment consists of configuring topic-specific parameters, applying the materiality filter, and defining reference benchmarks.
2. **Assessment** establishes the factual evidence base. For each material topic, metrics are assessed using quantitative, semi-quantitative, or qualitative approaches depending on data availability and topic characteristics.
3. **Evaluation** translates assessed impacts into standardized A–E performance ratings. Evaluation approaches differ by topic to reflect their specific characteristics but follow defined comparison techniques to maintain consistency.

2.1 Preparation

Preparation aligns available data with PPRIA logic before assessment begins. Preparation covers the definition of **significance thresholds** and the configuration of **topic-specific parameters** for pollution and social impact. This is where the company applies **the materiality filter** and defines the **point of reference** for the assessment. Where possible, these steps *should* draw on existing processes – LCA methodologies, supplier due diligence, ERM systems, and double materiality assessments – rather than duplicating them.

The objective is to align all data inputs with PPRIA logic to enable consistent, comparable assessments at the product segment (SPARc) level.

2.1.1 Definition of significance thresholds

Significance is a core interpretive mechanism within PPRIA. It determines which topics are material (materiality filter) and how to rate impacts. A clearly defined and consistently applied significance logic ensures that the results are comparable across product segments (SPARcs). Expert judgement is a key input to do this, especially where data is limited.

Significance is defined as:

$$\text{Significance} = \text{Magnitude} \times \text{Likelihood}$$

Magnitude is assessed through:⁶

- **Scale:** the intensity or severity of the impact
- **Extent:** the breadth of the impact
- **Irremediability:** the ability to reverse or remediate the impact

Likelihood is relevant where impacts depend on uncertain events (e.g., social risks) and not applicable where impacts are inherent life-cycle characteristics.

Every company *should* define their own significance levels and document:

- How it interprets low, medium and high magnitude;
- How it interprets and applies likelihood (where relevant);
- How it uses significance thresholds in filtering based on materiality and in the rating logic.

The company *should* ensure the consistent application of these concepts across topics, while allowing for topic-specific nuance. The company *shall* document, with the rationale, any deviations from this approach.

2.1.2 Dedicated topic configurations

Certain topics under the PPRIA scope require dedicated configurations before the assessment of individual SPARcs. The company configures it once and updates it before each new portfolio assessment cycle starts. The company *shall* configure the following parameters at an appropriate

aggregation level (e.g., corporate, business unit, or product line), before the SPARc-level assessment begins and *shall* apply it consistently across all relevant SPARcs:

- **Pollution:** Establish a company-wide list of pollutants based on existing internal parameters or metrics, external references and known stakeholder concerns (see the pollution guidelines in Appendix C.2 for more details).
- **Social impact:** Configure a social impact heat map to identify potential hotspot areas across the value chain (see the social impacts guidelines in Appendix B.1 for more details).

These preparations require topic-specific expertise and may require cross-functional input. They represent a one-time effort and the company updates them when new information becomes available (e.g., when material changes occur or based on the SPARc analysis outcome – see Step 1.3 Updating the SPARc segmentation)

2.1.3 Application of the materiality filter

The materiality filter helps the company focus on the impacts that matter most. It is done as preparation for the SPARc assessment to screen each topic across the full life cycle – upstream, the company's own operations, and downstream – and determine whether any impacts may reach at least moderate magnitude, or whether the topic is strategically relevant due to stakeholder expectations or requirements.

The company assesses materiality in PPRIA through two questions (see also [Table 5](#)):

- **Magnitude test:** Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
- **Stakeholder relevance test:** Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?

The company *should* conduct the materiality filter at the SPARc level. In the early stage of implementing the method, it *may* also do it at a higher level (e.g., business unit, product line, product family).

For each topic and life-cycle *stage* (upstream, the company's own operations, downstream), the company *shall*:

1. Apply the materiality filter questions using available data, existing processes and expert judgement;
2. Treat the topic as requiring further assessment (at least qualitative) if information is insufficient or uncertain to identify signals (either in terms of potential impacts or stakeholder expectations);
3. Assess the topic at least qualitatively as soon as it answers “**yes**” for one question for a topic;
4. Classify a topic as non-material if it answers all applicable materiality questions with “**no**”

For all questions with the answer “no”, the company *should* document the rationale for the conclusion (e.g., evidence of absence of signals, use of existing due diligence processes, or supporting data sources)

Decision logic

The materiality filter results in three possible outcomes:

1. No signal identified through an evidence-based process → the topic is not material;
2. A signal is identified, with low magnitude → the topic is not material;
3. A signal is identified and may reach at least moderate magnitude → the topic is material and taken forward for assessment.

Table 5: PPRIA materiality filter questions, applicable to each life-cycle stage

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess impacts of the SPARc key raw materials.⁷	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc within the chosen organizational level?

The question on magnitude is meant for screening purposes to determine whether any impacts could reach a moderate level. It is an absolute assessment of the impact and does not require a benchmark comparison.

For example, a process with significant emissions intensity (scale), an impact affecting a large part of the value chain (extent), or an impact that is persistent or difficult to reverse (irremediability) may indicate at least moderate magnitude in one dimension. See the Evaluation section below for further guidance on interpreting the three magnitude dimensions.

The company *shall* interpret the question on stakeholder expectations or requirements as externally or internally observable signals that are likely to influence decision-making, market access, or the license to operate. These may arise from regulatory requirements, customer demands, investor expectations, industry standards, or societal scrutiny. They must be relevant to the SPARc context (e.g., application, geography, value chain stage).⁸

The materiality filter leads to a list of material topics to analyze in the following sub-steps for each SPARc

Illustrative approach: Leveraging existing due diligence processes

Many companies already operate robust processes designed to identify environmental and social risks across their activities and value chains. These may include, for example:

- Supplier due diligence and monitoring systems;
- Compliance and regulatory watchlists;
- Environmental management and monitoring programs;
- Risk registers and enterprise risk management processes;
- Raw material risk screening tools;⁹
- Stakeholder engagement and grievance mechanisms.

Rather than duplicating these mechanisms, companies *may* draw on them as part of the materiality filter for any topic with the following possible outcomes:

- **Lack of information** (“unknown”), which requires further assessment;
- **Absence of a signal**, which may justify concluding that a topic is not material – provided that documented, fit-for-purpose processes support this conclusion.¹⁰
- **Presence of a signal indicating an actual or potential impact**, which shows that the company *should* advance the topic to assessment for each SPARc impacted.

Such an approach inevitably involves professional judgment. To preserve credibility and comparability, the company *may* leverage these systems provided that conditions are in place:

- These systems use robust internal and external data sources and are only used to filter topics when they cover indicators as defined in technical guidelines (see E&S thematic guidelines in appendices A to E) and across all life-cycle stages (upstream, the company's own operations, and downstream).
- The company reviews processes periodically to ensure coverage remains adequate as business activities evolve.

Conclusions *should* be traceable supported by documented processes, identified data sources, and a clear rationale.

Materiality is not static and may evolve over time due to changes in regulation, market expectations, technology or stakeholder scrutiny. Topics that were not material before may later show early signals of relevance (e.g., emerging regulation, increasing stakeholder attention, or known data gaps). The company *should* maintain a watchlist of such topics to be reassessed in subsequent iterations of the method or when relevant triggers occur (e.g., new regulation, customer requirements, or internal risk identification). This ensures that the company captures emerging risks and opportunities over time without expanding the scope of the current assessment disproportionately.

2.1.4 Defining the point of reference: benchmark and absolute

Defining the point of reference is an important step in preparing the assessment. It determines the level of ambition, the credibility and financial relevance of the ratings, as well as the ability to identify meaningful risks and opportunities. The company *shall* define the point of reference before the assessment begins.

Across E&S topics, the **point of reference** for evaluation has two approaches:

- **Absolute** evaluation is based on the concept of significance (defined above), with the direct assessment of impacts in terms of their scale, extent and irremediability.
- **Benchmark-based** evaluation is done relative to a reference benchmark. This applies to most topics.

In addition, decision trees or rating tables can help interpret results and derive consistent ratings. Table 6 summarizes the evaluation approach applied to each topic.



Table 6: PPRIA E&S evaluation approaches per topic;

Topic	Approach 1: Benchmarks	Approach 2: Absolute
Climate change mitigation	X	
Climate change adaption		(**)
Water use*	X	
Pollution*		X
Land- and sea-use change		(**)
Invasive species		(**)
Circular inflow	X	
Circular outflow	X	
Enabling solutions*	X	
Dematerialization		(**)
Social impacts*		X
Chemical safety		(**)

* These also use decision trees or rating tables, which the topic-specific guidelines explain further. Pollution uses a rating table to assist in the interpretation of the absolute evaluation of the SPARc impacts.

(**) Harmonized guidelines will become available in a later version of the PPRIA Method. In the meantime, companies *may* apply state-of-the-art practices.

Benchmark definition

PPRIA defines two types of reference benchmarks: external and internal.

Each benchmark works by fixing a known point on the A–E rating scale. Most benchmarks locate the neutral point (C) – parity with the reference – while some references instead locate the top of the scale (A), representing best-in-class performance. Which point a benchmark anchors depends on what it represents: a reference describing typical or minimum performance anchors C, while one that already defines leading performance anchors A. The table's third column ([Table 7](#)) shows where each option anchors; the Evaluation section sets out the mechanics of how the company then derives a rating from these anchors.

A SPARc is not compared against a single benchmark in isolation. The company considers all benchmark types that are possible and available, and uses the most stringent to locate C. Selecting a more stringent benchmark raises the bar for a positive rating and ensures the capturing of impacts relevant to identifying financially material risks and opportunities.

Table 7: External benchmark options

Benchmark	Source	Where it anchors on the A–E scale
External standard (required minimum) <i>Anchors C</i>	Product-level thresholds based on external standards, frameworks, targets, regulations or global conventions that define a required minimum for the category. Examples: EU Battery Regulation (2023/1542) recycled-content thresholds (2031 / 2036); End-of-Life Vehicles Directive reuse/recovery and reuse/recycling rates (85% / 95% by mass).	C corresponds to meeting the required threshold – the minimum expected level. Performance materially beyond it scores B/A; falling short scores D/E.
External standard (leading-performance target) <i>Anchors A</i>	Standards or targets that already define leading performance for the category rather than a minimum. Examples: a science-based net zero or International Energy Agency (IEA) net-zero sectoral pathway translated to a product-level emissions-intensity target; the highest Cradle-to-Cradle Certified achievement level.	The standard itself defines best-in-class performance, so meeting or exceeding the target earns an A (supported by documented evidence); performance below it is rated down towards B/C/D by significance.
Market practice (by market share) <i>Anchors C</i>	The E&S performance of the products with the highest market share in the category.	C corresponds to performing in line with the prevailing (highest share) market practice. SPARCs that outperform prevailing practice score B/A; those that lag score D/E. <i>A SPARC that is itself the market standard, or holds dominant share, is by definition representative of prevailing practice and therefore scores C on this benchmark.</i>
Next-best alternative <i>Anchors A normally; C for innovation</i>	The best performing credible solution meeting the same functional need, identified by looking broadly across the market – including substitute solutions or disruptive innovation outside the SPARC's own product category. Considered in all cases, not only for innovation products. <i>Applicable only when the next-best alternative is commercially available and has achieved meaningful market adoption.</i>	The role depends on whether an established market exists Where it exists, the next-best alternative serves as the A-anchor. It represents best-in-class performance for the function and works alongside market practice (the C-anchor). Matching or exceeding it earns an A. Where it does not exist (genuine innovation), there is no market practice product to serve as the C-anchor, so the next-best alternative becomes the C-anchor, representing parity with the current way of meeting the need. The innovation can then have a rating above C based on its significance and may still achieve an A rating, but only if supported by a high standard of documented evidence. <i>Looking beyond the SPARC's own category helps find potentially disrupting and substitute solutions that a within-category view would miss.</i>
Customer/ relevant industry expectations <i>Anchors C</i>	Expectations from industries directly linked to the SPARC's value chain, where they shape market requirements, standards or purchasing decisions. This includes signals that are likely to influence decision-making, market access or the license to operate.	C corresponds to meeting prevailing customer/industry expectations. Anticipating or exceeding those expectations scores B/A. Eligible only where such expectations can be clearly demonstrated.
Emerging regulatory developments <i>Anchors C</i>	Known, upcoming regulation that will set E&S performance requirements for the category.	C corresponds to meeting the level required by the upcoming regulation. A SPARC already at this level ahead of the deadline scores B/A; one that is below the level scores D/E. It is anchored to the standard set by the upcoming regulation itself (a floor).

Internal benchmarks

These are based on a predecessor product or solution providing the same functionality.

The company *may* only use this reference benchmark where external benchmarks are not yet feasible. The internal benchmark can typically be predecessor product. It ensures internal progression but provides limited external comparability and is less robust at capturing financially material risks and opportunities.

As internal benchmarks do not ensure external comparability, their use introduces limitations in demonstrating best-in-class performance. The company *should* therefore cap maximum ratings at B when leveraging the internal benchmark.

How to select a benchmark

1. **Establish if external benchmarks are feasible.** These benchmarks take preference and the company *should* use them wherever data availability allows. Only where no external benchmark is feasible *may* it use an internal benchmark – in which case it *should* cap top ratings at B; steps 2–4 below do not apply. Where external benchmarks are feasible, proceed as follows.
2. **Assemble the eligible benchmarks.** Include each benchmark that is both relevant to the SPARc and sufficiently robust. Relevance means the reference genuinely applies to the SPARc's function, value chain position, and context. Robustness means data of adequate quality to be decision-useful (consistent with the data-quality dimensions in the Assessment sub-step) support it. Note which of the qualifying benchmarks are C-anchors (locating the neutral point) and which are A-anchors (defining best-in-class performance).
3. **Locate C using the most stringent eligible C-anchor.** A market-standard or dominant-share SPARc scores C against it. When a genuine innovation has no established market, the next-best alternative (the current way of meeting the need) serves as the C-anchor, alongside any other eligible C-anchors (external standard, expectations, regulation). Select the most demanding anchor to locate C.
4. **Identify the best-in-class reference (A-anchor).** Either an external standard that itself defines leading performance (e.g., a science-based product target) – not one that sets a required minimum – where meeting it earns an A, or the next-best alternative can anchor an A. Where a market exists, the company *should* look broadly across available options, including substitute and potentially disrupting solutions beyond the SPARc's own category, to identify the best credible, commercially available solution that meets the same need; matching or exceeding it is the condition for an A. For a genuine innovation, no separate best-in-class reference exists: an A is achieved by significantly outperforming the incumbent (the C-anchor), supported by a high, documented evidence bar. A niche lower-performing alternative is never used.

Reference benchmark selection: data limitations, implications and progression

Where the data required for external benchmarks are unavailable, the company *shall*:

- Document the limitation transparently;
- Justify the selected benchmark type;
- Avoid defaulting prematurely to an internal benchmark.

A lack of quantitative data does not justify a reference benchmark that reflects lower performance, as qualitative and semi-quantitative assessments are possible across benchmarks (detailed in the Assessment step).

A reference benchmark selection influences the identification of risks and opportunities in Step 3. While a more ambitious benchmark can make it harder to achieve a high E&S Impact rating, it makes the SPARc's associated business risks and opportunities more visible. A less ambitious benchmark may lead to higher ratings but can hide underlying risks and delay necessary action.

Reference benchmark selection evolves over time. Companies *can* begin with pragmatic benchmarks where necessary, but *shall*:

- Reassess the stringency of reference benchmarks in each method iteration;
- Update the reference points to reflect regulatory and market evolution;
- Ensure the reference standards considered are up to date;

Ambitious and regularly reviewed reference benchmarks maximize the strategic value of PPRIA.

2.2 Assessment

Assessment captures the characteristics and impacts of the SPARc based on available data. Companies *shall* assess metrics for the indicators of all material topics identified in the materiality filter. They *may* also assess non-material topics.

For each SPARc and material topic, the company *shall*:

- Select the appropriate level of assessment depth per indicator;
- Assess each required metric at least qualitatively;
- Document all evidence transparently, including sources, assumptions and limitations.

This leads to quantitative, semi-quantitative or qualitative assessments for all metrics under material topics, documented in a traceable format.

The company *should* conduct the assessment in accordance with the topic-specific guidelines (see appendices A to E). It *shall* document and explain any deviation (see Transparency, documentation, deviations).

These guidelines define:

- The scope of the topic;
- Key references, standards and definitions;
- The indicator structure;
- Metrics per indicator;
- Topic-specific methodological considerations;
- The qualitative, semi-quantitative and quantitative assessment logic;
- Rating and aggregation rules.

The assessment follows an indicator-level structure. Each topic is composed of one or more indicators, and each indicator is described through defined metrics (see appendices A to E for comprehensive metric lists).

For each indicator under assessment, the company *shall* determine the appropriate level of assessment depth depending on data availability and proportionality:

- **Quantitative:** Metrics can be measured numerically; the most granular approach;
- **Semi-quantitative:** The metric cannot be fully quantified; however, the performance can be estimated with quantitative information, such as with proxies.
- **Qualitative:** Metrics are assessed through structured qualitative evidence (e.g., expert judgment, policy documentation, validated statements)

The company *may* combine qualitative, semi-quantitative and quantitative inputs within the same SPARc to reflect differences in data availability across life-cycle stages or impact drivers.

Quantitative measurement is not always feasible or necessary – accurate qualitative evidence is often more appropriate than incomplete quantitative data. The company *may* begin qualitatively and deepen quantification as data maturity improves.

Data quality

Beyond selecting the appropriate level of assessment depth, the company *should* consider the quality of the data underlying each indicator, as data quality directly affects the reliability of the resulting rating. It *should* assess and *may* document data quality across the following dimensions:

- Reliability/source: whether it has used primary (e.g., measured or company-specific data) or secondary (e.g., databases, literature, proxies or modelled estimates) data and the credibility of the sources.
- Temporal representativeness: to what extent the data represents the assessment period and whether it reflects present operating or market conditions.
- Coverage/completeness: the extent to which the data covers the relevant life-cycle stages, value chain steps, and impact drivers, and how any gaps are treated.

2.3 Evaluation

The purpose of the evaluation step is to translate assessed impacts into standardized performance ratings (A–E, see below) that enable comparison across SPARCs and inform the identification of business opportunities and risks in Step 3. The evaluation builds directly on the assessment results and applies a consistent logic across topics while reflecting their specific characteristics (see full E&S process overview in [Figure 5](#)). The **A–E ratings** are internal decision-support tools to enable consistent comparison across SPARCs and to inform product sustainability performance management. They do not represent standalone judgements on product sustainability performance and the company *should* interpret them in the context of underlying assumptions, benchmarks, data limitations and aggregation rules.

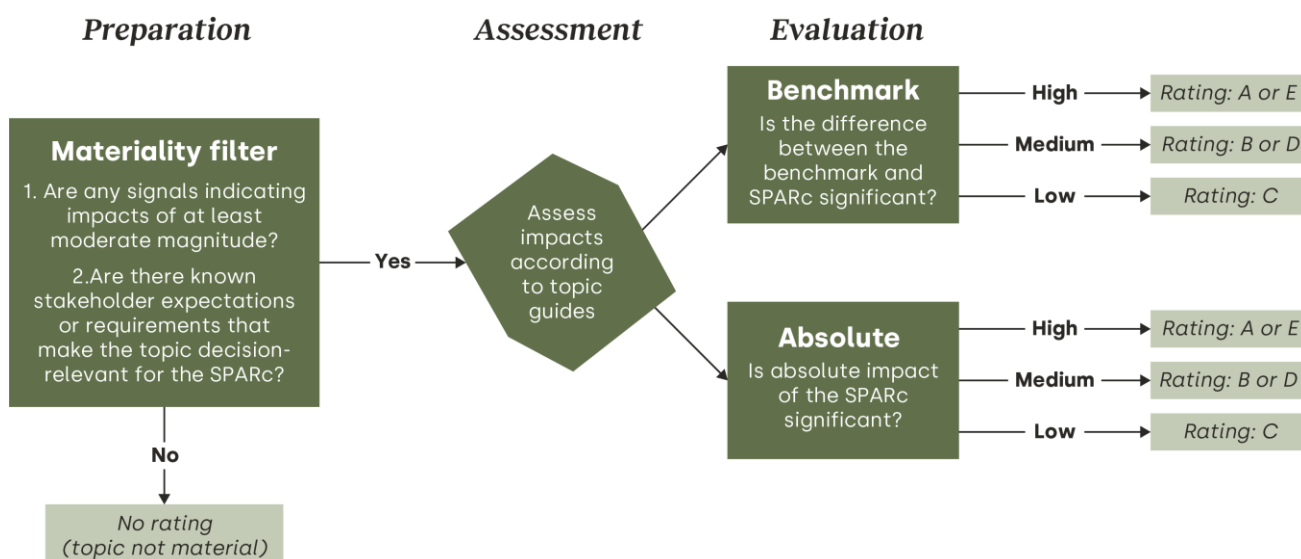
The ratings are based on the following scale:

- A: Significantly better, i.e., best performance; reserved for exceptional performance and reflects a clear contribution beyond prevailing practice (“moving the needle”).
- B: Better than reference point
- C: Neutral
- D: Worse than reference point
- E: Significantly worse than reference point

The company assigns the ratings at the indicator level, based on the assessment of each indicator’s performance. It then aggregates these indicator-level ratings into a single topic-level rating for each SPARC using a precautionary logic (described here after) to ensure the evaluation reflects all relevant impacts in a topic and that material weaknesses remain visible.

The method includes **safeguards** – including evidence requirements, significance assessment, and a precautionary aggregation approach – to ensure that ratings remain transparent, traceable and decision-relevant.

Figure 5: PPRIA integrated impact evaluation logic, from materiality filter to final individual topic rating



The evaluation logic (5) describes the common baseline approach across all topics. The company *shall* apply it in conjunction with the topic-specific guidelines, which define the relevant indicators and metrics, topic-specific interpretation rules and any further applicable decision logic (e.g., decision trees or rating tables).

Where topic-specific guideline introduces additional rules, these *shall* take precedence to ensure accurate and context-appropriate evaluation.

Evaluation combines two elements:

- A **reference** point (benchmark or absolute impact);
- The **significance** of the result, which determines whether performance is moderate or strong.

Benchmark-based evaluation

For most topics, the company evaluates performance relative to a reference benchmark. The key question is: Is the difference between the SPARc and the benchmark significant, based on scale, extent or irremediability?

Consistent with the section 2.1.4 defining the point of reference, a reference benchmark fixes a known point on a scale from A to E that is consistent with the rating introduced in the evaluation section. The rating is based on the significance of the SPARc's performance relative to that point (scale, extent, irremediability).

Evaluation using reference benchmarks requires the company to rate relative to the C-anchor: the significance of any positive/negative gap moves the rating to B/A or D/E (Table 8). The SPARc reaches A where it matches or exceeds the best-in-class reference. The company *shall* combine complementary benchmarks only if one alone does not cover all relevant life-cycle stages or material aspects.

Absolute evaluation

For the pollution and social impact topics, the company assesses the performance based on absolute impact, as a comparison to a reference benchmark is not appropriate. For example, a

product that pollutes less than that of its peers or has lower social risks may still cause significant harm.

In these cases:

- The company evaluates performance directly, based on absolute impact significance;
- The company assesses scale, extent and irremediability;
- The rating reflects the magnitude of impact, not relative positioning;
- Ratings for positive impact on these topics require careful consideration; evidence that the contribution is intentional, material and verifiable should support them.

Box 3: Interpreting low, medium and high magnitude

The following guidance is indicative and the company *should* interpret it proportionately to the topic.

Low magnitude

An impact may be considered low where:

- The scale is negligible or minor relative to regulatory thresholds, ecological baselines, or market norms.
- The extent is limited (e.g., confined to a specific life-cycle stage or geographically limited).
- The impact is readily reversible without long-term consequences.

Medium magnitude

An impact may be considered medium where any two of the three dimensions are “moderate”:

- The scale represents a clear directional increase or decrease in an indicator.
- The extent affects a defined stakeholder group, life-cycle stage or region.
- The impact is reversible, but not immediately or without effort.

High magnitude

An impact may be considered high where:

- The scale is large or structurally significant; **OR**
- The extent is broad (e.g., affecting multiple life-cycle stages or large stakeholder populations); **OR**
- The impact is irreversible or difficult to remediate; **OR**
- If all three of the dimensions above are “moderate”.

Table 8: Assigning a rating

Direction of impact	Magnitude	Rating
Positive	High	A
	Medium	B
Neutral	Low	C
Negative	Medium	D
	High	E

Application of likelihood

For social impacts, the company must also consider the likelihood. In these cases, an upgrade to A or E requires both:

- Sufficient impact intensity (as defined above); and
- A medium or high likelihood of occurrence.

Likelihood is generally not required for benchmark-based environmental topics where impacts are inherent life-cycle characteristics rather than contingent events. It is, however, central to many social impacts, where indicators are often expressed as the risk of an impact (e.g., forced labor, health and safety incidents) and therefore inherently incorporate likelihood.

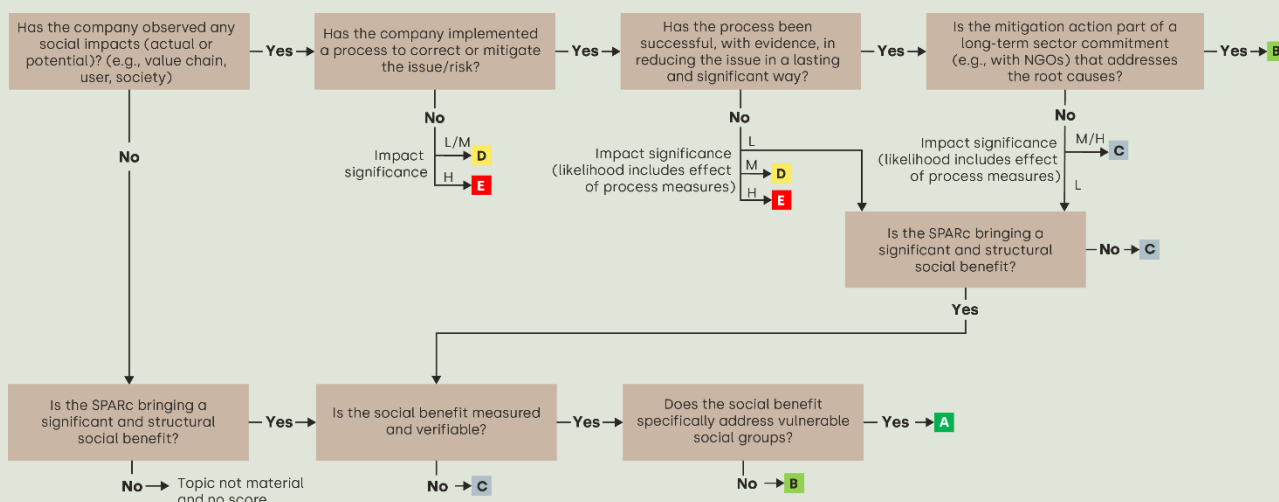
Additional considerations for internal benchmarks

When using an internal benchmark, the company *should* ensure that the maximum achievable rating for positive impact does not exceed B. To achieve a B rating, the SPARc *shall* demonstrate significant improvement relative to the internal reference. Where the company has applied an internal benchmark and results in an A rating, it *shall* transparently disclose, justify and support the rating using evidence demonstrating best-in-class performance (see Handling deviation).

Box 4: Decision trees and rating tables

Decision trees and rating tables are for topics where direct benchmarking or absolute evaluation using significance is insufficient to translate measurement results into standardized A–E ratings. These add contextual nuances for topics for which pure benchmarking or absolute evaluation using significance would oversimplify or misclassify performance.

Figure 6: Example decision tree for social impacts theme, value chain impacts



Decision trees apply to the following topics:

- **Social impact:** evaluating SPARcs based on the presence of issues, mitigation processes, and benefits across stakeholder groups;
- **Enabling solutions:** evaluating SPARcs based on contribution to circular performance;
- **Product safety:** evaluating complex compliance and risk scenarios.

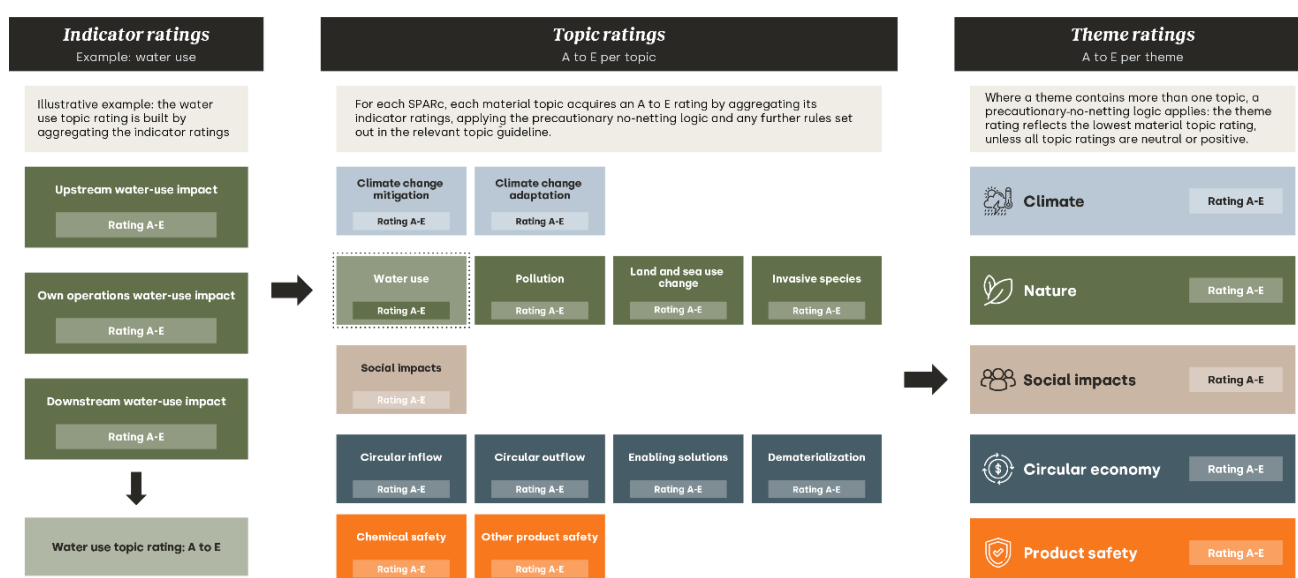
Rating tables apply to the following topics:

- **Water use:** evaluating SPARcs based on water consumption, water stress and mitigation efforts, across upstream, the company's own operations, and downstream, with benchmarking integrated into rating table logic;
- **Pollution:** the complex, absolute nature of pollution assessment – where impacts vary by pollutant, environmental medium, and life-cycle stage – requires structured criteria to translate significance into consistent A–E ratings.

The topic-specific guidelines provide details on how to apply the decision trees and rating tables.

Theme-level aggregation of multiple topics

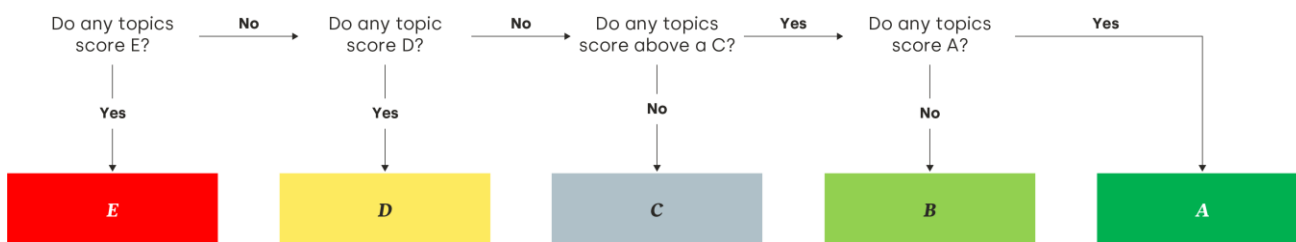
Figure 7: From topic ratings to theme scores



Note: Water use shown as an illustrative example.

From indicator to topic: Within a topic, multiple indicators may coexist and then require an aggregation to a single topic-level rating for each SPARc. Each dedicated topic guideline provides the applicable aggregation rule. When not specified, then the default **precautionary “no netting” logic** applies and ensures that the evaluation for the SPARc reflects all relevant impacts in a topic and that material weaknesses remain visible.

From topic to theme: Where a theme contains multiple topics, the company *shall* apply a consistent and precautionary aggregation logic to derive one consolidated theme-level rating. This approach ensures that material weaknesses remain visible and stronger performance on other topics within the same theme do not offset them. Aggregation follows a precautionary **“no netting”** logic: the theme rating reflects the lowest material topic-level performance, unless all topic performances are neutral or positive. Positive differentiation (A or B) is only possible in the absence of any negative topic ratings.

Figure 8: Topic aggregation rules (across themes)

Topics that the company has found not material during the preparation step (materiality filter) will not receive a rating and are not considered in the final rating.

Treatment of data limitations

The method applies across varying levels of data availability, recognizing that complete and high-quality data may not be available for all topics, indicators or value chain stages. Where data is limited, the company *should* apply proportionate and transparent approaches, including qualitative and semi-quantitative assessments, supported by expert judgement and available proxy information.

A qualitative assessment is appropriate wherever there is some reasonable basis on which to infer the likely direction or magnitude of impact, even in the absence of primary or quantitative data. This may include sector or commodity-level evidence, recognized risk databases or indices, geographic or country-level context, established industry knowledge, peer-reviewed literature, or credible proxy information from comparable products, processes or value chain stages. The absence of company-specific or primary data does not, in itself, justify treating an impact as unknown; the company *should* first consider whether any reasonable proxy or contextual evidence is available to support a defensible judgement.

The company *should* only treat an impact as genuinely unknown where no such basis exists. Where it is not possible to assess a material topic for this reason, the company *shall* treat this as a potential risk signal rather than as a neutral or benign result. In such cases, the indicator gets a D rating, reflecting a potential negative exposure. The company *may* distinguish between:

- Impact-driven D (based on identified negative performance);
- Data-driven D (resulting from lack of sufficient data or evidence).

This distinction is not required for rating but the company *may* use it internally to prioritize data improvement efforts and differentiate between known performance issues and uncertainty-driven exposure.

Alternatively, the company *may* classify an indicator as U (unknown), though best practice is to assign it a D to avoid treating an unassessed impact as neutral.

2.4 Summary of Step 2 outputs

The output of Step 2 is a structured view of environmental and social performance for each SPARc across all relevant themes and topics. Its typical presentation is an **E&S performance card**, as illustrated in [Figure 9](#).

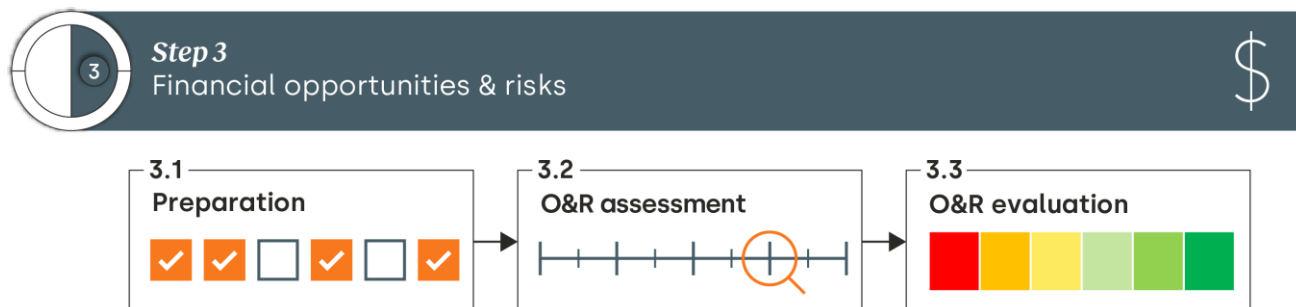
Figure 9: Illustrative example of an E&S performance card at SPARc Level

<i>E&S Performance card</i>		SPARc 1		
Climate	Nature	Circular economy	Product safety	Social
Climate mitigation	Water use	Resource inflow		
	Pollution	Resource outflow		
Climate adaptation	Land- and sea-use change	Enabling solutions		
	Invasive species	Dematerialization	Chemical Safety	

Legend: A B C D E Not material

The performance card enables comparison across SPARcs and across topics within a SPARc. It also helps identify key impact drivers and hotspots across the value chain. It is supported by the Step 2 assessment documentation (see Transparency, documentation, deviations). The company then uses this output to translate the environmental and social performance into financial opportunities and risks (Step 3).

Step 3: Business opportunities & risks (O&R)



Step 3 translates the performance assessment from Step 2 (inside-out perspective) into financial risks and opportunities (outside-in) at the SPARc level and over different time horizons. The company can then aggregate risks or opportunities to any level where it makes sense for decision-making – product, site, business or group.

To do so, this step captures the likely scenarios (**scenario space**), their **financial pathways**, the **gross effect**, the investment and mitigations required to convert gross into **net**, and the resulting net effect accepted by the business. The company condenses these outputs into the **O&R performance card**.

Both opportunities and risks carry equal weight and are **non-compensable**: a weak performance creates risk or exposure (identified as high risk), strong performance creates opportunity or leverage. Where both coexist for a specific O&R type, PPRIA keeps them separate so that a large net opportunity never offsets a high net risk.

Step 3 has three sub-steps:

- **Preparation** scopes what is material from the outside in and sets up the approach to use in the assessment.
- **Assessment** estimates each SPARc's opportunities and risks, on both sides, from gross to net.
- **Evaluation** normalizes and reconciles the results into one comparable value per SPARc per opportunity and risk type.

A summary of the assessment sequence is available at the end of the chapter.

3.1 Preparation

Preparation involves **connecting E&S impacts to their financial pathway** and deciding on the **level of the assessment** and the **assessment approach** to apply across SPARCs.

3.1.1 Connecting E&S impacts to their financial pathway

The first step is to identify the material impacts outside-in through the concept of dependency. Using the impacts identified in Step 2, it asks: “Could this impact the SPARC’s competitive position in its specific markets and supply chains?” This question is important, because some impacts are material inside-out (Step 2) but have no financial effect. A material E&S impact identified for the SPARC only becomes a financial opportunity or a risk when the business depends on the impacted resource, ecosystem or social system.¹¹

For each material E&S impact, the company translates identified dependencies into a financial effect, the corresponding O&R type and the specific time horizon, constituting the **financial pathway**:

E&S impact → dependency → financial effect → O&R type → time horizon

- The **E&S impact** from Step 2 is the starting point.
- The company identifies **dependencies** – e.g., the business’s reliance on nature, climate or social conditions, and the services they provide, to operate and generate cash flow. An impacted resource, ecosystem or social system in which the business is well-positioned is a source of opportunity; one whose disruption would raise costs or curtail revenue is a source of risk.

***Note:** The company documents E&S impacts without identified dependencies and sustains their visibility to ensure it can revisit them when the business environment changes or at the next portfolio assessment cycle.*

- The **financial effect** is the translation of that dependency into business value through one or more change drivers – revenue, cost or asset and financing effects – each of which can be an opportunity (an upside to capture) or a risk (a downside to manage), tangible or intangible.
- The **O&R type** files the financial effect under one O&R category following an O&R catalogue.¹² This ensures each O&R type is non-overlapping and complete so that every material impact lands in exactly one O&R type per pathway. Applying it consistently across the portfolio ensures the aggregation of results without double counting. The O&R catalogue follows the Taskforce on Nature-related Financial Disclosures (TNFD) standards symmetrically: opportunity categories (resource efficiency, energy source, products and services, markets, resilience, positive social outcomes) and risk categories (policy and legal, technology, market, reputation, physical, social). See [Table 9](#) and [Table 10](#) for examples.
- **The time horizons** maps when the opportunity or risk becomes relevant – short-, mid-, long-term – with all three retained.

Table 9: Translating E&S impact into O&R type – illustrative examples

E&S impact (Step 2)	Dependency (outside-in)	Financial effect (opportunity/risk)	O&R type (non-overlapping)	Time horizon
High manufacturing energy intensity vs benchmark	Reliance on affordable low-GHG emission energy	Risk: rising carbon-price & energy cost on costs of goods sold (COGS) Opportunity: efficiency gain if gap closed	Risk: market/policy Opp: energy source	Short–mid
Recycled content integration capability above market	Access to secondary feedstock	Opportunity: price premium & share gain in circular segments	Opp: products & services/markets	Mid–long
Water use at a site in a water stressed region	Reliance on stable water availability	Risk: withdrawal limits, CapEx to secure supply	Risk: physical	Mid–long
Downstream social impact of use phase	■ No business dependency identified today	None today – carries no financial effect	Excluded from O&R; flagged, watch item	—

Note: Each E&S impact carried through dependency, financial effect, non-overlapping O&R type and horizon, on both sides. The final, shaded row shows a topic that is impact-material (Step 2) but has **no business dependency**, so it is flagged and excluded from the O&R categorization while kept visible for traceability.

Box 5: One E&S topic, multiple financial pathways, no double counting

Each E&S impact topic may be associated with several O&R types and therefore generates more than one financial pathway. Each O&R type being non-overlapping, each financial pathway lands in exactly one O&R type, which ensures no double counting occurs.

For example, a single E&S impact may materialize differently in the different stages of the value chain and therefore leads to different financial pathways, then on to several non-overlapping O&R types. For instance, an impact related to greenhouse gas emissions (climate change mitigation) may generate multiple pathways, as illustrated in [Table 10](#). Step 2 assessment identified different impacts throughout the value chain: upstream embedded carbon, energy from the company's own operations, product use-phase emissions, or avoided emissions. Each stage can generate its own financial pathway, landing in a distinct O&R type.

Table 10: E&S impact to O&R type

E&S impact (Step 2)	Dependency (outside-in)	Financial effect (opportunity/risk)	O&R type (non-overlapping)	Horizon
High-carbon intensity of embedded materials and own-operations energy – above market benchmark Impacted value chain stages: upstream + the company's own operations	Reliance on affordable, low-carbon energy and material inputs; exposure to carbon pricing on electricity, plastics, battery components	Risk: COGS increase – as carbon prices rise on upstream inputs and own-operations energy. Competitive position and selling power decide how much of these cost increases the company can pass on to customers	Policy – risk	Short Mid Long

E&S impact (Step 2)	Dependency (outside-in)	Financial effect (opportunity/risk)	O&R type (non-overlapping)	Horizon
High use-phase GHG emissions per unit output vs market benchmark – product above category average Impacted value chain stages: use phase/downstream	Customer purchasing criteria increasingly reflect product-level energy performance; regulatory labelling and eco-design standards tighten	Risk: Revenue loss – buyers shift to lower-carbon alternatives; a high-carbon product loses market share and pricing power	Market – risk	Short Mid Long
Low use-phase GHG emissions vs benchmark – product leads the market category on carbon performance Impacted value chain stages: use phase/downstream	Customer willingness to pay premium for lower GHG emissions products; green procurement requirements; environmental, social and governance (ESG)-screened supply chains	Opportunity: Revenue growth – market share growth and pricing premium in low GHG emissions segments; advantage in public tenders	Products & services/market – opportunity	Short Mid Long
Product design or embedded material content approaching non-compliance with tightening GHG emissions or energy-performance standards Impacted value chain stages: product design/upstream material sourcing	Product engineering agility and supplier-base capability to meet tightening EU Ecodesign for Sustainable Products Regulation (ESPR), eco-design or GHG emissions level thresholds	Risk: CapEx – necessity to upgrade product designs and manufacturing processes to meet tightening standards before compliance deadlines; additional CapEx for better control over supply chain	Technology – risk	Mid Long
New products or services that enable measurable GHG reductions in customer operations vs a reference baseline Impacted value chain stages: use phase/downstream/customer operations	Customer and market recognition of avoided-emissions value; access to carbon markets, EU Taxonomy eligibility, regulatory recognition	Opportunity: Revenue growth and financing advantage with reduced cost of capital – premium pricing for verified lower-carbon solutions; access to green bonds and taxonomy-aligned capital lower cost of capital and the return on investment hurdle for investment projects	New products & services – opportunity	Mid Long

Table 10 shows how each impact (one row) follows a distinct financial pathway, along a separate financial metric – e.g., COGS, revenue, CapEx, or financing access – so the five O&R types drawn from this one E&S impact don't overlap or aren't double-counted.

A sound understanding of the financial pathways may prompt adjustments in the SPARc market and product segmentation granularity to better distinguish existing vs new products while avoiding overlap, building a clearer picture for portfolio management.

The company categorizes the dependency and financial pathway for every material impact identified. The next step is to determine the relevant level for the assessment and whether to assess a single SPARc or a cluster of them.

3.1.2 Level of assessment and clustering

The company performs this assessment at the SPARc level. Where many SPARcs share a dependency and it is more efficient to assess them together – for example, water consumption across a product family – the company *may* cluster them, provided that the result remains traceable to each SPARc. The use case and the organizational level at which decisions are made drives the granularity of any clustering. Clustering is optional and unnecessary where it is possible to assess a SPARc directly. Where clustering is relevant, it follows four steps:

1. **Determine the assessment level:** The level at which the company is making the decisions using the PPRIA outcome (product, product group, site, business, portfolio) informs the choice. This sets whether SPARcs need to be grouped at all – where it is possible to assess a SPARc directly, no clustering is needed.
2. **Cluster, if needed:** Group the SPARcs that share the dependency being assessed and document the rational (shared feedstock, shared site, shared market). While clustering, the company *should* ensure it counts no results twice when clustering/declustering (principle of mutually exclusive and collectively exhaustive).
3. **Set the attribution key:** Choose the basis that will later split the cluster's result back to each SPARc – by output volume, by revenue, by cost, or by another economic weight – and document the chosen key. The key is set once, at clustering, so that the split is consistent and reproducible.
4. **Decluster:** After assessment, apply that same attribution key back to each SPARc, so every result is held at the SPARc level and remains traceable to the products beneath it.

The same mechanism also handles risks that do not break down neatly by product – e.g., physical climate risk at a site producing several products (SPARcs), certain macro-legal and regulatory risks, and systemic financial-stability risk. The company assesses these at the level where they occur – group, site or central finance (treasury) – then attributes them down to the SPARcs they affect using the same attribution key. Physical and most legal or regulatory risks fit the standard risk categories; systemic and macro risks don't, but whoever manages them still leverages them, so every SPARc gets a complete picture.

More insights on key areas of attention for attribution key are available in Appendix F.4 Attribution keys.

3.1.3 Assessment approach: technique, scenarios and thresholds

The **assessment technique**, the **scenario space** and the **thresholds** are set once and applied to every SPARc, so that results stay comparable across the portfolio and over time. The company *shall* revisit them when it updates the method, or as its practices mature and it sees the need to increase the method's robustness (e.g., to move from a qualitative to semi-quantitative or quantitative method). The company *should* choose the technique first, because it shapes both the scenario design and the thresholds that follow.

Assessment technique

As part of the preparation, the company *should* choose how it will estimate the financial effect: **qualitative** (structured expert judgement in bands), **semi-quantitative** (judgement anchored to external datasets), and **quantitative** (modelled in monetary terms). The choice depends on data

availability and maturity, and the company context (incl. business/corporate culture, sector, etc.). The techniques can vary per O&R type and to better reflect a specific E&S topic and time horizon. Step 3.2 – Assessment covers how to operationalize the different techniques in the assessment.

What matters here is the consequence of the choice. The technique chosen carries throughout the entire assessment: a qualitative assessment stays netted and normalized as a band, while a quantified one keeps its monetary value and the company can measure it against profitability hurdles and aggregate it cleanly. The techniques work together; they are not exclusive. The company *should* screen the whole portfolio qualitatively, prioritize with semi-quantitative anchoring, and reserve quantitative modelling for the material few, so that the effort follows the materiality.

More insights on assessment techniques (impact valuation) are available in Appendix F.5.

Scenario space

The company assesses the portfolio against a common **scenario space** (i.e., a set of plausible scenarios), aligned with the company's strategy scenarios and the chosen assessment techniques.

Scenarios are structured descriptions of plausible alternative futures used to assess forward-looking financial exposure. Each defines a specific external environment – the regulatory trajectory, market conditions, and physical-hazard levels that the assessment assumes.

The company evaluates each opportunity and risk against the different identified scenarios so that the assessment covers a range of possible outcomes. A robust scenario space must cover every major type of future that is material to the SPARc's E&S topics, ensuring nothing gets missed. In practice, a minimum viable scenario set includes the full range, from orderly transition to physical disruption (See Appendix F.3 for more details).

Three **time horizons** are set here: short-term (shocks), mid-term (today's environment extended forward), long-term (structural change in markets, competition and policy based on scenarios).

As part of the scenario space, each scenario *shall* cover every PPRIA E&S theme and topic (Step 2) that is material to the portfolio as it reflects how they relate to one another within the scenario. Consistent with best practices, the company *should* build internally consistent scenarios. For example: no net-zero with a high degree of material circularity,¹³ a hot-world scenario with a high level of water-efficiency investments, etc. The company does this for every scenario included in the scenario space.

The company *shall* review the scenario space when a new portfolio assessment cycle starts and update it where new scientific evidence, regulatory developments, or emerging market signals have materially changed the plausible future space.

More information on relevant reference frameworks, best practices and further insights on technical scenario specifications are available in Appendix F.3.

Thresholds

A *threshold* is the cut-off value that decides whether a financial effect is big enough to count and calls for a decision. PPRIA uses thresholds in two distinct ways:

- A **normalization threshold (use-case independent)** is a fixed reference scale that is set once and turns any type of opportunity and risk results – a qualitative band, a semi-quantitative range, or a quantitative monetary value – into a low/medium/high rating so they can compare O&R types across products, units and years. The company sets it once, during Step 3.1 Preparation, and applies it consistently across SPARc and use cases.

Example: A USD \$10 million exposure is rated medium. This rating doesn't change depending on who is looking at it and when: a product manager reviewing a product line and the CFO reviewing the group results will both see the same USD \$10 million as medium this year and next year.

- A **materiality threshold** (use-case specific) informs how large an opportunity or risk must be before taking action. This varies by type of business decision (use case) and the level of the organization (e.g., entity) where the decision considered is made – low when small items should accumulate, high when only large movements matter. The materiality threshold does not alter the normalization threshold. (Defined here for clarity, this is used in Step 4.).

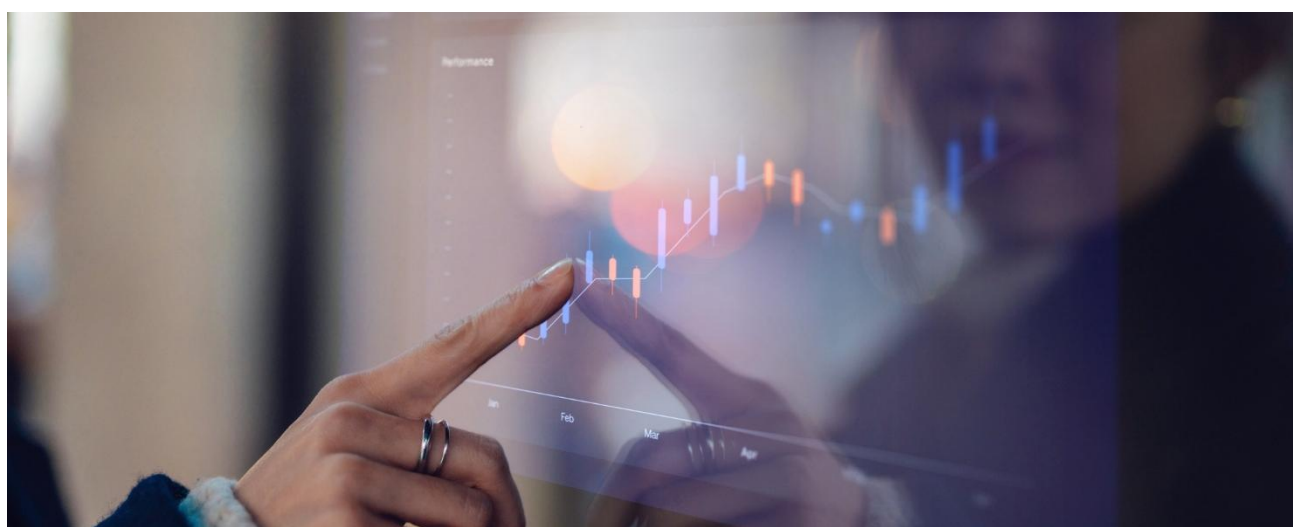
Example: The threshold defines how large an opportunity must be to justify the investment to capture it. A EUR €2 million energy-efficiency saving might be big enough for a business division to decide whether to fund a plant retrofit but too small for the CFO, who decides whether it moves the group's enterprise value. Similarly, a single product's water risk triggers mitigation at the portfolio level but may not be considered material at group level.

Example: The threshold defines how large a risk must be to justify a mitigation action. A product line faces a JPY ¥ 5 million water-scarcity risk impacting 1 plant and 10 SPARCs. This could be large enough for the business manager to fund a mitigation project but too small for the CFO to flag as an issue for the whole company. If 10 product lines carry a similar risk, though, the combined JPY ¥ 50 million total can cross the group-level bar.

Companies usually define only a few broad, company-wide thresholds. They often need to develop more specific thresholds for different levels, such as at plant, product line, or business unit level (Step 4). This is an iterative process involving the stakeholders identified in Step 1, especially those who will act on the results, such as operations, procurement, sales and R&D. Their input helps ensure the assessment is relevant, credible and actionable.

A note on financial data access

Setting meaningful thresholds requires product-level financial data – revenue and margin. Securing that access is a journey; artificial intelligence (AI) and cloud tooling are improving data availability and consistency, and revenue is typically easier to obtain than margin.



3.2 Assessment

The assessment estimates, for each SPARc/SPARc cluster and each O&R type, the gross and net financial effects across the defined time horizons. If an O&R type leads to both opportunities and risks, the company assesses them and keeps them separate throughout the assessment. Using the three types of assessment techniques identified in the Step 3.1 Preparation, this follows two steps:

- **Assess the gross financial effect**, i.e., the full size of the opportunity or risk before any response. For risks, this is the potential downside before mitigation; for opportunities, it is the upside before the investment needed to capture it. The company applies the likelihood (the probability of occurrence) at this stage.
- **Determine the net financial effect**, i.e., what remains after a mitigation (for risk) or the enabling investment (for opportunity); the company has integrated their corresponding CapEx and OpEx.

This produces a qualitative, semi-quantitative, fully quantitative net value (i.e., a band, a range, a numeric value, of opportunities and risks of the SPARc) of the financial effect – a net opportunity (leverage) and a net risk (exposure) for each SPARc/SPARc cluster, per O&R type and per horizon. It carries its gross figure, its investments or mitigations, and the attribution key. Different O&R types might require the use of different assessment techniques.

Table 11: Assessing net financial effects to inform business decisions

Business use case	Examples of how net financial effects inform the business decision
CapEx and OpEx allocation	Recording the investment makes the return on mitigation and on opportunity capture visible and comparable across the portfolio
Product development and R&D	Identifying where an investment may be required to protect a product performance advantage or where redesign is most urgent
Financing and access to capital	Responding to a net exposure input to green bonds or sustainability-driven loan processes
Commercial positioning and customer engagement	Substantiating sustainability claims and making them more credible and defensible in tenders, contracts and assurance processes
M&A and portfolio transactions	Informing due diligence processes – e.g., quantifying stranded-asset risk and documenting management responses
Regulatory disclosure and external assurance	Auditing the net figure, carrying gross basis, scenario inputs, and management-response classification as the foundation for TNFD, CSRD and IFRS S2

3.2.1 Gross financial effect

The company assesses the gross effect before any response (e.g. Investments, mitigation or control measures) on an opportunity (upside) or risk (downside) using the assessment techniques selected in Step 3.1 Preparation. It covers the balance sheet (including impacts on company's assets, such as stranded asset) and the cash-flow perspectives (costs and revenues).

More insights on assessment techniques (impact valuation) used to assess gross financial effect are available in Appendix F.5.

Using the normalization threshold on the gross financial effect is helpful to understanding the magnitude and to compare the results of different assessment techniques early on in the

assessment. Step 2.3 Evaluation provides further information on consolidating results from qualitative, semi-quantitative and quantitative assessment methods to create a common scale.

Applying likelihood in PPRIA

Consistent with TCFD¹⁴ and IFRS S2 guidance,¹⁵ likelihood is the **probability** that the specific opportunity or risk identified for a SPARc /SPARc cluster materializes, within each scenario, given the conditions that the scenario describes. Each scenario has a defined external environment – the regulatory trajectory, market conditions, and physical-hazards assumed; the likelihood defines what might happen inside that environment.

How the company applies likelihood depends on the assessment technique:

- **Quantitative:** The company applies likelihood as an expected value: the modelled monetary value multiplied by the probability of occurrence. In scenario-based work, the scenario itself carries the likelihood assumption.¹⁶ Therefore, the company runs this calculation separately within each scenario (as opposed to a single blended probability across all scenarios).
- **Qualitative/semi-quantitative:** The company applies likelihood as an explicit factor – it combines the gross magnitude band with a likelihood band to give a likelihood-weighted gross band.

Consolidation and harmonization

The company assesses each opportunity and risk across all scenarios, for every opportunity, risk type and time horizon. The company then **consolidates** the scenario results into one value using one of three approaches – an average across scenarios, a worst-case value, or a single scenario justified as most decision-relevant.

Where the results for the same O&R already exist under a different scenario or time horizon, the company first restates it for the current scenario set and time horizons to **harmonize** before consolidation. The company uses this method to document each case to keep the result reproducible.

3.2.2 Net financial effect

The net financial effect shows the residual risk exposure or opportunity leverage that remains once the company has implemented or formally committed to a business response. This can be investments or mitigation and control measures that reduce the magnitude, likelihood or both. The company measures it with the same unit and metric as the gross effect.

Estimating the net financial effect should be proportionate to the importance and size of the opportunity or risk, focusing detailed analysis only on the most material cases.

Attributing the investment to a SPARc/SPARc cluster

Investments and mitigation or control measures usually take place above the product level. An investment can therefore cover several SPARcs or a SPARc cluster. The company *should* translate it into a net figure at the product level, in three steps, to ensure every SPARc ends up with traceable and accurate share:

1. Identify the level of the investment commitment – e.g., site, business or group.
2. Decide whether to break it down to the SPARc level. This is needed when a product-level decision depends on it; otherwise, the investment can stay at the level at which it was committed.

3. Where a product-level net figure is needed, the company allocates the investment using a documented attribution key – output volume, revenue, cost or another economic weight – consistent with SPARc clustering/declustering (see Step 3.1 Preparation).

A single measure can reduce multiple risks or create multiple opportunities. While risks and opportunities are classified without overlap (mutually exclusive and collectively exhaustive), measures may legitimately affect several risks, opportunities and E&S impacts at once. The company therefore expects and records these overlaps.

The basis for comparability across SPARcs

To ensure net exposures across SPARcs are comparable, the company *shall* perform the evaluation of net figures using:

- The same scenario assumptions (**scenario space**, see Step 3.1 Preparation)
- The same normalization **threshold** (see Step 3.1 Preparation).
- The same criteria to define the business response (i.e., implemented and formally committed measures).

3.3 Evaluation

Before the company can compare the O&R results across the portfolio or aggregate them in Step 4, it must convert them to a common scale. This ensures that the company can consistently evaluate the qualitative, semi-quantitative or monetary assessment results and use them together in the next step.

3.3.1 Normalize to a common scale

A portfolio may contain different types of results – qualitative (a band), semi-quantitative (a range) or quantitative (a monetary value). To compare and combine them, the company converts all results to the same scale (low/medium/high). It does this by using the **normalization threshold** defined in 3.1 Preparation, applied to both kinds of results:

- It places a qualitative (band) or semi-quantitative (range) result directly into a low/medium/high band;
- It maps a quantitative result (monetary value) onto the same bands through the threshold boundaries (for example, a large monetary exposure falls in the “high” band). The monetary values are kept alongside low/medium/high rating, so that decisions that need absolute magnitude – Step 4’s enterprise-value case in particular – still have it.

The company *should* keep the opportunity and risk values separate for each O&R type. Because the O&R types do not overlap, the company counts each impact only once and assigns it to a single type. The company then calculates the overall result for a SPARc by adding up all the results from all categories without double counting.

3.3.2 Allocate to SPARc level (declustering)

Declustering is required where the assessment was done on a SPARc cluster. It allocates the results back to each SPARc using the same attribution key defined in Step 3.1 Preparation.¹⁷

Declustering serves two purposes: 1) it ensures that a product-level view reflects its opportunities and risks; and 2) it keeps results traceable to the products within the cluster, so that the company can aggregate it at any level to make decisions.

Example: Physical risk impacting a plant. A plant is located in a water-stressed basin that makes four products. The risk associated with water use is at the site level. The four SPARCs are clustered accordingly. When the company needs a product-level view, it breaks the exposure down to each of the four SPARCs using an economic key – e.g., each product's share of plant profit.

For more details, see Appendix F.4 for attribution keys and Appendix F.7 for an example.

3.4 Summary of Step 3 outputs

Each SPARC and its respective O&R type produces a set of normalized net opportunity leverages or risk exposures within the relevant time horizons. The results *should* remain traceable, while enabling decisions at the required levels of aggregation (product, site, business unit, company).

The overall result is an **O&R performance card** for the SPARC, showing an overview of its opportunities and risks, gross and net, by type and by horizon complemented by Step 3 SPARC assessment documentation (see Transparency, documentation, deviations above). The company uses these outputs, combined with Step 2 outputs, to inform portfolio and investment decisions at the product, site, business unit, or company level to inform the business decisions and their applications (Step 4).

Figure 10 provides a simplified O&R performance card. A more detailed example distinguishing both opportunity leverage and risk exposure is available in Appendix F.6,.

Figure 10: Simplified SPARC O&R performance card

		SPARc 1					
O&R Performance card		→ High (net) risk					
Opportunities							
Resource efficiency/ cost reduction	New products & services	New markets/ revenue pools	Technology leadership	Operational resilience	Capital access/cost of capital	Strategic positioning/ brand differentiation	
Risks							
Physical/ environmental exposure	Policy & regulatory	Technology/ innovation disruption	Market/ demand shifts	Reputation/ stakeholder perception	Legal/ liability	Dependency risks	Systemic/ macro risk
Legend:							
High opportunity		Medium opportunity		Low opportunity		Low risk	
High risk		Medium risk		High risk		Not present	

3.5 The Step 3 assessment sequence overview and example

Figure 11: Step 3 assessment sequence overview

	Preparation 	Connecting E&S impacts to their financial pathway	Waypoints 1 and 2
		Level of assessment and clustering	Waypoint 3
		Assessment approach: technique, scenarios and thresholds	
	Assessment 	Gross financial effect	Waypoints 4, 5 and 6
		Net financial effect	Waypoint 7
		Output	
	Evaluation 	Normalize to a common scale	Waypoint 8
		Allocate to SPARc level (declustering)	
		Step 3 output	

The Step 3 assessment sequence

The eight waypoints below summarize the full Step 3 sequence.

The MountVacuum example in Appendix F.7 follows this sequence end-to-end.

Waypoint 1: Use the E&S assessment from Step 2 for the SPARc – For each material topic, carry the performance rating, benchmark logic, and quantified assessment result forward.

Waypoint 2: Map financial pathways and O&R types – this will translate impact into financial effort: E&S impact → dependency → financial effect → O&R type → time horizon. Each value lever generates one O&R type.

Waypoint 3: Define the approach to use for the assessment – Set the scenario space – including physical/stress, baseline and transition considerations – assessment technique per O&R type, and financial thresholds.

For each SPARc (or cluster) and O&R type combination:

Waypoint 4: Assess gross exposure per scenario – Estimate gross financial effect per E&S topic using scenarios, financial pathway and valuation techniques.

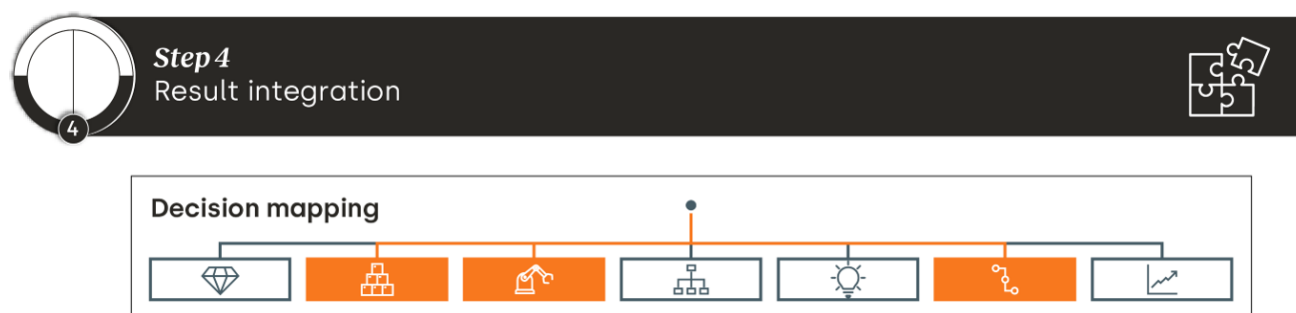
Waypoint 5: Apply likelihood within each scenario – Assess the probability that the gross exposure will materialize given the scenario's conditions. Combine gross × likelihood.

Waypoint 6: Consolidate across scenarios – Apply the consolidation rule (most-plausible, weighted or stress-informed) to produce one consolidated gross figure.

Waypoint 7: Assess net exposure – Identify implemented and committed responses. Net = Gross – Effect of credibly committed response.

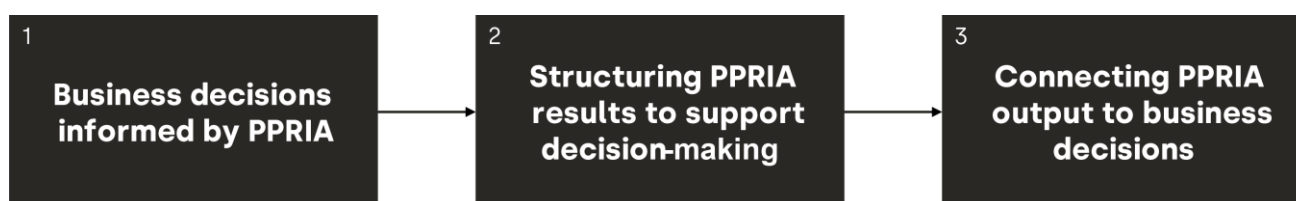
Waypoint 8: Normalize, decluster, compile the O&R performance card – Translate to low/medium/high. Decluster to SPARc. Compile the two-sided O&R performance card. Hand off to Step 4.

Step 4: Result integration



Step 4 connects identified business decisions and their applications (Step 1.1 Use case identification) with supporting PPRIA output. It consolidates E&S impacts (Step 2) with O&R leverage and exposures (Step 3) into a structured sustainability insight ready for integration in existing business decision processes, including strategy, capital allocation, procurement, innovation.

Figure 12: From results to decision – Step 4



Typical business decisions where PPRIA supports the integration of sustainability and its material consequences on business decision processes includes:

- **Enterprise value and materiality** – portfolio sustainability performance management and the equity narrative at the group level;
- **Business portfolio management** – setting the strategic role and investment of each business;
- **Manufacturing asset management** – deciding a production site's or physical production asset's future and capital investment;
- **Product line portfolio management** – deciding which products to mitigate, scale, transform or study further;
- **Innovation management** – directing innovation and decisions;
- **Sourcing** – engaging and selecting suppliers;
- **Grow sales** – engaging customers and positioning the brand.

This step covers how PPRIA inputs into typical business decisions, their specific business use cases, and the typical related actions, decision owners and organization processes they are integrated in. This builds on the understanding of the specific processes, governance and levels where decisions are made, uses aggregation as well as materiality threshold where required, and structures the PPRIA output according to the decision criteria. Table 17 (see section 4.2) provides a summary of how PPRIA outputs support different types of business decisions and Appendix G.2 provides examples.

In this first version of the method, the focus is deliberately on driving the integration of sustainability into business decisions, which the above listed examples reflect. As companies advance in their practices, PPRIA can also inform the broader company's disclosure and engagement narrative outward when combined with the maturity of practices, as well as adequate levels of documentation and assurance/verification.

4.1 Structuring PPRIA results to support decision-making

PPRIA provide for each SPARc the E&S and O&R performance cards, and their supporting documentation, a single evidence base that can be tailored to the specific targeted decision processes and enable consistent action across the company's different levels of governance.

Some decisions are made at the product level (e.g., product line portfolio management). Others require results aggregation up to the level where the decision sits (e.g., enterprise value and materiality, business management, manufacturing asset management). Tailoring PPRIA results for the targeted business use case entails considering:

- The organization **level** where the decision is made, and the results **aggregation** this implies;
- The relevant **materiality threshold** (defined in Step 3 Preparation) to determine whether the results are significant enough to trigger action for the specific use case.

While other business decision use cases may be specific to a company context, product sustainability performance management requires the use of a harmonized approach **for SPARc performance categorization** (define in 4.1.2).

4.1.1 Aggregation and thresholds

Consideration 1: Aggregating the PPRIA results at the decision level

Aggregation enables the structuring of the PPRIA results to connect with a broad range of decision processes in an organization, without information loss. As defined in Step 3, aggregation follows the mutually exclusive and collectively exhaustive (MECE) principle to avoid duplication ([Table 12](#)).

Table 12: Importance of mutually exclusive and collectively exhaustive principle to prevent double counting in results

	Is it MECE	Rationale
O&R types	Yes	Do not count an E&S impact that maps to several O&R types more than once when results are summed up.
Aggregation	Yes	Ensure no double counting when rolling up results across levels (e.g., SPARc to product, product to business unit, business unit to corporate).
Measures (net financial effect assessment)	No	A single CapEx or OpEx mitigation action can reduce several risks at once or unlock several opportunities at once.

Two principles hold across every type of decision considered :

- The aggregation logic is identical in all cases. What varies is the level where the aggregation occurs.

- The aggregation does not mask significance of exposure: routine strengths and weaknesses net against each other for nuance, but a high risk or a significant E&S impact stays visible after aggregation. A portfolio that is strong on average must still bring to the surface the single product or site that carries a high risk.

Consideration 2: The materiality threshold

Step 3 (Preparation) defines two types of threshold : normalization and materiality threshold. In contrast to the normalization threshold used in Step 3 to bring different type of results on a comparable ground, the **materiality threshold** is used in Step 4 to determine how large an opportunity or risk must be before the company takes action. This may for example be a coarse, high bar where only group-level financial movements matter or a deliberately low bar where the company must allow many small product-level exposures to accumulate.

Table 13 illustrates typical aggregation level and materiality threshold considerations, by business decision type (indicative).

Table 13: Aggregation level and threshold for PPRIA result structuring, by business decision type

Business decision type	Aggregation level	Materiality threshold
Enterprise value & materiality	Group/corporate total	Coarse – relative earnings before interest, taxes, depreciation and amortization (earnings before interest, taxes, depreciation and amortization)-margin bands (e.g., >30% = going-concern). Small SPARc-level O&R is allowed to accumulate until it crosses the corporate materiality border.
Business portfolio management	Business unit	Business-specific, tied to each unit's strategic role.
Manufacturing asset management	Site, allocated economically to product groups	Per product group, by economic weight (earnings before interest and taxes/ return on capital employed/total cost of ownership).
Product line portfolio	SPARc/product, rolled up to the business unit portfolio	Deliberately low, to make product-level exposure visible.
Innovation management	Market/system segment and product line	Future-oriented; may exceed the strategy horizon.
Sourcing	Supplier/supplying site	Reflects buying power and local regulation.
Growing sales	Customer/market segment	Reflects claim robustness and the assurance needed.

Note: Illustrative, may vary from company to company.

4.1.2 Portfolio categorization for product sustainability performance management

Performance categorization is used for product sustainability performance management. It translates individual SPARc results, reconciling the immediate perspective (E&S impacts performance, Step 2) with a forward-looking view (O&R performance – exposures and leverage –, Step 3) into a single performance rating. It is done in 3 steps by determining:

- the final SPARc E&S performance rating
- the final SPARc O&R performance rating
- the resulting SPARc performance category using the categorization matrix (Figure 14).

Applied consistently across the portfolio, it builds a comparable overview of the portfolio performance to drive transformation toward more sustainable products.

Where an organization chooses to use categorization **for internal** product portfolio sustainability performance management, management reporting or strategic discussion, it *should* apply the categorization rules. It *may* use any visualization of its preference or simply rely on the detailed E&S and O&R performance cards. A few examples are available in Appendix G1 Structuring PPRIA results for other types of decisions: examples.

When communicating about portfolio sustainability performance externally, the company *shall* follow these categorization rules and matrix (see more information in Appendix H Disclosure principles).

Determine the final SPARc E&S performance rating

The E&S categorization is built from the five equally weighted theme ratings resulting from Step 2: one rating per theme (climate change, nature, circular economy, social and product safety), each derived from the evaluation of its constituent topics. The categorization logic operates on these five ratings directly. Positive E&S performance in some themes cannot mask or obscure negative impacts in others.

The E&S performance categories are:

- Leading
- Advancing
- Mixed or neutral
- Lagging
- Challenged

A SPARc rated **mixed or neutral** reads most of the time as a genuinely mixed profile, with real strengths (positive impact) and a real concern (negative impact) sitting alongside each other. The categorization keeps both visible rather than netting them into a single aggregate signal. This rating also covers perfectly neutral profiles (no positive, no negative impacts).

Advancing and **leading** are reserved for profiles with positive impacts carrying no D-rated theme. This is the commitment to transparency : it ensures that where a material negative impact is present it remains clearly identifiable in the categorization.

Leading additionally requires at least one theme rated A. This highest category recognizes genuine best-in-class performance on at least one sustainability dimension.

At the severe end, a rating of E on any single theme – or the accumulation of three or more D ratings – results in **challenged**. These outcomes are absolute: they cannot be offset by positive performance elsewhere.

Applying the E&S performance categorization in practice

The company *should* apply the performance categories according to the logic in [Table 14](#) to the SPARc's five theme ratings. Each condition is self-contained; the table should be read from top to bottom; the first condition met determines the category.

Table 14: PPRIA E&S performance categories

E&S performance categories	Conditions
Leading E&S profile	No themes rated D or E AND at least one theme rated A
Advancing E&S profile	No themes rated D or E AND at least one theme rated B <i>Note: Leading takes priority where at least one theme is also rated A</i>
Mixed or neutral E&S profile	All themes rated C OR At least one theme rated A or B AND not more than one theme rated D
Lagging E&S profile	Two themes rated D OR One theme rated D AND no themes rated A or B
Challenged E&S profile	Three or more themes rated D OR One or more themes rated E

Determine the final SPARc O&R performance categorization

PPRIA O&R performance categorization has been informed by WBCSD members experience and extensively tested for robustness. It follows an **offsetting logic with a defined limit**. Opportunities and risks net against each other for nuance, a high net risk is **non-compensable**: where present, the SPARc performance is high net risk, with any potential net upside documented as context.

It recognizes that an accumulation of low or medium risks can become significant and applies the same logic symmetrically to opportunities. This acknowledges that leading frameworks guiding O&R assessment bring risks to the surface more readily and building a robust opportunity case takes more effort. Making sustainability opportunities as visible as risks is equally important in fostering greater integration of sustainability in business decisions and advancing the systematization of O&R practices down to the product level.

The same logic applies consistently whether the O&R assessment is qualitative (bands), semi-quantitative or quantitative (monetary exposure).

The O&R performance categories are:

- High opportunity
- Medium opportunity
- Low opportunity
- Low risk
- Medium risk
- High risk

Each SPARc is assigned to one category based on the opportunities and risks identified. This enables the representation of the portfolio as a distribution of revenue across sustainability-related exposure/leverage categories.

Applying the O&R performance categorization in practice

Where the company has conducted a fully quantified O&R analysis for the SPARc, it *may* apply the O&R performance categorization directly to the quantified net O&Rs.

Where quantification is not complete, a two-step logic applies to the individual **net O&Rs normalized** to the low, medium, high scale (see normalization threshold, Step 3.1.3).

The **high-risk guardrail** is the first step: if at least one high net risk is present, the SPARc earns the high net risk category and no further calculation is needed. This guardrail ensures a single high net risk cannot be offset by any level of opportunity.

Where no high net risk is present, the second step applies. The company assigns a **numerical value** to each individual net risk and opportunity according to [Table 15](#), then sums these values to produce an overall SPARc score. The resulting score determines the final O&R performance category, as set out in [Table 16](#).

This decision logic is summarized in [Figure 13](#).

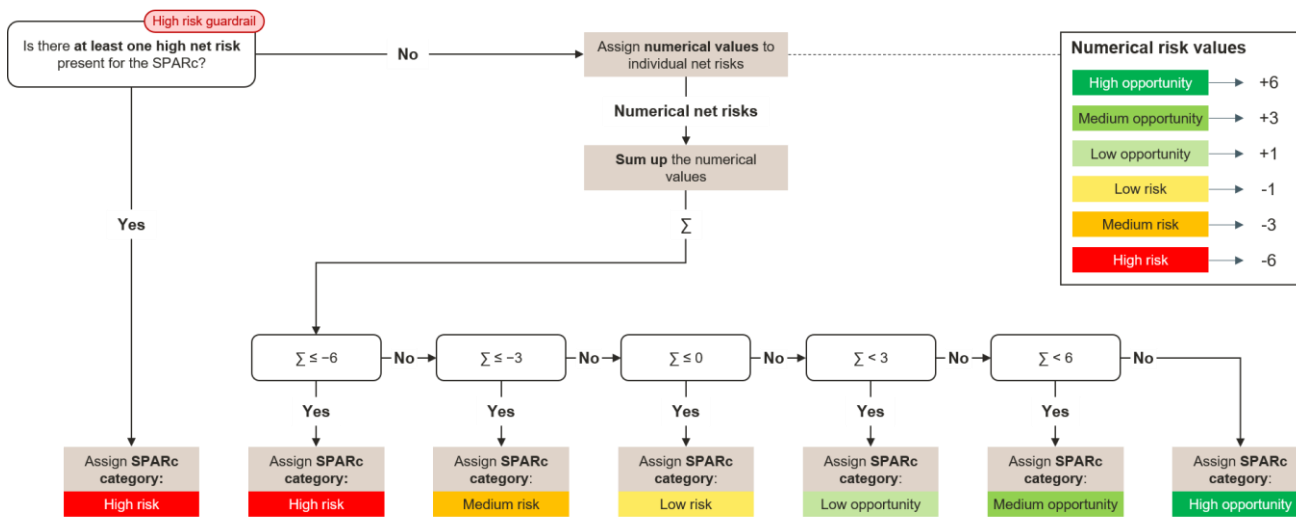
Table 15: Numerical value for individual net O&R

Numerical value for	Low	Medium	High
Net risk	-1	-3	-6
Net opportunity	+1	+3	+6

Table 16: Final net O&R performance category

Performance category	Final net O&R score (X)
High opportunity	$X \geq 6$
Medium opportunity	$3 \leq X < 6$
Low opportunity	$1 \leq X < 3$
Low risk	$-3 < X \leq 0$
Medium risk	$6 < X \leq -3$
High risk	$X \leq -6$

Figure 13: Decision tree illustrating the logic leading to the final net O&R performance category



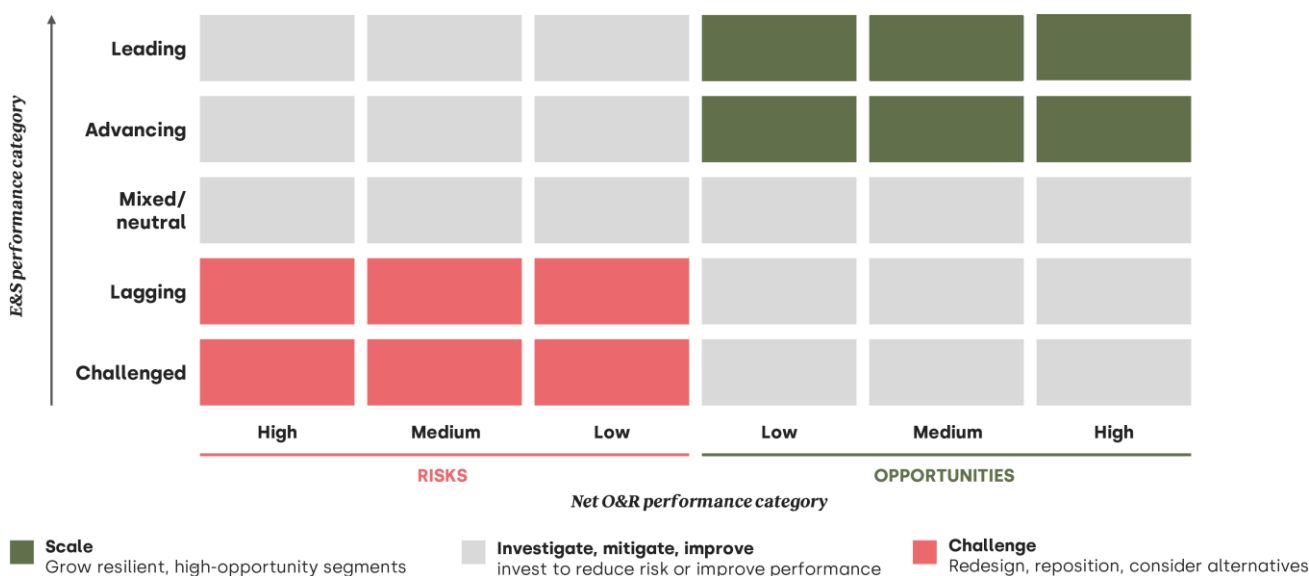
Building the overview (categorization matrix)

Figure 14 presents the categorization matrix, which defines how E&S and O&R performance categories combine to determine each SPARc's overall performance category. A company *shall* differentiate at least **three** categories when classifying SPARc performance across its portfolio. It *may* adopt a more granular view when this adds value, provided company has documented the correspondence with the PPRIA categorization matrix.

Following the classification rule is mandatory; the category names and visualization format are illustrative. Best practice suggests linking each category directly to a portfolio transformation action. This could, for example, be:

- **Scale** (green) – grow resilience, high-opportunity segments;
- **Investigate, mitigate, improve** (blue) – invest to reduce risk or improve performance;
- **Challenge** (red) – structurally redesign, reposition and consider alternatives or exit strategies.

Figure 14: The categorization matrix



Results are particularly insightful where E&S and O&R performance pull in opposite directions. A SPARc rated **leading** on E&S but facing **high risk** may represent a product with strong environmental performance in a declining or disappearing market. Conversely, a SPARc rated **challenged** on E&S but facing **high opportunity** may represent a material that is essential to the renewable energy transition but carries significant chemical, exposure or recyclability impacts in its supply chain. These are the cases where the combination of physical impact and financial exposure highlights genuine trade-offs and inform better decision and action.

4.1.3 Structuring PPRIA results for other types of decisions

SPARc performance categorization for portfolio sustainability management aggregates to the highest level and condenses the portfolio into the three action-oriented categories (scale/investigate, mitigate, improve/challenge). Because every result is available at the SPARc level and remains traceable through aggregation, the company *can* also structure them into different ways using aggregation and the relevant thresholds.

Three illustrative examples illustrating how PPRIA output support different purposes (more examples are available in Appendix G):

- The **portfolio hotspot map** plots net opportunity vs net risk by SPARc. The company *can* use this map at the product level. Use case: *product line management*. (See Appendix G.2 example 2.)
- The **gross-to-net over time** view plots gross (pre-strategy) against net (post-strategy) exposure across short-, mid- and long-term horizons, showing how measures and resources shift the exposure. Use case: Business Portfolio Management. (See Appendix G.2 example 3)
- The **value chain view** plots either E&S impacts or O&R by stage. E&S impacts or O&R split across upstream, the company's own operations and downstream, to locate where in the chain the impact sits. The company *can* use it for targeted supplier engagement (sourcing).

4.2 Connecting PPRIA output to business decisions

PPRIA is a management system that translates sustainability impacts into net risk exposure and opportunities leverage to inform business decision. [Table 17](#) illustrates how PPRIA outputs support the integration of sustainability in seven business decision types, their decision owners, their processes and the choices PPRIA outputs guide, spanning from capital allocation to business portfolio strategy, manufacturing assets, product and innovation management, sourcing, and sales.



Table 17: Seven illustrative business decisions restructured

Business decision type	Business use cases	Relevant PPRIA output	Action choice	Process
Enterprise value & materiality Where is the group's enterprise value most exposed and is its capital expenditure reducing this exposure? Chief financial officer (CFO), chief sustainability officer (CSO), head of strategy	- Product portfolio sustainability performance management and portfolio steering - Innovation strategy - Strengthening the external disclosure process and brand value - Anticipating regulatory and market pressure across value chains - Engaging investors with structured portfolio exposure insights and access to capital	- Group-aggregated O&R performance cards across short/mid/long horizons - SPARc categories condensed into capital-allocation criteria - Portfolio-level double-materiality view	- Prioritize capital investment across the portfolio against group-level sustainability risks and opportunities. - Frame the CFO's sustainability value-creation and risk narrative to achieve a data-driven balance of mid-term financial returns with long-term risk exposure.	- Enterprise value & materiality - External CSRD/ISSB disclosure
Business portfolio management What strategic role should each business play— harvest, grow or restructure – and what transition and resilience capital does it need? Group strategy or business division leadership	- Strategic business portfolio management - Portfolio transformation and M&A due diligence - Capital allocation and investment justification - Sustainability target-setting and performance tracking	- Net O&R exposure cards per business, tied back to the enterprise-value case - CapEx/OpEx allocation to understand gross to net exposure and leverage - Long-term (10+ years) competitiveness reference	- Build a representation that reflects future sustainability constraints, beyond present and historic financial performance, and integrate sustainability performance in business units' strategic role assessment; this leads to a different allocation of capital and innovation resources across businesses. - Anchor the strategy dialogue on a long-term (10+ years) competitiveness reference.	Strategic business portfolio management

Business decision type	Business use cases	Relevant PPRIA output	Action choice	Process
Manufacturing asset management What is the future of this production site or physical asset? How should the company secure its value and license to operate? Site director & operations, head of strategy, group human resources	- Manufacturing asset & operations management - Site-level license to operate - Energy and feedstock transition planning	- SPARc-level O&R exposure translated to production site, physical asset or product-group exposure - Direct and indirect production site/physical production asset competitiveness corridor - CapEx/OpEx allocated economically at product group level relevant to the production asset	- With upstream and downstream value chain forces mapped, allocate site-level CapEx beyond renewal, safety and compliance – towards growth and energy and raw materials transition – to protect production site/physical production asset cost-competitiveness and the license to operate. - Decide on relocation or divestment before sustainability-related exposure becomes a structural liability. - Plan for the complex workforce, community, investment and divestment communication challenges connected to any structural site change.	- Manufacturing/ physical production asset and operations management - Site portfolio management, human resource management
Product portfolio Which products should the company scale, mitigate, transform or study further? Business line manager	- Rebalancing the portfolio toward more resilient product segments - Identifying segments exposed to regulatory, transition or supply chain risks - Managing product pricing and margin	- SPARc E&S Performance Card (A–E) and O&R exposure card with SPARc categorization 2-D portfolio views drillable to the SPARc - Group/business O&R translated down and complemented bottom-up	- Categorize each product group with its strategic sustainability performance posture: scale (grow resilient, high-opportunity segments), investigate, mitigate, improve (invest to reduce E&S risk and improve performance, understand data gaps), challenge (redesign or reposition for future requirements). - Build a data-driven view of future product contribution from all angles that informs better portfolio decisions, improving NPS, customer value, and competitive peer performance.	Product management, Business Line strategy
Innovation management Where should the company direct innovation so tomorrow's products clear future E&S constraints? Group/business head of innovation	- Innovation management - Prioritization and decision-making processes - Product design	- Forward view of the value chain/system success requirements - Future stakeholder ambitions - Gap analysis in the existing offering feeding the innovation decision-making process and minimum performance requirements	- Direct innovation resources to defend exposed SPARcs and create new ones. - Embed future sustainability constraints and opportunities in new product design requirements and innovation decision-making process. - Anticipate market and system transformation to stay ahead of competitive and regulatory shifts. - Build partnerships beyond the company's control.	Innovation management and governance Innovation decisions as part of portfolio steering (if separate)

Business decision type	Business use cases	Relevant PPRIA output	Action choice	Process
Sourcing Which suppliers carry the company's exposure? how does the company engage and select the suppliers? Head of procurement, head of business line management	• Supplier engagement • Defining sustainability requirements for sourcing and product design • Targeting remediation or collaboration initiatives	• Supplier & product E&S impacts tied to cradle-to-gate performance (E&S Performance Card) • Credible, reviewed basis for supplier requirements • Supply chain/ environmentally-extended input-output pressure points	• Manage supplier risk and sourcing resilience. • Set supplier design and sustainability performance requirements and tie environmental and social impacts directly to supply contract negotiations. • Select and develop strategic suppliers using sustainability trajectory alongside commercial criteria. • Collaborate with key suppliers to actively reduce shared sustainability exposure across the value chain.	• Supplier engagement
Grow sales How does the company turn E&S performance into a credible customer or brand story? Head of sales & marketing, head of marketing communication	• Customer engagement • Substantiating sustainability claims with documented evidence • Strengthening brand positioning through credible transparency	• SPARc E&S Performance Card and O&R exposure card used to extract the customer-relevant story • 2-D portfolio views • Credible, reviewed basis for B2B cradle-to-gate evidence and consumer claims	• Run promotion and targeted sales campaigns based on a differentiated value proposition using holistic sustainability performance across the value chain. • Collaborate with customers to take more sustainable solutions to market and establish partnerships (e.g., take-back schemes, living wage programs, regenerative/water-efficient agriculture programs for biobased raw materials, co-invested renewable energy, etc.). • Craft a brand positioning and transition narrative that translates environmental and social impacts data into a compelling customer story.	• Customer engagement • Stakeholder engagement that shapes value chain E&S performance

Implementing and moving up the PPRIA adoption ladder

We've designed PPRIA as an iterative management tool to drive performance, manage risks and grow resilience by embedding sustainability into business decisions made at the product portfolio level. This is also a capability that companies start to build and improve over time. Implementing PPRIA is therefore not a one-off exercise.

A portfolio assessment cycle starts with planning (or reviewing) the effort and business use case, mapping the stakeholders, and segmenting the portfolio into SPARcs (Step 1). It guides environmental and social impact assessment (Step 2), translates them into financially material risks and opportunities (Step 3) and connects these inputs with business decision processes (Step 4) for all SPARcs in the company portfolio.

Review frequency

As portfolios, markets, data and business priorities evolve, companies *shall* periodically review their assessments and progressively strengthen PPRIA robustness and the level of integration in their organization. At a minimum, companies *should review assessments* as part of their regular portfolio management cycle, whenever significant changes occur (e.g., product reformulation, process changes, market segment changes, new/better data, etc.), at a frequency consistent with their sector's rate of change and innovation and at minimum every **three to five years**.

Progressing along the adoption ladder

Companies, sectors and certain parts of value chains also differ in data availability, analytical maturity, portfolio complexity, and the extent to which they have already embedded sustainability into decision-making processes. The PPRIA Method enables companies to start at different maturity levels while preserving methodological integrity.

The adoption ladder is a **compass** for those responsible for deploying and operating the PPRIA Method. It helps the company plan staged progression, which demonstrates business value and builds momentum to then expand scope, depth and integration over time, without compromising methodological robustness. The company *can* use the adoption ladder when planning an assessment cycle and when reviewing lessons learned in preparation for the next one.

In this first version of PPRIA, the adoption ladder is a **self-assessment** of the **robustness of the analysis** and of **organizational integration**. It assesses maturity along these two dimensions through five criteria:

Dimension 1: Robustness of the analysis Dimension 2: Organizational integration

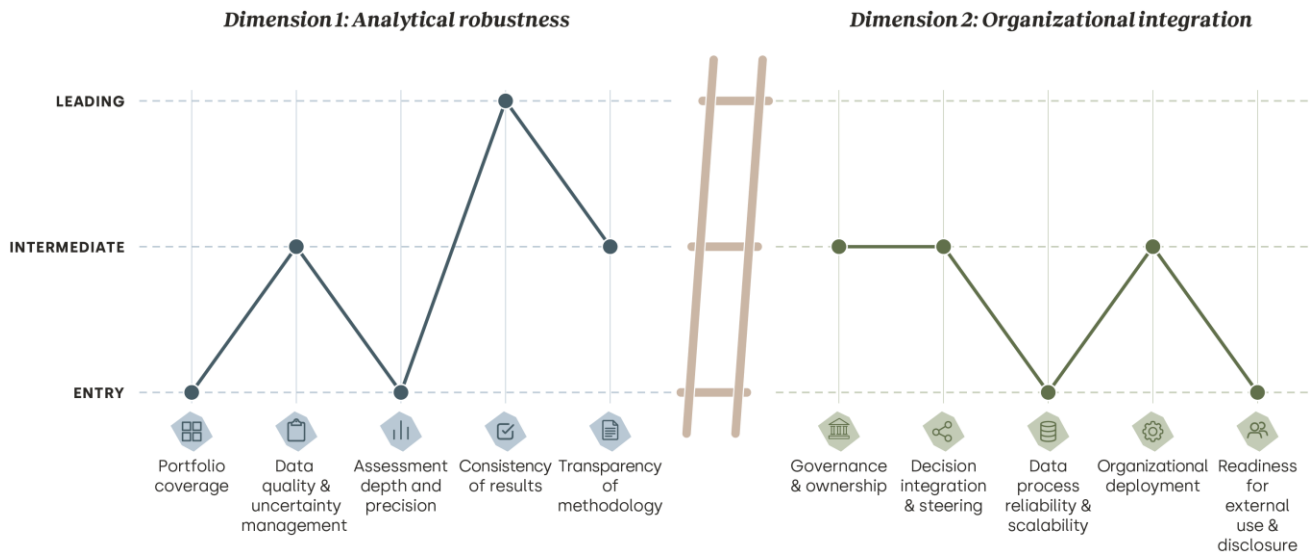
- | | |
|---|---|
| • Portfolio coverage | • Governance and ownership |
| • Data quality and uncertainty management | • Decision integration and steering |
| • Assessment depth and precision | • Data process reliability and scalability |
| • Consistency of results | • Organizational deployment |
| • Transparency of method | • Readiness for external use and disclosure |

For each criterion, three levels of progression apply:

- **Entry:** structured, not fully robust, tested;
- **Intermediate:** robust and decision-useful, partially embedded;
- **Leading:** strategic and transformative.

While maturity disclosure is not required, companies who share their PPRIA performance results externally, are encouraged to provide transparency on their level of robustness and organizational integration.

Figure 15: Adoption ladder



Analytical robustness criteria definitions

→ **Portfolio coverage** captures the share of the product portfolio assessed within the defined PPRIA boundary covering:

- Current products: share of net revenue assessed;
- Future products: share of innovation pipeline products or projects assessed, reported separately.

The company *should* document the boundary's inclusions and exclusions so that the coverage stays comparable. Progression against this criterion requires qualitative judgement of how meaningful or representative the scope covered is for the organization.

→ **Data quality and uncertainty management** covers the quality of the data underlying the assessment and how the company handles uncertainty across the entire method. Progress on this criterion requires an understanding of: 1) data gaps; 2) handling of gaps; 3) transparency of assumptions.

The method requires the traceability of data sources; it is not a maturity dimension (see Transparency, documentation, deviations above)

The following three factors reflect **assessment depth and precision**:

- Degree of quantification (qualitative, semi-quantitative, quantitative) and use of recognized external methodologies;
- Effectiveness of the point of reference (benchmark, absolute) – how well the defined point of reference captures relevant opportunities and risks, using the most effective reference realistically achievable at the chosen SPARc granularity, with documented rationale;
- SPARc granularity (broad segmentation, through to fine segmentation where it adds value).

Note 1: Depending on the context, these three factors lead to different answers. 1) Because finer SPARc granularity often limits the use of external benchmarks, internal benchmarks may be the best realistic choice and require ensuring it

appropriately captures risks and opportunities. 2) Similarly, broader SPARc segmentation may better support the use of external benchmarks, be stronger at capturing risks and opportunities, and strengthen assessment credibility.

Note 2: *This criterion applies across all aspects of PPRIA (E&S impacts and O&R exposures and leverage). In practice, companies may reach different levels of maturity across the method. Within E&S impacts, for example, this may be between the different topics in scope for PPRIA. While the adoption ladder provides an overall assessment for this criterion, companies may find it useful to assess maturity at a more granular level (e.g., by method component, E&S theme, or topic) to identify where further capability building would have the greatest impact.*

→ **Consistency of results** reflects a coherent application of the method across the portfolio and over time, supporting comparability of results across products and assessment cycles:

- Standardized rating logic applied uniformly, independent of individual judgment;
- Alignment with PPRIA Method rules (no cherry-picking);
- The company justifies and documents deviations from the method, with evidence that any alternative approach delivers equivalent results (consistent with the "comply or explain" principle).

→ **Transparency of method** is the extent to which others understand and can re-run the assessment:

- Completeness of documentation (methods applied and methodological choices made);
- Reproducibility of results from the documented basis.

Organizational integration criteria definitions

→ **Governance and ownership** captures how PPRIA is owned by – and anchored in – the organization. Progression along this criterion considers:

- Defined roles and responsibilities;
- Integration into existing governance (e.g., strategy, sustainability, finance, risk management);
- Level of sponsorship (senior backing vs isolated team);
- Recurring internal reporting and accountability for results.

→ **Decision integration and steering** reflects how PPRIA results feed into business decisions and lead to tangible consequences, from results being acknowledged to results driving concrete management action. Progression along this criterion considers:

- Breadth of business decisions using PPRIA outputs;
- Integration with company processes (e.g., decision-making process for innovation, procurement, commercial decisions, M&A, strategy);
- How results influence targets and key performance indicators (KPIs) and drive concrete action.

→ **Data process reliability and scalability** relates to the robustness and scalability of the data process, independent of the specific tools used. It considers:

- Repeatability and resistance to manual error;
- Single source of truth and auditability;
- Ability to scale with portfolio growth.

→ **Organizational deployment** is the breadth of organizational rollout across relevant geographies and business units, measured against the intended implementation scope (pilot, selected units, or full rollout). Distinct from portfolio coverage, this counts organizational units practicing PPRIA, not the share of portfolio revenue assessed.

→ **Readiness for external use and disclosure** covers the extent to which the company can use and does use the portfolio/product PPRIA performance results to communicate externally. It considers:

- **Readiness** for external communication: level of confidence and evidence in PPRIA Method compliance and alignment between internal results and external claims to withstand external scrutiny;
- **Processes** in place to ensure compliance and assurance to give confidence in the company's PPRIA Method comparability and disclosed results (e.g., internal evidence based, auditable/verifiable, audited/verified for the method and for the results);
- **Extent** of communication: internal only, selective/on request, or systematically integrated into external reporting.



Robustness and integration expectations by criteria and adoption level

Table 18: Adoption ladder criteria matrix

Criteria	Entry level	Intermediate level	Leading level
Dimension 1: Analytical robustness			
Portfolio coverage	Revenue covered judged meaningful and representative by management May still be a pilot; future products (innovation) considered	Coverage extended to a substantial, representative share of current products Future products (innovation) included in scope covered and reported separately	Portfolio comprehensively covered Future product portfolio (innovation) fully covered and reported separately
Data quality & uncertainty management	Significant data gaps Proxies used but not systematically Assumptions partially documented	Gaps identified and handled with documented proxies Assumptions stated	Gaps minimal or explicitly managed Proxy use justified Assumptions transparent
Assessment depth and precision	Largely qualitative Broad SPARc segmentation Point of reference is generic or static, capturing O&R only partially No or few recognized methods used	Advances on one or more factors: Largely semi-quantitative OR More granular SPARcs OR Points of reference chosen to capture O&R more effectively for the chosen granularity, with documented rationale	Strong on the factors most appropriate to the company's reality: e.g., quantitative where it adds value AND/OR Finely segmented SPARcs AND/OR Points of reference that effectively capture O&R using the best reference achievable at the chosen granularity, with documented rationale for the combination and evidence of effectiveness
Consistency of results	Rating applied with some variation across assessors or units Alignment with PPRIA rules not yet systematic Limited internal review Deviations not consistently documented	Standardized rating applied in the most consistent way Internal review or process in place to drive consistent assessment Deviations documented with rationale	Rating applied uniformly and independent of individual judgment, verifiable through internal review Any deviations from the method are justified and shown to produce results equivalent to the standard approach
Transparency of method	Key methods and choices documented at a high level Results not readily reproducible by others	Methods and methodological choices documented Results reproducible with some effort	Method documentation complete and structured Results fully reproducible from the documented basis

Criteria	Entry level	Intermediate level	Leading level
Dimension 2: Organizational integration			
Governance & ownership	Roles informal or held by a single team Little integration into existing governance Limited sponsorship Ad hoc reporting	Roles defined Partial integration into existing governance Active sponsorship Regular internal reporting	Roles clearly assigned and accountability established Embedded in existing governance Senior sponsorship Recurring reporting with clear accountability
Decision integration & steering	Results acknowledged and used to build awareness Rarely changes specific business decisions or targets Not yet linked to core decision processes	Results used in selected business decisions and processes Influences some targets, KPIs or actions	Results drive concrete management action across business decisions and processes Consistently shapes targets, KPIs and steering
Data process reliability & scalability	Process largely manual and ad hoc Limited repeatability No single source of truth for PPRIA records Scalability not yet addressed	Process partly standardized Repeatable with some manual steps Developing single source of truth for PPRIA records with partial auditability, scales to a defined scope	Process reliable and repeatable with strong data control Auditable single source of truth Scales with portfolio growth
Organizational deployment	Applied in a pilot or single unit within the intended scope	Applied across selected units within the intended scope	Applied across the intended scope (all relevant geographies and business units)
Readiness for external use & disclosure	Results only used internally; any external mention stays within what the results support, with alignment with internal results checked ad hoc Evidence-based and self-declared: claims rest on a documented, PPRIA-consistent basis	Selective external disclosure Claims reconciled to internal results before disclosure and any gaps documented Method compliance verified by a third party, with internal or limited verification of results disclosed	Systematic external communication External claims consistent with internal results across channels Independent external assurance covers both PPRIA-compliant application and the results disclosed

Appendices



Note: At the time of publication of this first version of PPRIA, guidelines for several topics were still under development (see [Table 4](#) in Step 2). We will continue to work with our PPRIA stakeholders to develop these harmonized guidelines, and introduce them in future method versions.

We have prioritized guideline development based on the following criteria:

- Methodological maturity;
- The availability of reliable data for portfolio-level assessment;
- Business relevance — how strongly the data connects to emerging sustainability drivers affecting product competitiveness, cost and portfolio resilience.

In the meantime, companies with existing practices for the missing guidelines may apply them as part of their PPRIA implementation while ensuring they reflect state-of-the-art practices.

Appendix A Climate thematic guideline for Step 2

Climate change represents one of the most systemic and far-reaching risks to natural systems, human well-being and economic stability. The accumulation of greenhouse gas (GHG) emissions in the atmosphere – resulting from energy use, industrial processes, land-use change, and activities across value chains – are its primary drivers. All sectors contribute to these emissions through operations, supply chains and product life cycles.

And the reverse is also true: climate change has direct implications for business resilience, portfolio performance, and long-term value creation.

The climate change thematic guideline includes two distinct topics:

- Climate change mitigation;
- Climate change adaptation (under development for a future version).

A.1 Climate change mitigation

A.1.1 Scope, standards and definitions

Climate change mitigation refers to efforts to reduce or prevent GHG emissions in order to limit global temperature rise and its associated impacts. Without rapid and sustained mitigation, climate change will intensify physical risks, disrupt ecosystems, accelerate biodiversity loss, and undermine the natural capital on which societies and businesses depend.

The PPRIA climate change mitigation guideline aims to accelerate the identification of, and actions on, material climate impacts related to products and their value chain stages. It does so by enabling the distinction between products that contribute to climate risk and those that enable mitigation outcomes. This helps prioritize actions and innovation, and incentivizes deeper analysis where it matters most.

We've designed this guideline to provide a structured, proportionate approach to assess climate change mitigation performance at a supply – production – application and end-of-life – region combination (SPARc) level, consistent with the overall PPRIA logic. Where they exist, it leverages product carbon footprinting (PCF), life-cycle assessment (LCA), or other data. Where they do not, the guideline offers a way forward to start assessing.

Scope

PPRIA incentivizes the consideration of impacts from cradle-to-cradle as an inspiration. In practice, companies mostly carry out greenhouse emissions assessment on a cradle-to-grave basis.

While there are nuances (e.g., system expansion substitution, cut-off vs credit), emissions a product displace or avoids elsewhere cannot be subtracted from its own carbon footprint. All leading product carbon footprint standards¹⁸ require avoided emissions to be a separate, optional disclosure. PPRIA climate change mitigation guideline method is consistent with this approach.

Key references and standards

This guideline aligns with recognized product-level greenhouse gas accounting methodologies, including:

- GHG Protocol (Corporate and Product Standards);¹⁹
- ISO 14067 (Carbon footprint of products);²⁰
- PACT v3 Methodology for Calculating and Exchanging Cradle-to-Gate Product Carbon Footprints;²¹
- EU Product Environmental Footprint (PEF).²²

This guideline also seeks alignment with relevant climate-related reporting and disclosure frameworks, including the European Sustainability Reporting Standards (ESRS E1).²³

Definitions

Avoided emissions: PPRIA endorses the definition of avoided emissions defined in WBCSD's [Guidance on avoided emissions v2.0: Drive innovations and scale solutions toward net zero \(v2.0\)](#):

“Avoided emissions refer to the estimated difference in full life-cycle GHG emissions that results from a scenario with a solution in place, compared to a reference scenario without the solution. When the solution scenario emissions are lower than the reference scenario emissions, emissions have been avoided.”

A.1.2 Preparation

The preparation step structures the approach, ensuring focus and consistency across the entire portfolio, by:

- Creating a data library supporting consistent assessment across the SPARc (optional);
- Determining the materiality of GHG-related impacts for the SPARc.

A.1.2.1 Method setup

Mapping available data, data sources and high-emissions materials, processes or applications into a data library early on in the setup of the PPRIA Method creates the shared reference for consistent assessment of climate change mitigation impacts across the portfolio. While optional, this can shorten individual SPARc preparation time and the company *can* update it before any new portfolio assessment cycle starts and as new information becomes available.

Relevant data sources may include: existing internal climate targets or hotspot analyses, existing GHG inventories and climate assessments, available LCAs, PCF, data sets from environmental product declarations (EPD), data from supply chain data transfer platforms (e.g., PACT) etc.

A.1.2.2 SPARc-level preparation

The materiality filter determines whether climate change mitigation is a material topic for the SPARc assessment. It follows the questionnaire defined in Step 2 and in [Table 19](#) for the company reference.

Table 19: Climate change mitigation materiality filter questions

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the key SPARc raw materials.²⁴	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc within the chosen organizational level?

If the company answers any question with “yes” or “unknown”, it *should* consider the climate change mitigation topic material for the SPARc and take it forward for assessment, at a minimum qualitatively.

The company assesses the climate change mitigation topic across all life-cycle phases; it is relative to the SPARc benchmark. Step 2 Preparation lays out the criteria to set up the benchmark.

A.1.3 Assessment

A.1.3.1 Indicators

The indicator is the SPARc GHG emissions, assessed or measured in kg CO₂-eq across all life-cycle stages. This is consistent with recognized the product level greenhouse gas accounting standards mentioned in Scope, standards and definitions.

Key considerations

Handling product carbon footprint information follows PPRIA Method documentation requirements and *should* follow GHG accounting best practices:

- The company *shall* document all data gaps, assumptions, estimates, evidence and rationale supporting expert judgement in a way that enables anyone reviewing the mitigation impact to properly assess and contextualize the impact of an intervention. The company *should* document the life-cycle coverage (e.g., cradle-to-gate vs more complete life-cycle coverage) and ensure it addresses any missing life-cycle phases consistently with the assessment approach (e.g., supplemented qualitatively where needed).
- When considering land-sector emissions and removals in a PPRIA SPARc assessment, the company *should* apply a recognized and documented method that ensures transparent accounting, traceability and clear documentation of assumptions, boundaries and data sources. An example is the *GHG Protocol Land Sector and Removals Standard* (GHG-P LSRs).²⁵

Deriving an extra energy indicator

By definition, energy is integrated into the assessment of SPARc GHG emissions. Companies *may* nevertheless choose to derive an additional energy-specific indicator to monitor energy efficiency for their SPARc assessments across life-cycle stages. Where applied, the company *shall* apply this design choice consistently across the entire scope to which it applies the PPRIA Method.

Considering avoided emissions

PPRIA assesses SPARc (i.e., product) GHG emissions compared to a benchmark according to product carbon footprint methodology, qualitatively to quantitatively depending on the data availability and carbon accounting maturity of the organization.

The company uses an attributional approach to calculate PCFs,²⁶ following inventory logic to understand all the absolute emissions attributable to (or caused by) a product over its life cycle. The company calculates the avoided emissions by comparing the inventory emissions of a product to a hypothetical baseline scenario without that product in place to understand the change in overall emissions caused by that product. It therefore *should not* net avoided emissions against inventory emissions. It *may* report them as a separate optional disclosure.

The PPRIA Method is consistent with this principle. A company willing to specifically look at avoided emissions *may* do so by considering an additional indicator to understand a company's SPARc-related decarbonization contribution beyond its own inventory reductions, as defined according to our [Guidance on Avoided Emissions v2.0](#). It *may* also ensure the company meets all criteria, including the eligibility criteria and definitional approaches for reference scenario, system boundaries, etc. WBCSD [Guidance on Avoided Emissions v2.0](#) prevails for any claims related to avoided emissions.

A.1.3.2 Metrics to conduct the assessment

Comprehensively quantifying a SPARc's GHG emissions from cradle to grave is a best practice. It is, however, not a pre-requisite in the PPRIA Method. Where external PCF data or sufficient data to credibly quantify cradle-to-grave GHG emissions are not available, the company *may* start with qualitative or semi-quantitative approaches and progressively work towards a full quantitative assessment where relevant. The metrics for each approach are meant to be applicable for all value chain stages.

Qualitative assessment

A qualitative assessment examines factors directly (i.e., product level) impacting the SPARc's greenhouse gas emissions across the life cycle in comparison to the benchmark. The company *can* apply it where robust quantitative data is not available (e.g., in specific life-cycle stages or where LCAs or product carbon footprints are not available). However, trade-offs between positive and negative impacts on SPARc GHG emissions, underlying assumptions, and the significance of impacts may be more difficult to interpret than under a fully quantitative approach. As results are less robust, the company *should* apply a more conservative interpretation.

Examples:

- The company cannot quantify a SPARc use phase, but its technical service team has run a series of trials at customers' facilities and collected data that allows it to assess how much energy it can save when implementing the SPARc in its customers' production processes
- A manufacturer sourcing some components produced using fluorinated gases has implemented a supplier engagement program incentivizing substitutions of these gases, monitored substitution implementation and collected the data allowing GHG emissions assessment.

Table 20 provides examples of metrics.

Table 20: Metrics for qualitative assessment of SPARc GHG emissions

Qualitative metrics	Examples/description
Decreased or increased GHG emissions released	Decreasing methane leaks, reducing land-use change
Removal of GHG emissions from the atmosphere with a direct physical connection to the SPARc	Removals occurring within the company's organizational or value chain boundary that have a direct physical connection to the SPARc and meet the traceability, permanence, and stock-change requirements, supported by a methodology such as the GHG-P LSRS assessment. ²⁷
Increased or decreased resource use (incl. biomass)	Dematerialization, resource efficiency, waste reduction, extended lifetime/durability, reuse, refurbishment, repair
Substitution of fossil fuels with renewable or secondary raw material	Circular feedstocks, such as those described in WBCSD's Global Circularity Protocol (GCP) v1.0 , virgin fossil fuel feedstocks
Increased or decreased energy use	Total energy consumption (kWh or other)
Substitution of a lower emitting or non-fossil energy source	Percentage of energy supplied from renewable sources or sources with lower global warming potential
Other changes impacting these factors	Other process efficiency gains or changes, different waste treatment pathways

Semi-quantitative assessment

A semi-quantitative assessment quantifies some characteristics influencing SPARc GHG emissions, but full life-cycle quantification is not possible.

Example: An estimated product carbon footprint based on emissions factors for the main raw materials (≥50% of mass) or for the material with the highest emissions intensity (e.g., steel).

Table 21 provides examples for building semi-quantitative metrics.

Table 21: Metrics for semi-quantitative assessment of SPARc GHG emissions

Semi-quantitative metrics	Examples/description
Partial quantification may include: - An intermediate indicator of the SPARc's impact on climate change mitigation is quantified (such as: x kWh energy savings per kg of product, increasing resource use by y%), but the full SPARc GHG emissions cannot be fully quantified - Quantitative data is only available for some of the relevant phases of the life cycle and thus quantification only covers these phases, while other relevant phases are covered qualitatively.	Estimated GHG emissions associated with the main raw materials of the SPARc

Quantitative assessment

A quantitative assessment involves calculating a product carbon footprint (PCF) for both the SPARc and the benchmark from cradle to grave (see [Table 22](#)).

Even where benchmarking data are limited, a robust cradle-to-grave PCF remains a strong basis for the future comparability and substantiation of climate performance claims. It supports clearer judgments on significance, trade-offs, and relative performance between the SPARc and the benchmark. However, an LCA or PCF requires a substantial effort and relevant data availability. Low up- and downstream data quality may introduce variability.

Table 22: Metrics for quantitative assessment of SPARc GHG emissions

Quantitative metrics	Examples/description
SPARc GHG emissions CO ₂ -eq / functional unit	Refer to harmonized product-level carbon accounting standards (see references and standards in this guideline).

Treatment of energy-related aspects (optional)

Depending on the company's or sector's context, the company *may* monitor energy use separately as a supporting metric. SPARc GHG emissions inherently capture energy-related impacts. The company *may* nevertheless choose to monitor energy use separately as an additional supporting indicator. Some energy indicator examples include:

- Increase or decrease in total energy consumption (e.g., kWh per functional unit);
- Changes in energy sources (e.g., share of renewable energy).

Treatment of avoided emissions (optional)

PPRIA leverages avoided emissions calculations when they exist. The company *shall* then quantify them according to our [Guidance on Avoided Emissions v2.0](#). The benchmark used is then consistent with the "reference scenario" (i.e., the most likely alternative scenario without the solution or portfolio). When these calculations are not available, PPRIA allows qualitative (using substantiated expert judgement) and semi-quantitative approaches while still ensuring the company respects the principles of the guidance, including the assessment approach, eligibility checks, and rules for reference scenario definition.

A.1.4 Evaluation

The company rates SPARc performance for climate change mitigation by comparing the SPARc GHG emissions to the benchmark and applying a significance overlay to differentiate impact magnitude using the A to E scale (as defined in Step 2). PPRIA treats data gaps and uncertainties ("unknown") explicitly to avoid masking potential risks while recognizing current data maturity gap constraints.

Rating qualitative or semi-quantitative metrics

As the company *may* consider more than one qualitative or semi-quantitative metric, the following additional considerations apply:

- When metrics on the minimum list are not applicable for the SPARc, documenting the evidence-based justification is required.
- Consistent with Step 2 (Treatment of data limitations) : “Unknown” does not qualify as “not applicable”.
- Consistent with the Step 2 Evaluation: the aggregation of multiple metrics to a final rating follows a precautionary “no netting” logic: the topic rating reflects the lowest material performance, unless all performances are neutral or positive.

There may be cases where different metrics diverge (e.g., higher resource use but lower energy demand). The company *should* estimate an order of magnitude for each metric based on documented evidence to understand what the dominant effects are and how they compare to benchmark performance. This resulting estimate then determines the score and the company documents it. If comparison is not possible, the conservative approach is to use the most cautious rating of all metrics (“no netting” approach).

Rating for optional, additional indicators (energy and avoided emissions)

The additional indicators (energy and avoided emissions) are optional, indicative. They use the same approach as above (compared to a benchmark – or reference scenario – for avoided emissions) and use the significance overlay to assess the magnitude of the difference to the benchmark. They give context to the rating, with the following nuances:

- The energy indicator is symbolic and does not influence the score: the SPARc GHG emissions assessment (PCF) already reflects energy-related impacts to avoid double counting.
- The company treats the avoided emissions indicator consistently with Step 2 Evaluation: the aggregation of multiple metrics to a final rating follows a precautionary “no netting” logic. The topic rating reflects the lowest material performance, unless all performances are neutral or positive.

Where used, the company includes these indicators on the E&S performance score card; they also inform the identification of the financially material risks and opportunities in Step 3.

A.2 Climate change adaptation

Under development



Appendix B Social thematic guideline for Step 2

B.1 Social impacts

B.1.1 Scope, standards, definitions and indicator structure

Products and their associated value chains influence working conditions, access to essential goods and services, and community well-being. Environmental challenges such as climate change, resource scarcity and pollution are amplifying impacts on people and ecosystems, making social performance central to business resilience and sustainable value creation.

Social impacts have direct business implications: they influence regulatory exposure, supply chain resilience, market access, brand trust, and the ability to attract capital and talent. They are typically monitored at the company level. Understanding where and how they materialize in the product portfolio makes social impacts visible, encourages all four stakeholder groups to consider them, and guides business leaders to prioritize actions and more systematically integrate social considerations into strategic and operational business decisions.

This guideline provides a consistent approach to identifying and assessing how products impact workers, consumers and communities. It jointly addresses all four identified social topics (human rights, working conditions, equal treatment and opportunities for all, and health and well-being), recognizing their interconnected nature and need for the holistic management of social impacts.

Scope

The social impact guideline applies across a SPARc's full value chain, covering upstream sourcing, the company's own operations, downstream use and end-of-life where relevant.

It considers both negative impacts (e.g., human rights risks, poor working conditions, or unequal treatment) and positive impacts (e.g., access to essential goods and services, great affordability, better health and well-being, digital and financial inclusion, food security, sustainable livelihoods, and stronger community resilience).

Key references and standards

This guideline leverages and aligns with definitions from the following international standards and frameworks:

- International Labour Organization (ILO) Fundamental Principles and Rights at Work;²⁸
- United Nations Universal Declaration of Human Rights;²⁹
- United Nations Department of Economic and Social Affairs Sustainable Development Goals (SDGs);³⁰
- UN Global Compact's Ten Principles of the UN Global Compact.³¹

The Taskforce on Inequality and Social-related Financial Disclosures (TISFD) was developing its framework at the time we developed this guideline. Future development and iterations of the guideline will align with the emerging Taskforce on Inequality and Social-related Financial Disclosures (TISFD)³² guidance as it becomes available.

The following social LCA (sLCA) tools and practices have also inspired the development of this guideline:

- United Nations Environment Programme (UNEP) Life Cycle Initiative: *Guidelines for Social Life Cycle Assessment of Products and Organizations*³³ and detailed topic descriptions in Methodological Sheets;³⁴
- Social Value Initiative: *Handbook for Product Social Impact Assessment (PSIA)*³⁵ and *Detailed topic descriptions for Product Social Impact Assessment*;³⁶
- Horizon 2020 ORIENTING Project: *General sLCA process: Social approaches in life cycle sustainability assessment*.³⁷

Additional relevant references:

- European Commission: Research and Innovation: Revised Framework for 'Safe and Sustainable by Design (SSbD)' Chemicals and Materials for the social inputs;³⁸
- ISO 14 075:2024: Environmental Management – Principles and framework of social life cycle assessment (ISO 14 075:2024).³⁹

References consulted and considered for the development of this thematic guideline:

- UN Human Rights: Guiding Principles on Business and Human Rights;⁴⁰
- BSR: Human rights assessments: Identifying risks, informing strategy;⁴¹
- European Financial Reporting Advisory Group (EFRAG): European Sustainability Reporting Standards (ESRS) topical stakeholder groups S1-S5, ESRS 1 Annex A;⁴²
- ILO: Declaration on Fundamental Principles and Rights at Work (as amended in 2022);⁴³
- Horizon 2020 ORIENTING Project: LCSA methodology to be implemented in WP4 demonstrations;⁴⁴
- ILO: ILOSTAT;⁴⁵
- United Nations Children's Fund (UNICEF): child labor data;⁴⁶
- European Commission: Safe and Sustainable by Design (SSbD).⁴⁷

Definitions

The guideline uses the definitions in [Table 23](#):

Table 23: Social impact definitions for human rights, working conditions, and equal treatment and opportunities

Term	Definition
Human rights	Human rights are rights inherent to all human beings, as internationally proclaimed in the Universal Declaration of Human Rights, regardless of nationality, place of residence, sex, national or ethnic origin, color, religion, language, or any other status. Everyone is entitled to these rights without discrimination (<i>adapted from UN Global Compact</i> ⁴⁸).
Working conditions	Working conditions refer to the terms and circumstances under which work is performed, encompassing secure employment, working time, adequate wages, social dialogue, freedom of association and collective bargaining, work-life balance, and occupational health and safety (<i>consistent with ESRS S1</i> ⁴⁹).
Equal treatment and opportunities	The absence of discrimination and equal access to employment-related opportunities, including gender equality and equal pay for work of equal value, training and skills development, inclusion of persons with disabilities, measures against workplace violence and harassment, and diversity (<i>consistent with ESRS S1</i> ⁵⁰).
Health and well-being	The physical, mental and social well-being of workers and affected stakeholders, including safe and healthy working conditions, the prevention of occupational injury and illness, psychological safety, work-life balance, social protection, and conditions that support dignity and quality of life (<i>consistent with the World Health Organization (WHO)</i> , ⁵¹ <i>ILO</i> , ⁵² <i>UN human rights frameworks</i> , ⁵³ and <i>ESRS S1</i> ⁵⁴).

This guideline uses the definitions in [Table 24](#) for stakeholder groups, consistent with leading social LCA references and ESRS.⁵⁵

Table 24: Social impact definitions for the company's own workforce, workers in the value chain, affected communities, and consumers and end-users

Term	Definition
Own workforce	All workers in an employment relationship with the company undertaking the work (employees) and non-employee workers who are either (i) self-employed individuals contracted directly to supply labor, or (ii) workers provided by third-party undertakings primarily engaged in employment activities (e.g., temporary work agencies).
Workers in the value chain	Workers who are not part of the workforce of the company undertaking the work, but who may be impacted by the company's operations, products, services or business relationships in its upstream or downstream value chain (examples in the guideline include supplier factory workers, agricultural laborers, logistics workers, and outsourced service providers).
Affected communities	The physical operations and activities across the value chain of the company undertaking the work that may impact the communities (including communities near sites, remote communities impacted by downstream effects, communities along the value chain, and Indigenous Peoples with specific rights, such as free, prior and informed consent).
Consumers and end-users	Individuals or groups who purchase or use products or services; end-users are a sub-group of consumers who use the product or service, but do not have a direct trade relationship with the undertaking

Indicator structure

PPRIA method recognizes that social impacts are complex by nature and often interlinked in practice. They are context-dependent and shaped by geopolitical, regulatory, and socio-economic conditions. This guideline therefore follows a unified approach across the four main categories of social impacts, where product and portfolio decisions can materially influence social outcomes across the value chain:

- Human rights;
- Working conditions;
- Equal treatment and opportunities;
- Health and well-being.

We have identified these four categories through a structured review of established international frameworks and methodologies, including:

- The Social and Human Capital Protocol;⁵⁶
- Social life-cycle assessment (sLCA) best practice guidance:
 - United Nations Environment Programme (UNEP) Life Cycle Initiative: *Guidelines for Social Life Cycle Assessment of Products and Organizations*⁵⁷ and detailed topic descriptions in Methodological Sheets;⁵⁸
 - Social Value Initiative: *Handbook for Product Social Impact Assessment (PSIA)*⁵⁹ and *Detailed topic descriptions for Product Social Impact Assessment*;⁶⁰
 - Horizon 2020 ORIENTING Project: *General sLCA process: Social approaches in life cycle sustainability assessment*.⁶¹
- EU European Sustainability Reporting Standards (ESRS) social standards (S1–S4);⁶²
- UN Global Compact Principles;⁶³
- Organisation for Economic Co-operation and Development (OECD) Well-being Framework;⁶⁴
- Roundtable Product Social Impact Assessment.⁶⁵

Four stakeholder groups (own workers, value chain workers, consumers, affected communities) structure the guideline.

Using the references above, we developed a list (Figure 16) of common social impacts, henceforth referred to as “indicators”, consistent with the PPRIA E&S guideline structure. This list is non-exhaustive and aims to guide the company in identifying impacts relevant by stakeholder group.

We have differentiated the indicators for a company’s own workers and for workers in the value chain intentionally. This reflects fundamental differences in levels of control, responsibility and visibility: companies have direct control, full responsibility, and robust internal data for their own operations, while social impacts in the value chain often occur further upstream, with limited direct control, indirect leverage, and incomplete or proxy data.

Figure 16: Social impact indicators

Workers		Value chain workers		Consumers		Communities	
Adequate wages		Adequate housing Adequate food		Accessibility		Cultural rights	
Child labor		Child labor		Affordability		Free, prior and informed consent	
Forced labor		Health and safety		Effectiveness and comfort		Health and safety	 
Working time		Land-related impacts		Health and safety		Land-related impacts	
Measures against violence and harassment in the workplace		Forced labor		Privacy		Security-related impacts	
Health and safety		Diversity				Training and skills development	
Gender equality and equal pay for work of equal value							
Employment and inclusion of persons with disabilities							
Diversity							
Secure employment							
Freedom of association, including the existence of work councils							
Collective bargaining							

Icon legend:  human rights  working conditions  equal treatment and opportunities for all  health and well-being

Note 1: This mapping does not highlight specific stakeholders or social impact sub-categories (e.g., women’s and children’s rights) as the company foresees them materializing through the indicators listed. The company may complement the list with additional relevant categories when they are derived from recognized and published sLCA methodology.

- Occupational health and safety explicitly cover workers and communities, while broader aspects of health and well-being (e.g., access, nutrition, hygiene or living conditions) may also be relevant depending on the product, value chain context, and affected stakeholder groups.
- In practice, some social impacts (indicators) may express themselves differently according to the stakeholder group considered. For example, the social impact “health and safety” will be expressed differently when considering workers, where this typically falls under **working conditions**; for consumers, where this is a matter of **health and well-being**; or for communities, where it relates to both, as affected communities may include workers, consumers, and wider populations exposed to the SPARc’s impacts.

Note 2: The Taskforce on Inequality and Social-related Financial Disclosures (TISFD) is currently developing detailed guidance on health and well-being and we may need to update this indicator when the framework is more mature.

B.1.2 Preparation

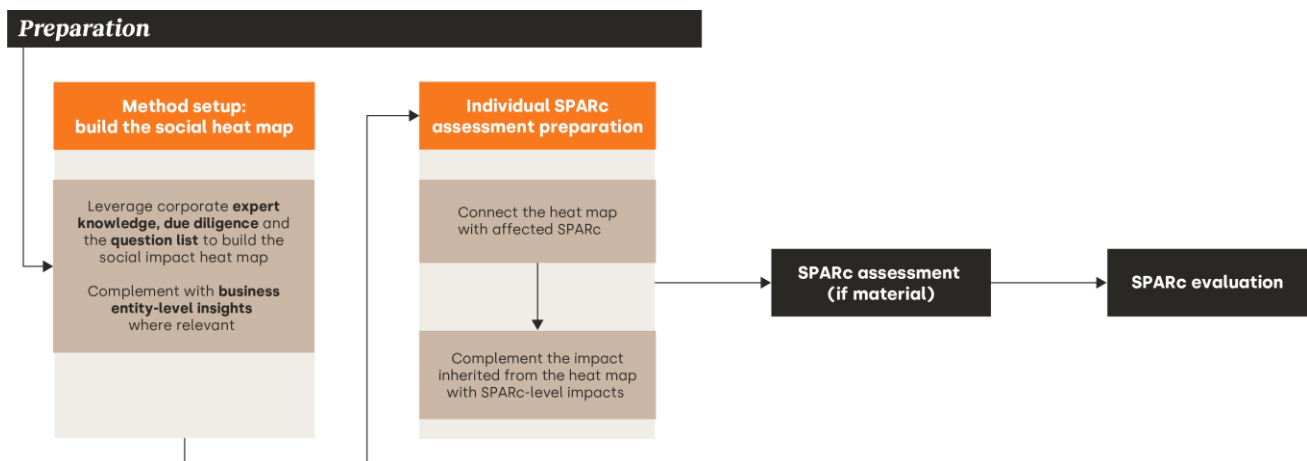
Social impacts span a wide range of indicators, stakeholder groups, and value chain stages, and data availability is often uneven. The PPRIA social impact guideline functions at a SPARc level, with

varying data availability and organizational maturity, while staying scalable and proportionate and capturing the primary points of social impact along the value chain.

The preparation structures the approach, ensuring focus and consistency across the entire portfolio. It aims to:

- Consolidate existing company-level information on social risks, issues and opportunities;
- Complement, where relevant, with business division information;
- Structure this information in a way that the company can apply consistently to SPARCs;
- Act as a materiality gate to ensure a scalable, proportionate effort that captures the primary points of SPARC-relevant social impacts along the value chain (SPARC-level preparation).

Figure 17: Social impact guideline preparation overview



Note: the question list is proposed Table 25

Example: The heat map may point to raw materials associated with high labor risks and production sites with known social issues. It may be complemented at the SPARC level by the identification of applications affecting vulnerable users and product groups that generate positive social benefits.

B.1.2.1 Method setup: building the social impact heat map

The social impact heat map is the central prioritization mechanism of the PPRIA social impact guideline. It provides a company-level starting point to identify where social impacts are likely to arise across products, value chain stages, regions and life-cycle stages. It leverages company-wide social impact expertise and due-diligence processes, connects this information to affected SPARCs, and helps ensure that the company does not overlook significant social impacts as more granular information becomes available over time.

Relevant inputs for social impact configuration typically include outcomes from:

- Double materiality assessments (DMA);
- Enterprise risk management processes;
- Social controversy tracking;
- Supplier risk screening;
- Audit findings;
- Sector- or country-level risk sources;
- Due-diligence systems;
- Grievance data;

- Supplier audit results;
- Human rights risk tools.

The company *may* also use external datasets to identify regions, industries or materials commonly associated with severe social risks.

To be effective in PPRIA, the social impact heat map *should* highlight relevant social impacts – positive and negative. The company can then connect the impacts to the affected SPARcs in the preparation step.

In practice, corporate social impact monitoring often focuses on risks, while positive impacts may require a more granular analysis, sometimes down to the product family or SPARc level, where robust evidence can back up the benefits. The company *can* then complement the relevant social impacts at the SPARc level later in the process. By the sensitive and ethical nature of social impact topics, positive impact requires careful consideration to ensure evidence demonstrates it is indeed structural, significant and verifiable.

The social impact heat map is built during the method setup using the question list ([Table 25](#)) and the list of indicators ([Figure 16](#)) considering all stakeholder groups to consistently map these impacts. New information complements it as it becomes available when the company does the assessments and reviews and updates them. The SPARc preparation by additional screening at SPARc level also complements it.

Table 25: Guiding questions to build the social impact heat map

Guiding questions		Possible source information
Company identifies social issues at a business or unit level for applicable stakeholder groups		
1	Is the company's (double) materiality assessment and enterprise risk management system flagging any social topics?	Information from sources such as: company DMA or enterprise risk assessment or list of controversies. Special attention to salient human rights issues
2	Does the company use any raw materials or components that are from supply chain sectors associated with social issues (refer to Figure 16)?	Information from sourcing department or others, such as: • ILO: Data tools to find and download labor statistics - ILOSTAT⁶⁶ • UNICEF: UNICEF DATA - Child Statistics⁶⁷ • EcoVadis: The Global Standard for Resilient, Sustainable Supply Chains⁶⁸
3	Are there any application sectors associated with social issues?	Information from sources such as: • ILO: Data tools to find and download labor statistics - ILOSTAT⁶⁹ • UNICEF: UNICEF DATA - Child Statistics⁷⁰ • EcoVadis: The Global Standard for Resilient, Sustainable Supply Chains⁷¹
4	Are there social issues in (parts of) the company where it produces products?	Information from internal sources, using resources such as: • Sedex: Scalable and site-specific assessments of social and environmental practices⁷² • EcoVadis: The Global Standard for Resilient, Sustainable Supply Chains⁷³
5	Are there product groups that, as part of the business model, generate positive social impact in the company's supply chain, production, use or disposal phase (application)?	
6	What social impacts are strategically relevant due to stakeholder (e.g., customers, policymakers) expectations or requirements?	

For practical implementation, the company *may* conduct social impact heat mapping and initial materiality screening at a higher aggregation level first, such as raw-material family, supply chain, product category, or product family, where this better reflects data availability and organizational practice. In this process, companies *shall* consistently consider social impacts associated with raw materials, production sites, application sectors where the product is used, and products with positive social impact. This ensures that product-level considerations complement social impact categories already identified through corporate processes (e.g., double materiality assessments, ERM, strategy).

The company *can* then connect the resulting insights with affected SPARCs in the preparation, ensuring that the link between aggregated social impacts and individual SPARCs remains explicit and transparent.

The outcome of the heat map is to provide a structured overview of potential social impact hotspots that the company *can* reference consistently during SPARC-level preparation. The heat map *shall* be refreshed periodically as new information becomes available or change occurs.

Table 26 illustrates how a company *may* run a social impact heat map during its E&S method setup. It follows the preparation logic above by reviewing internal information, raw materials, applications, the company's own operations, and potential positive benefits, before translating the findings into preliminary social impact hotspots to be considered during SPARC-level preparation.

Table 26: Building a heat map – illustrative example

Heat map step	Illustrative application
Example company context	An SME recycling company has two business lines. In the first, suppliers collect mixed plastic locally and manually sorts it in facilities in the EU and one African country. In the EU, the material is resold in the recycled plastic market; in the African country, it is converted into building materials. In the second business line, used textiles from Europe are sorted and resold near the African site by a group of women entrepreneurs.
DMA/ERM inputs	The company has not yet performed a double materiality assessment. Its ERM assessment identifies potential exposure to brand damage connected with known issues related to child labor.
Raw materials	The key raw materials are mixed plastics and mixed textiles. A preliminary review of public sources identifies social issues related to plastic collection around landfill sites in the African country, including child labor and health effects for collectors. The company maps these issues as potential impacts for value chain workers .
Application	The heat map does not flag issues in the use phase of the products (building materials and clothing resale).
Own organization	The company maintains the same standards in the African facilities as in the EU, with oversight from top management; no immediate worker rights issue is triggered. Seasonal workers in the EU are hired through a third party; although press reports flagged sector-level concerns, a check with the intermediary does not indicate issues for the hired workers.
Potential positive impact	The textile business unit has invested in a textile recycling business model that supports women entrepreneurship and improves access to affordable clothing. The company <i>should</i> therefore investigate relevant SPARCs for substantiated positive social benefits (SPARC-specific , identified at the SPARC level and used to complement the heatmap overview).
Heat map conclusion	- Child labor and health and safety for value chain workers are potential negative social impact areas for SPARCs in the African country. - Health and safety for the company's own workforce in the building material business line requires further investigation. - SPARCs linked to recycled textiles may generate positive social impacts, including accessibility and affordability for consumers, training and skills development for the community, and equal opportunities or women's empowerment.

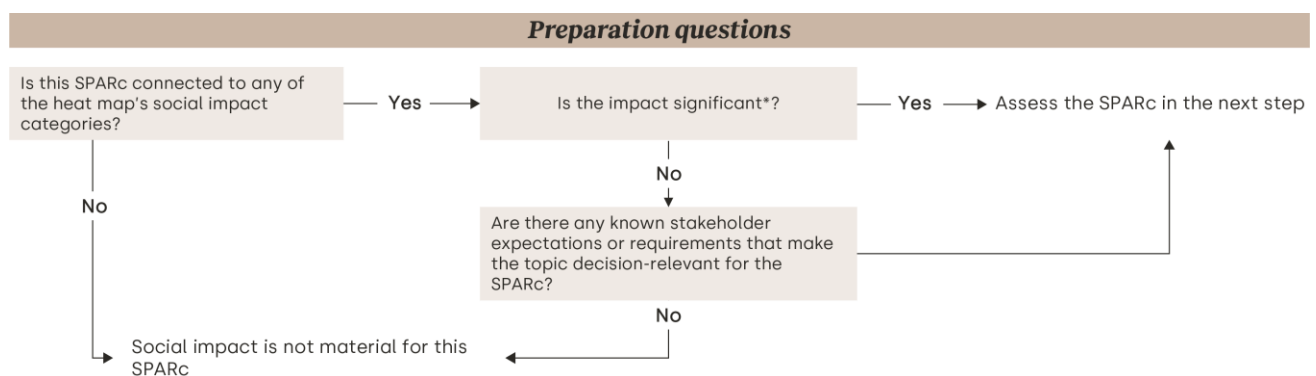
Disclosing the social impacts in scope of the heat map (consistent with the corporate due-diligence process and therefore disclosure practices) is what makes the flexibility of this approach credible: it allows external stakeholders to understand the scope of the assessment and enables method comparability across companies. When making external reference to PPRIA and portfolio performance, companies *shall* therefore disclose their PPRIA heat map (i.e., social impacts in scope), which *may* build on existing disclosure practices such as ESRS S1 to S4 or GRI. Companies with more advanced practices may go further and disclose additional information to reflect the full breadth of their approach.

B.1.2.2 SPARc-level preparation

When moving to SPARc-level preparation, the company uses the social impact heat map information to identify which impacts are relevant for the SPARc. It *may* complement this starting point with known SPARc-specific impacts (see heat map example) when they are supported by structural, significant and verifiable evidence.

The materiality filter for social impact assessment then confirms the relevant impact by using the decision tree on [Figure 18](#) combined with significance (with a minimum of moderate magnitude – see core method for more details).

Figure 18: Social impacts materiality filter guiding questions



Note: (*) confirm that the impact could reach at least moderate magnitude

Where the SPARc is connected to any of the heat map's social impact indicators, and the impacts are significant, the company takes the SPARc forward for further assessment for the relevant stakeholder group.

Where there is no evidence that the SPARc is connected to any impact indicators in the heat map, the company *may* filter the social impact theme out, provided it documents the rationale according to the requirements described in the method.

Additional considerations

The company *should* do the preparation at the SPARc level but *may* do it at any other organizational level (group of SPARcs up to the division level) that aligns with the company's structure, e.g., business unit, product line, product family.

Because social impacts are often context-dependent, preparation requires judgment. The company *should* consider whether impacts could reasonably affect the four stakeholder groups linked to the SPARc, taking into account the value chain position, geographic context, and nature of the product

or application. Where information is insufficient to reach a confident conclusion, the company *shall* treat the topic conservatively and take it forward for at least qualitative assessment.

B.1.3 Assessment

The social impact assessment evaluates whether and how a SPARc affects people across the value chain, focusing on the stakeholder groups identified as material during preparation. Given the current maturity of social impact methodologies and data availability, the assessment is scalable: it can be applied using qualitative evidence, semi-quantitative indicators, or more detailed sLCA approaches where available. It aims to generate a robust, transparent and decision-relevant understanding of specific material social impacts at the SPARc level.

The company assesses each social impact (indicator, see [Figure 16](#)) and the stakeholder group identified as material according to a decision tree considering the absolute impact using significance.

In practice, social impact metrics differ fundamentally from environmental metrics. While frameworks such as ISO 14075 provide a recognized structure for sLCA, they do not prescribe a single set of indicators, reference scales, or quantitative thresholds. Instead, they allow for a combination of qualitative descriptions and semi-quantitative rating approaches, often applied at the level of individual impact indicators. In addition, consistent quantitative social impact data is rarely available at a product or portfolio level, and different social topics typically rely on different sources of information. The SPARc social impact assessment therefore focuses on robust qualitative and semi-quantitative metrics that can support business decisions.

Qualitative metrics are commonly derived from documented evidence such as policies, management systems, audits, due-diligence processes, grievance mechanisms, and third-party assessments. Where available, the company *may* use semi-quantitative rating schemes drawn from established sLCA practices (see sLCA references 3.1.1.2) to increase consistency and transparency. Ongoing developments, including emerging guidance from initiatives such as the Taskforce on Inequality and Social-related Financial Disclosures (TISFD), will further strengthen metric availability over time.



Conducting assessment

For each SPARc, the company *shall* structure the assessment of social impacts according to the four given stakeholder groups, considering the relevant impact indicators for the identified stakeholder group. It follows a decision tree logic (see [Figure 19](#) and [Figure 20 below](#)) to align practices across companies and sectors.

These decision trees are based on the following questions:

- Have significant social impacts (actual or potential) been observed?
- Has a process to correct or mitigate the issues/risks been implemented?
- Has the process been successful, with evidence, in reducing the issue lasting and significantly?
- Is the mitigation part of a long-term sector commitment (e.g., with NGOs) AND does it address the root causes?

For positive impact, the company answers the following additional questions:

- Is the SPARc bringing a significant and structural social benefit?
- Is the social benefit measured and verifiable?
- Does the social benefit specifically address vulnerable social groups?

Interpreting performance

When assessing the significance of social impact indicators for the different stakeholder groups, the key references and standards listed above can help to interpret performance. While they may not cover all cases, they typically include locally stringent or international laws, recognized societal expectations, and guidance provided by established sLCA frameworks. Performance below these references indicates undesired situations, while alignment or improvement beyond them supports more favorable outcomes, which can provide additional support in determining whether impacts are significant.

Where more detailed sLCA-based assessments are available, the company *may* rate individual impact indicators and subsequently aggregate them into stakeholder-based indicator ratings in line with aggregation rules. This approach increases transparency regarding how the company identifies and measures impacts, while maintaining consistency with the overall method.

Mitigation actions

For social impact, mitigation actions may include long-term sectoral or NGO-based commitments where direct elimination of impacts is not immediately feasible. This reflects the structural nature of social impacts, which often involve limited direct control, multi-actor responsibility, and delayed outcomes. Where impacts cannot be fully eliminated, credible long-term engagement is therefore recognized as an interim signal of mitigation effort, provided it is substantive, sustained and demonstrably linked to the SPARc.

B.1.4 Evaluation

Rating social impacts uses decision trees applicable for both qualitative and semi-quantitative approaches. They ensure consistent interpretation across stakeholder groups, while reflecting differences in control, responsibility and influence along the value chain. They differentiate the company's own operations from upstream and downstream operations ([Figure 19](#) and [Figure 20](#)).

The company assesses each social impact indicator separately for each relevant stakeholder group. It then aggregates the results to provide the overall social impact rating.

Rating is differentiated across stakeholder groups based on the significance of impact on affected stakeholders.

The company assesses its own operations more strictly, in line with social LCA best practices, as impacts are directly under company control and the magnitude of impact is limited to the company scope. As a result, a positive rating is capped to avoid treating baseline compliance or standard company practices as positive impact and to prevent greenwashing at the SPARc level.

PPRIA treats data gaps and uncertainties (“unknown”, see also Step 2.3 Treatment of data limitations) explicitly to avoid masking potential risks while acknowledging current data limitations.

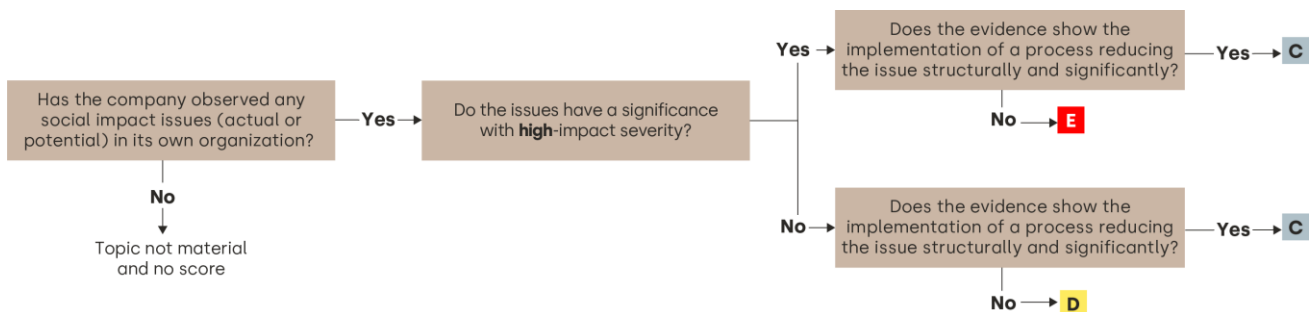
Rating rules

The company assesses each social impact indicator separately for each stakeholder group. A given SPARc may therefore receive different ratings across indicators and stakeholder groups.

The company’s own operations (Figure 19)

For workers in the company’s own operations, rating reflects the highest expectations, as impacts are fully within company control. Where social issues are present, the maximum achievable rating is C, regardless of mitigation measures. Positive impacts are not recognized for this group, as they are typically limited in scale and risk being perceived as greenwashing in internal operations.

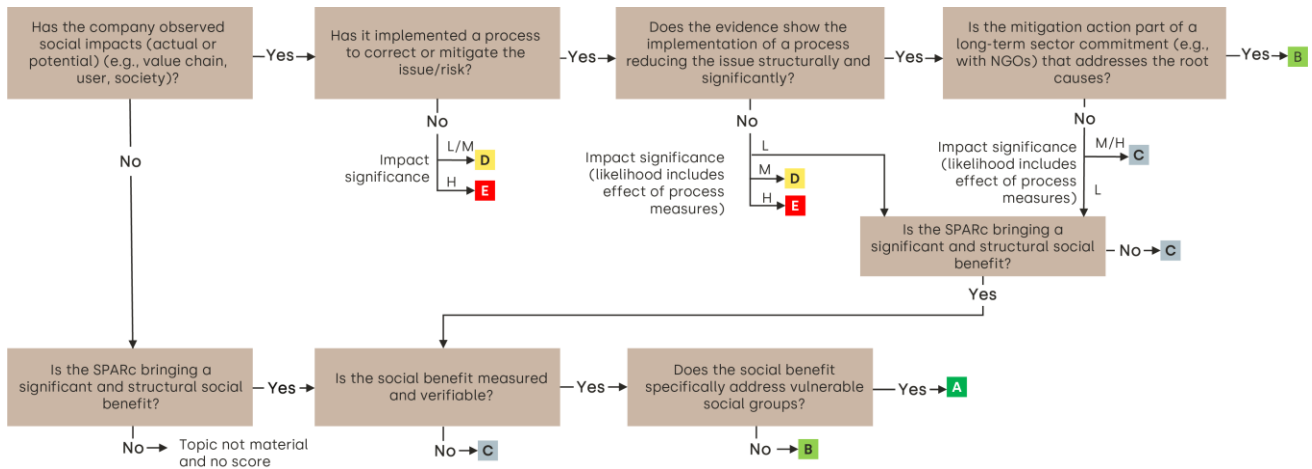
Figure 19: Social impact decision tree for impact on workers from a company’s own operations



Value chain, communities and consumers (Figure 20)

For value chain workers, affected communities, and consumers, rating reflects indirect influence, collaboration and long-term engagement (as opposed to the full control in the company’s own operations). Demonstrable, structural improvements are recognized. Significant progress on addressing root causes may achieve a B rating, even if issues are not fully eliminated, provided there is clear evidence of the effectiveness of the measure implemented and that a long-term plan addressing the root causes is in place.

Figure 20: Social impact decision tree for impact on workers in the value chain (upstream and downstream), affected communities, and consumers



Recognition of positive impacts

Positive impacts are only recognized where no medium or high social issues remain after mitigation. Benefits must be significant, structural and supported by verifiable evidence, with additional weight given to impacts affecting vulnerable groups.

Figure 21: Social impact rating

Human rights; working conditions; equal opportunities for workers in direct operations Qualitative metric scope: all worker categories, limited by desired granularity level					
The company's own workers	E	D	C	B	A
	Issues present that have high impact significance AND The company does not have evidence showing the implementation of a process reducing the issue structurally and significantly	Low/medium impact significance issues present AND The company does not have evidence showing the implementation of a process reducing the issue structurally and significantly	Issue present but active process in place that shows the company is eliminating the issue in a structural way	C is the highest rating available for the company's own workforce social impact.	
Human rights; working conditions; equal opportunities for all Qualitative metric scope: all stakeholder relevant categories, limited by desired granularity level					
Value chain workers, consumers and communities (each scored individually)	E	D	C	B	A
	The company has observed social impact issues or significant risks (high impact significance)	The company has observed social impact issues or significant risks (medium impact significance, which can be due to reduced likelihood as a result of mitigation implemented)	The company has observed social impact issues or significant risks AND - It has a mitigation process in place showing the lasting and significant reduction of the social issue in a measurable and verifiable way OR - The impact significance is low	The company has observed social impact issues or significant risks AND It has a process in place showing the reduction of the social issue in a measurable and verifiable way, addressing the root causes AND The mitigation is part of a long-term sector commitment (e.g., with NGOs)	–
	–	–	OR A significant and structural social benefit is present that is not yet measured and verifiable AND There are no social impact issues and the company has not observed medium/high significance risks	The SPARc is bringing a significant and structural social benefit that is measured and verifiable AND There are no impact issues and the company has not observed any medium/high significance risks or unaddressed low significance risks AND The SPARc does not meet requirements for an A	The SPARc is bringing a significant structural social benefit that is measurable and verifiable and specifically addresses high impact significance with socially vulnerable groups AND The company has not observed any social impact issues or significant risks

Aggregation of indicators

A stakeholder-level rating provides key insight for the SPARc performance card and informs Step 3 (risks and opportunities). For usability, the company aggregates the results into an overall social impact rating, following the topic-level aggregation of multiple indicators guidance (Step 2).

Appendix C Nature thematic guideline for Step 2

The nature thematic guideline assesses how products and portfolios interact with natural systems across the full value chain, focusing on impacts that may be material in magnitude and relevant for product portfolio sustainability performance management decisions. It supports companies in identifying where products contribute to pressures on nature or enable nature-positive outcomes.

The nature thematic guideline includes four topics:

- Water use;
- Pollution;
- Land- and sea-use change (for a future version of the method);
- Invasive species (for a future version of the method);

C.1 Water use

Freshwater resources are under increasing global pressure due to population growth, industrial demand, pollution and climate change. According to the United Nations Sustainable Development Goals (SDG 6) and frameworks such as the Taskforce on Nature-related Financial Disclosures (TNFD), water scarcity and declining water quality represent systemic environmental and societal risks, with direct implications for ecosystems, communities and economic activity. Water stress is inherently local in nature but globally interconnected through supply chains, making responsible water use and stewardship a critical dimension of sustainable value creation.

Water use is therefore both a shared environmental constraint and a strategic business dependency. It is a critical operational input and a local environmental boundary that can materially influence product performance, cost structures, license to operate, and long-term portfolio resilience. Water use impacts differ significantly by region, production process, supply chain configuration, and use phase, making product- and SPARc-level visibility essential for informed product portfolio sustainability performance management.

The water use topic focuses on minimizing water use, including both freshwater withdrawal and water consumption, with particular attention to regions experiencing water stress. By identifying where water use impacts are material across the value chain, the assessment enables companies to anticipate regulatory and physical risks, prioritize mitigation where exposure is highest, and steer portfolios toward solutions that reduce pressure on stressed water systems. In doing so, water use performance becomes a strategic lever for resilience, competitiveness and responsible growth.

In the PPRIA Method, water use impacts include the consideration of **water scarcity** – the interaction between water consumption and the local water stress context in which that consumption occurs. This reflects that water use significance depends on the availability of water resources in the relevant region. As such, identical levels of water consumption may lead to materially different impacts depending on geographic context.

C.1.1 Scope, standards and definitions

Scope

This guideline applies water use to the SPARc across the full value chain stages, taking a cradle-to-grave perspective and, where feasible, recognizing cradle-to-cradle principles.

In scope:

- Freshwater withdrawal;

- Water discharge;
- Water consumption;
- Water stress;
- Water scarcity.

Out of scope:

- Water quality and pollution-related impacts (covered under PPRIA Pollution)

Water use impacts are assessed across three life-cycle stages for the SPARc:

- Upstream (supply chain and raw materials);
- A company's own operations;
- Downstream (use phase and end-of-life).

Key references and standards

This guideline aims leverages and aligns with definitions from established standards, including:

- GRI 303: Water and Effluents;⁷⁴
- Taskforce on Nature-related Financial Disclosures (TNFD) Glossary of terms;⁷⁵
- EFRAG ESRS E3 – Water;⁷⁶
- EFRAG ESRS E4 – Biodiversity (marine biodiversity and ecosystem impacts);⁷⁷
- EFRAG ESRS E5 – Resource use and circular economy (marine resource use);⁷⁸
- ISO: Guidance on water terminology;⁷⁹
- Alliance for Water Stewardship (AWS) Standard.⁸⁰

The following tools can support screening and prioritizing site-level water stress and water use during preparation and assessment:

- WWF Water Risk Filter;⁸¹
- World Resources Institute (WRI) Aqueduct 4.0;⁸²
- Integrated Biodiversity Assessment Tool (IBAT) – IBAT Alliance tool on water (for downstream and LCA-based screening);⁸³
- Third-party commodity lists such as the SBTN High Impact Commodity List;⁸⁴
- Industry water stress databases, where they exist.

Definitions

This guideline adopts the following definitions, drawn from GRI 303⁸⁵ and the TNFD Glossary of key terms,⁸⁶ with GRI definitions building on ISO 14046⁸⁷ and adapted for the purpose of PPRIA.

Table 27: Water use terms and definitions

Term	Definition
Freshwater	All permanent and temporary freshwater bodies, as well as saline water bodies that are not directly connected to the oceans. ⁸⁸
Water withdrawal	The total volume of water drawn into the boundaries of the undertaking from all sources for any use during the reporting period. ⁸⁹

Term	Definition
Water discharge	"The total volume of effluents, used water, and unused water" leaving the boundaries of the organization "and released to surface water, groundwater, seawater, or a third party, for which the organization has no further use, during the reporting period." ⁹⁰
Water consumption	The volume of water drawn into the boundaries of the undertaking/facility and not discharged back to the water environment or a third party during the reporting period.⁹¹ Sum of all water that has been withdrawn and incorporated into products, used in the production of crops or generated as waste, has evaporated, transpired, or been consumed by humans or livestock, or is polluted to the point of being unusable by other users, and is therefore not released back to surface water, groundwater, seawater, or a third party over the course of the reporting period.⁹² <i>Water consumption = water withdrawal – water discharge⁹³</i>
Water stress	The inability to meet human and ecological demand for freshwater due to insufficient supply, poor water quality, or limited access (i.e., a broader concept than volumetric water scarcity). ⁹⁴
Water scarcity (for product sustainability performance management purposes)	Operational definition used in PPRIA: The share of a SPARc's (or product's) water consumption (m ³) that occurs in areas under high water stress, as defined by ESRS E3 - Water⁹⁵ (used as the geographic screen). This is calculated by allocating facility and value chain water consumption to SPARcs/products using the portfolio allocation rules applied elsewhere in the method (e.g., by production volumes, mass balance, or other documented drivers)
Key raw materials	See definition in Appendix I Terminology

C.1.2 Preparation

SPARc-level preparation determining if water use is material for the SPARc

The individual SPARc preparation step assesses whether water use is material for the given SPARc (materiality filter), using the preparation questionnaire ([Table 28](#)).

The water use preparation step also serves the purpose, where materiality is confirmed, to:

- Identify key water-related data needs for subsequent assessment steps;
- Validate the SPARc segmentation from a water use and water stress perspective;
- Provide an initial view of potential water hotspots across the portfolio.

Table 28: Water use materiality filter questions (Step 2 preparation questions)

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the SPARc key raw materials.⁹⁶	a) Are there any signals, based on available evidence, indicating that at least one SPARc in the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc in the chosen organizational level?

If the answer to any question is “yes” or “unknown”, the water use topic is considered material for the SPARc and the company takes it forward for assessment, at minimum qualitatively.

C.1.3 Assessment

Water use impacts are inherently context-dependent and require the consideration of multiple factors:

- Intrinsic performance (e.g., water consumption levels);
- Regional water stress context;
- Presence of water stewardship practices (e.g., AWS certification);
- Comparison to reference benchmarks.

These factors are operationalized through life-cycle-specific indicators, set out below.

C.1.3.1 Indicators

Water use impacts are assessed using indicators differentiated by life-cycle stage to reflect differences in impact relevance as well as data availability and control across the value chain ([Table 29](#)).

Table 29: Water use indicators

Upstream water use impact	• Water consumption • Water withdrawal where available • Water stress for country or regions of origin
Water use impacts of the company's own operations	• Water withdrawal • Water discharge • Water consumption • Water stress for relevant operating regions
Downstream water use impact	• Water consumption (this includes potential water savings enabled by use of the SPARc) • Water stress of downstream regions

Companies typically have the highest level of control and data availability for their own operations, which enables more detailed measurement, management and improvement of water-related impacts. In this context, focusing on water consumption alone may mask material operational vulnerabilities, as low consumption can coexist with high water withdrawal and discharge volumes, increasing exposure to water availability constraints and regulatory limits.

Upstream and downstream stages, by contrast, often involve shared responsibility, indirect influence, and greater data uncertainty. Companies have very little access to detailed downstream water use metrics. PPRIA metrics reflect this. In addition, assessments for these stages may rely more on screening tools, reference data, and qualitative judgment, while still providing decision-relevant insight.

Use of alternative water use assessment methodologies

While the method provides structured qualitative, semi-quantitative, and quantitative approaches, the company *may* also leverage established external methodologies for water use assessment

where appropriate. These include, for example, approaches such as AWARE (Available Water Remaining)⁹⁷ or other life-cycle-based water scarcity indicators.⁹⁸

The company *can* apply such methods as an alternative or complementary approach to the rating table-based assessment, particularly where they provide more robust or decision-relevant insights for the specific context.

Where the company uses alternative methodologies for the water use assessment, the company needs to fulfill the requirements laid out in the method to demonstrate comparability in the approach.

C.1.3.2 Metrics

Based on the indicators set out above, the company *may* assess water use impacts using qualitative questions, quantitative metrics, or a semi-quantitative combination of both.

Where sufficient data is available, the company *should* measure indicators quantitatively. Where data are limited, it *may* apply qualitative or semi-quantitative approaches.

Qualitative assessment

The questions in [Table 30](#) support a structured qualitative assessment of water use impacts.

Table 30: Water use qualitative assessment questions

Indicator	Questions
Upstream water use impact	- Is the water consumption of the SPARc's upstream footprint significantly higher or lower than the benchmark (e.g., considering key raw materials and water-intensive processes)? - Does the water consumption of the SPARc's upstream footprint occur in regions of water stress?⁹⁹ - Complementary: For suppliers located in regions of water stress, are water stewardship or mitigation measures, practices or plans in place (e.g., AWS certification) and have they been proven to be effective?*
Operational water use impact	- Is the water consumption of the SPARc in the company's own operations significantly higher or lower than the benchmark (e.g., considering water-intensive processes)? - Does the water consumption of the SPARc's operational footprint occur at sites located in regions of high/medium/low water stress? - Is the company or site a significant water user (e.g., water withdrawal) in the local watershed or area (e.g., based on site water intensity compared to the watershed average)? - Complementary: For sites located in regions of water stress, are water stewardship or mitigation measures, practices or plans in place (e.g., AWS certification) and have they been proven to be effective?*
Downstream water use impact	- Is the water consumption of the SPARc in the use phase significantly higher or lower than the benchmark? - Does the SPARc enable reductions in water consumption compared to the benchmark (e.g., through reuse, water recycling, or water purification)? - Does the water consumption associated with the SPARc in the use phase occur in regions of high/medium/low water stress?

*Effective water stewardship or mitigation measures *shall* be justified by significant and verifiable evidence of impact.

Examples

- Downstream impacts enable water treatment and drinking water purification;

- Reduced water use in production through evolving growing methods – tomatoes/canola seeds, for example – drought resistance, varieties suitable for less water and processing; varieties with easy to clean properties.

Quantitative assessment

Where data is available, the metrics below support a structured quantitative assessment of water use impacts.

Table 31: Water use quantitative assessment metrics

Indicator	Metrics
Upstream water use impact	• Water consumption (m³) • Water withdrawal (m³) where available • Water stress score for country or region of origin (e.g., baseline water stress under the WWF Water Risk Filter¹⁰⁰ and similar for WRI Aqueduct¹⁰¹)
Operational water use impact	• Water withdrawal (m³) • Water discharge (m³) • Water consumption (m³) • Water stress score for relevant operating regions (e.g., baseline water stress under the WWF Water Risk Filter¹⁰² and similar for WRI Aqueduct¹⁰³)
Downstream water use impact	• Water consumption (m³) • Water stress score for relevant downstream regions (e.g., baseline water stress under the WWF Water Risk Filter¹⁰⁴ and similar for WRI Aqueduct¹⁰⁵)

Semi-quantitative assessment

When a fully quantitative assessment is not possible, a semi-quantitative approach consists of a partial quantification complemented by qualitative approach. This could typically include:

- Where the company can quantify either the water figures OR the water stress of the country of origin.
- Where only a part of the value chain of the SPARc (upstream/own operations/downstream) is assessed quantitatively, the rest only qualitatively. For example: the product of the SPARc enables water savings in the application of X m³ water / Functional Unit in comparison to the market standard. Other phases of the life cycle are only assessed qualitatively.
- A value chain stage, where only some relevant indicators are quantified (e.g., the company has not quantified all the indicators for its own operations, such as only consumption but not withdrawal and discharge).
- Where only an intermediary indicator is known: the company can quantify water consumption and water withdrawal but not the country of origin.
- Where indicators are quantified but with a high uncertainty, e.g., using a range, proxy or expert judgment.

C.1.4 Evaluation and aggregation

The company rates water use using rating table-based logic (defined in Step 2), reflecting regional variability of water stress, data limitations across the value chain, and the role of management practices and mitigation measures.

Water use impacts are inherently context-dependent and require the consideration of multiple factors. The decision trees guide the integration of the following in a harmonized structured, step-by-step manner:

- Intrinsic performance (e.g., water consumption levels);
- Regional water stress context;
- Presence of water stewardship practices (e.g., AWS certification¹⁰⁶);
- Comparison to reference benchmarks.

They apply consistently for qualitative, semi-quantitative, and quantitative approaches and are specific for upstream, a company's own operations, and downstream stages. PPRIA treats data gaps and uncertainties ("unknown") explicitly to avoid masking potential risks while recognizing current data maturity constraints.

Mitigation actions are only considered in the scoring when they are demonstrably effective, which means they are justified by significant and verifiable evidence of impact.

Treatment of water use savings

In the rating tables, the company interprets water use savings (i.e., lower consumption than the benchmark) relative to local water stress: the same reduction has a greater effect in water-stressed regions than in low-stress regions.

The company therefore interprets downstream water savings enabled by the use of the SPARc as a positive contribution where the SPARc demonstrably reduces water consumption in stressed regions. For upstream and a company's own operations, where they exercise greater control, strong positive performance requires both performance below the benchmark and evidence of mitigation or stewardship actions proportionate to the local water stress context.

C.1.4.1 Rating upstream water use impact (rating table)

Table 32: Water use evaluation rating table for upstream

Water stress region? (WWF indicator > 3.4)	Supplier engagement on water proven effective?	Lower water consumption – significance ≥ M	Similar water consumption – significance = L	Higher water consumption – significance ≥ M
No	-	A	C	D
Yes	Yes	B	C	D
Yes	No	C	D	E
Unknown	-	C	C	D

Note: Use in conjunction with the guidance on qualitative, quantitative and semi-quantitative metrics.

Treatment of data gaps and uncertainty

For upstream water use impacts, information on country of origin and associated water stress is often unavailable at sufficient resolution, particularly in early applications of the method. Classifying such cases as worst performance would conflate the lack of information with poor performance, undermining the ability to differentiate impacts across SPARcs in the portfolio.

The guideline therefore applies a conservative and pragmatic treatment of uncertainty, recognizing data gaps without disproportionately penalizing products where information is still maturing. We encourage companies to progressively improve upstream transparency, including on country of origin and water stress exposure. The treatment of “unknown” cases may be revised in future SPARc assessment as data availability and assessment maturity increase.

C.1.4.2 Rating the water use impact of the company’s own operations (rating table)

Table 33: Water use evaluation rating table for a company’s own operations

Water stress region? (WWF indicator > 3.4)	Significant water user in watershed?	Proven mitigation / water stewardship?	Lower water consumption – significance ≥ M	Similar water consumption – significance = L	Higher water consumption – significance ≥ M
No	-	-	A	C	D
Yes	No	-	B	C	D
Yes	Yes/unknown	Yes	B	C	D
Yes	Yes/unknown	No	C	D	E
Unknown	-	-	C	D	E

Note: Use in conjunction with the guidance on qualitative, quantitative and semi-quantitative metrics.

Treatment of data gaps and uncertainty

Companies generally have a high degree of control over water use in their own operations, supported by established operational data, site-level monitoring, and management systems, so the guideline holds this value chain stage to stricter expectations for data availability and transparency.

Missing or incomplete data on water withdrawal, consumption, discharge, or site-specific water stress is therefore treated as a material limitation: the guideline applies a more conservative treatment of “unknown” cases to avoid overstating performance where operational visibility is lacking.

C.1.4.3 Rating downstream water use impact (rating table)

Table 34: Water use evaluation rating table for downstream

Water stress in use phase (WWF indicator > 3.4)	Lower consumption/ improvement in water availability – significance ≥ M	Similar consumption/ improvement in water availability (incl. lower, significance = L)	Higher water consumption / reduction in water availability – significance ≥ M
Yes	A	C	E
No	B	C	D
Unknown	B	C	D

Note: Use in conjunction with the guidance on qualitative, quantitative and semi-quantitative metrics.

Treatment of data gaps and uncertainty

Downstream water use impacts for the SPARc arise primarily during the use and end-of-life phases and depend heavily on application context, user behavior, and local context – factors largely outside companies' direct control. Companies often derive downstream data from use-phase assumptions, scenario-based estimates, or reference data, rather than direct measurement.

The company interprets these results against functional performance and regional water stress, since products enabling water savings can have materially different effects depending on where and how they are used. As with upstream impacts, companies *should* progressively refine downstream assumptions and data as product knowledge, use-phase evidence, and market maturity increase.

C.1.4.4 Aggregation

The Step 2 evaluation rule (topic-level aggregation of multiple indicators) applies.



C.2 Pollution

Pollution is one of the most pervasive and cross-cutting pressures on natural systems and human health.

In this context, emissions refer to any substances or forms of energy (stressors such as heat, noise, light, etc.) released to the environment (air, soil, water and other natural component).

Emissions become pollution when these substances are released into the environment at levels that cause adverse impacts on human health, living organisms or the environment. For example, it is released at a rate faster than it can be dispersed, diluted, decomposed or stored in some harmless form, or it exceeds the quality or quantity criteria established for certain environmental media. We have adapted this definition from multiple sources for use in PPRIA Method.¹⁰⁷ These emissions releases arise across all sectors and product life-cycle stages.

Pollution contributes to declining human health, biodiversity loss, and ecosystem degradation, all of which are increasingly material to business resilience and long-term value creation.¹⁰⁸ For companies, pollution impacts can translate into regulatory exposure, operational constraints, reputational risk, and reduced flexibility in portfolio and market choices. PPRIA's pollution topic supports product portfolio sustainability performance management decisions, including:

- Identifying products, technologies or value chain stages associated with material pollution impacts;
- Supporting the prioritization of innovation, substitution, or redesign efforts;
- Strengthening forward-looking regulatory readiness and risk management across regions;
- Recognizing products that contribute to absolute reductions in existing pollution.

Assessing pollution at the product and portfolio level enables companies to identify the life-cycle stages, materials and use patterns that drive the most significant pollution impacts. This supports more targeted mitigation and innovation efforts and enables more informed decision-making on product design, sourcing and portfolio strategy.

C.2.1 Scope, standards, definitions, indicator structure and pollutant list

Scope

The pollution guideline is part of the PPRIA nature theme. It addresses air (non-GHG), soil, water and other forms of pollution, including different forms of energy release (e.g., noise, light). It includes the positive (i.e., contribution to pollution reductions) and negative impacts of a SPARc relative to pollution. The company assesses pollution impacts across three life-cycle stages (cradle-to-grave):

- Upstream (raw materials and supply chain);
- The company's own operations;
- Downstream (use phase and end-of-life).

The following are out of scope:

1. **Waste management:** The circular economy thematic guideline covers waste quantities, material efficiency, and resource flows (e.g., kilograms of waste generated). The pollution topic focuses on environmental contamination resulting from waste treatment and disposal. It does not assess waste generation as a resource-efficiency metric.
2. **Water management:** The water topic within the nature thematic guideline covers water withdrawal, consumption, availability and water stress (quantity). The pollution topic focuses on contamination of water bodies through discharges and runoff (water quality impacts).

3. **Air emissions:** The climate change mitigation thematic guideline covers greenhouse gas (GHG) emissions. The pollution topic covers impacts of non-GHG air emissions that affect local air quality, human health and ecosystems (e.g., particulate matter, NO_x, SO_x, VOCs).
4. **Chemical safety:** The chemical safety topic covers the intrinsic properties of substances and their *potential* risk. The company *can* use these as an indicator to identify where pollution risks may lay in the portfolio. The pollution topic covers the actual release/removal of a substance in a quantity that causes adverse effects on human health or the environment.

Key references and standards

This guideline aligns with and draws on established international frameworks and standards, including:

- United Nations Economic Commission for Europe (UNECE) Convention on Long-range Transboundary Air Pollution (LRTAP);¹⁰⁹
- OECD Harmonized List of Pollutants for Global for Pollutant Release and Transfer Registers (PRTR)¹¹⁰ – and relevant national PRTR;
- UNEP & FAO *Global Assessment of Soil Pollution Report*;¹¹¹
- Back to Blue Initiative's *Roadmap to Address Ocean Pollution*;¹¹²
- World Health Organization (WHO) guideline on air pollution and human health;¹¹³
- Relevant global conventions;
- Taskforce on Nature-related Financial Disclosures (TNFD);¹¹⁴
- Global Reporting Initiative (GRI) draft Pollution Standards;¹¹⁵
- IPBES Global Assessment on Biodiversity and Ecosystem Services;¹¹⁶
- WBCSD [Nature Metrics Portal](#).

Definitions

Pollution is specific to the media impacted. [Table 35](#) provides the operational definitions used in PPRIA.

Table 35: Pollution definitions

Term	Definition
Emissions	Any substances or forms of energy (stressors such as heat, noise, light, etc.) released to the environment (air, soil, water and other natural compartment).
Pollutants	Substances or forms of energy that, when present in the environment at harmful concentrations or levels, cause or contribute to adverse effects on human health, ecosystems, environmental quality, or the intended use of environmental media. They are typically air pollutants, nutrient pollutants, toxic pollutants or solid waste. ¹¹⁷
Air pollution	The presence of physical, chemical or biological substances in indoor or outdoor air at concentrations that adversely affect human health, ecosystems, or environmental quality. Common pollutants include particulate matter (PM _{2.5} , PM ₁₀), nitrogen oxides (NO _x), sulphur dioxide (SO ₂), ozone (O ₃), and volatile organic compounds (VOCs). ¹¹⁸
Water pollution	The presence of physical, chemical, biological, thermal, or radiological substances or energy in surface waters (including rivers, lakes and transitional waters), groundwater, and coastal and marine

Term	Definition
	waters, at concentrations that adversely affect water quality, ecosystem integrity, human health, or beneficial use. ¹¹⁹
Soil pollution	The presence of physical, chemical or biological substances in the soil at concentrations that pose risks to human health, biodiversity or ecosystem functions. It can arise from direct releases to soil, including effluents, improper waste disposal, pesticide use, accidental release, deposition from other environmental media where relevant, or others. ¹²⁰
Other forms of pollution	The release of a form of energy that negatively affects environmental quality or human health or well-being. These include noise pollution, light pollution or vibration pollution. ¹²¹

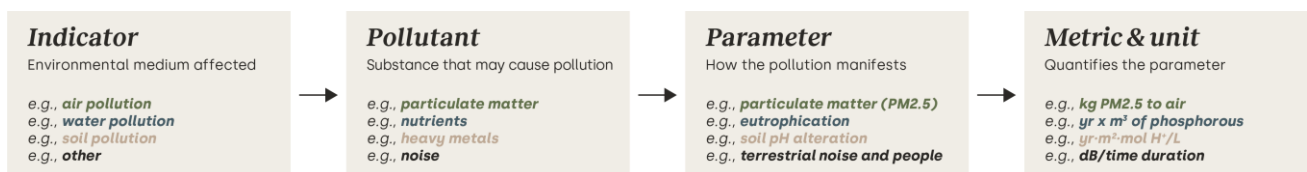
Pollution indicator structure

Pollution impacts are often local, cumulative and not substitutable. The company assesses them across all life-cycle stages using four indicators that reflect the environmental media affected by the release of emissions.

Indicators

- Air pollution;
- Water pollution;
- Soil pollution;
- Other types of pollution (e.g., noise, light).

Figure 22: PPRIA indicator, pollutant, parameter, and metric and unit structure



Pollution metrics are specific to the media and the pollutants, and depend on how the pollution materializes in practice (parameters). Each pollution indicator may include multiple pollutants and their corresponding parameters, capturing different aspects of pollution associated with a given pollutant. It is essential to identify the pollutants within scope for the SPARc, their parameters and metrics as early as possible in SPARc-level preparation. The company then uses this structure throughout the assessment and evaluation of this guideline. Further details are available in the assessment paragraph.

Industry standards and regulatory requirements, scientific literature and LCA-based indicators, product characteristics, internal operational knowledge and value chain analysis, as well as existing measurement and monitoring data (non-exhaustive), inform the selection of parameters and metrics.

The list of pollutants

Understanding pollution in the context of a SPARc requires more than a generic checklist: it demands a tailored, systematic approach that reflects the realities of a company's specific activities and impacts.

Pollution is highly context-specific: the type and relevance of pollutants vary significantly depending on the sector, product, process, geography, and life-cycle stage. Assessing the positive and negative impacts of a SPARc requires understanding how pollution occurs in practice – including the affected media, the specific substances involved, their emissions pathways and ultimate environmental fate, and the conditions under which they become pollutants.

Defining a single, universal list of pollutants to assess across sectors would inevitably include substances irrelevant to a given company, while overlooking others that are critical to specific SPARcs. This would dilute the assessment and divert the focus away from material impacts.

In practice, companies often manage pollution-related information in fragmented ways (e.g., through environmental, health and safety systems; waste data; permits; LCA studies; supplier questionnaires, etc.). This fragmentation makes it difficult to build a consistent, organization-wide view of pollution risks. Over time, building and progressively enriching a company-wide list of relevant pollutants and their associated parameters will help the company systematically identify material pollution issues.

To operationalize the pollution assessment in a way that is both broadly applicable and context meaningful, PPRIA requires the company to develop its own PPRIA list of pollutants. This **company-specific** pollutant list defines the scope of pollutants systematically considered.

Companies *may* scan pollutants broadly across operations, upstream and downstream activities, considering both the point of emissions and the downstream fate of pollutants in the environment, where characterized. The pollutant list has two levels:

1. A **core list** of pollutants assessed consistently across the portfolio (PPRIA core pollutant list, disclosed externally);
2. **Segment-specific lists** of more targeted pollutants assessed only where relevant to particular SPARcs (managed internally).

Disclosing the core pollutant list is what makes the flexibility of this approach credible: it allows external stakeholders to understand the scope of the assessment and enables method comparability across companies. When making external reference to PPRIA and portfolio performance, the company *shall* therefore disclose its PPRIA core pollutant list, which may build on existing disclosure practices such as ERS E2 or GRI. Companies with more advanced practices *may* go further and disclose additional information, such as the total number of pollutants monitored, to reflect the full breadth of their approach.

Companies do not need to assess every pollutant against every product. The approach is scalable: start with what is already known and expand over time. The core pollutant list ensures consistency and comparability across the organization; the segment-specific list provides the flexibility to capture what is material in a given context.

This two-level structure acts as a structured filter, enabling effective action, focusing efforts on what matters most, ensuring a consistent approach across the organization for all SPARcs, and reducing the risk of blind spots. **Building and maintaining the pollutant list is a foundational element of the pollution guideline and is therefore mandatory.**

C.2.2 Preparation

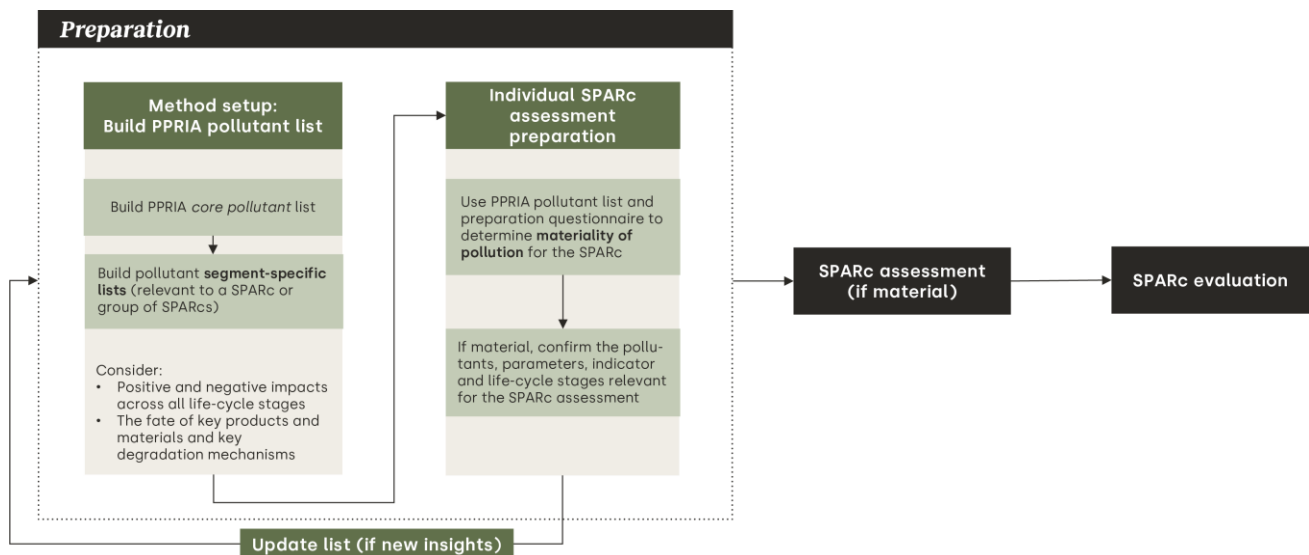
The preparation step assesses whether pollution is material for a given SPARc. This preparation has two steps:

1. During the method setup, develop the PPRIA pollutant list at the portfolio level using reporting and product data, where available, including:
 - The PPRIA core pollutant list – applicable to all SPARcs

- The segment-specific lists – specific to a (or a group of) SPARc(s)
2. During the individual SPARc preparation, determine the materiality of pollution for the SPARc by identifying potential negative and positive impacts using the preparation questionnaire and the pollutant list across the full life cycle.

When the company has confirmed pollution as material to the SPARc, it adds the indicator and parameters, by life-cycle stages to the pollutants list.

Figure 23: Pollution preparation logic



C.2.2.1 Method setup: building the pollutant list

The company establishes the pollutant list when it sets up the method. It *should*:

- Be specific to the company's activities and value chain;
- Include pollutants relevant to soil, air, water, and other categories
- Apply across all life-cycle stages (upstream, its own operations, downstream)

Building the pollutant list is an iterative process. The company enriches the initial list established during method setup over time as SPARc-level analyses identify additional pollutants or evolving exposure profiles – making it relevant and useful over time. Building a structured process to ensure the list stays up to date is a best practice.

The list typically draws on:

- External authoritative references (e.g., WHO, UNECE LRTAP, TNFD – see Key references and standards);
- Scientific frameworks (e.g., planetary boundaries, to ensure the adequate capturing of pollutants of systemic environmental relevance);
- Internal knowledge (e.g., operational, regulatory and technical expertise);
- Known stakeholder concerns.

The process should further align with regulatory exposure, operational realities, and reputational risk. A practical starting point is the scope of pollutants the company already reports on externally, to be expanded over time. As maturity increases, best practices suggest screening key products and materials and understanding their fate across the full life cycle (cradle-to-grave or cradle-to-cradle), including degradation mechanisms, where known.

Table 36 provides examples derived from multiple authoritative sources. The company adapts and complements them with factors linked to specific industries, applications, supply chains, manufacturing processes, or other SPARc characteristics – including material degradation during intended or unintended use.

It can be practical to document, within the pollutant list, each pollutant's relevant media, parameters, and recommended metrics, as this reduces preparation time for individual SPARc assessments.

Table 36: Example list of common pollutants

Indicator	Pollutant, activities or monitoring systems relevant to map contribution or reduce of pollution for a SPARc
Applicable to air, water and soil indicators	- Heavy metals (lead, mercury, cadmium, arsenic, etc.) - Persistent, bioaccumulative, toxic substances – persistent organic pollutants (POPs)/persistent, bioaccumulative and toxic substances (PBTs)/pseudo-persistent organic substances¹²²
Air pollution (non-GHG)	- Nitrogen oxides (NOx) (deposit as nitrogen on land and water) - Ammonia (NH3) (deposit as nitrogen on land and water, mostly relevant to agriculture) - Particulate matter (PM2.5 and PM10, incl. airborne microplastics) or for water – suspended solids from solid materials (e.g., microplastics) - Volatile organic compounds (VOC or NMVOC) - Sulphur oxides (SOx) - Carbon monoxide (CO) - Black carbon (BC) - Hazardous air pollutants (HAPs) - Organic carbon (OC)
Water pollution	- Nutrients and nutrient imbalance (e.g., fertilizers, organic matter) - Pharmaceuticals - Oil - Particulate matter (e.g., plastics, micro- and nano plastics) - Temperature alterations (thermal pollution) - pH alterations (water acidification) - Radioactivity
Soil pollution	- Particulate matter from solid materials (e.g., microplastics) and emerging contaminants - Soil pH alterations and salinity levels - Nutrient imbalances (excess or deficiency, incl. from waste) and toxic effects on soil microorganisms - Soil organic matter changes - Organic waste accumulation and decomposition - Agrochemical residues (non-toxic at certain levels) - Pollution from waste management practices/effectiveness - Radioactivity
Other types of pollution (incl. noise, light, etc.)	Example: noise (inspired from multiple sources including TNFD, WHO, EU environmental noise directive)¹²³ - Decibel levels¹²⁴ - Duration of noise events - Proximity to sensitive receptors/annoyance/disturbance levels
The company <i>should</i> consider additional pollutants, such as electromagnetic fields, vibration or emerging contaminants, according to its context, bearing in mind the latest science knowledge and monitoring methods.	

C.2.2.2 SPARc-level preparation: determining if pollution is material for the SPARc

The individual SPARc preparation step assesses whether pollution is material for the given SPARc (materiality filter). It requires mapping to potential negative and positive impacts across the full life cycle for a SPARc. This requires using the preparation questionnaire ([Table 37](#)) and the pollutant list to determine whether pollution indicators are material for the SPARc, considering both negative and positive pollution-related impacts, consistently across all life-cycle stages.

As maturity increases, best practices suggest screening key products and materials and understanding their fate across the full life cycle (cradle-to-grave or cradle-to-cradle), including degradation mechanisms and degradants, where known.

The outcome of the SPARc-level preparation step is the identification of which pollutants from the pollutant list are material, together with their parameters and indicators by life-cycle stages.

Table 37: Pollution materiality filter questions

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least <i>moderate magnitude</i> in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the SPARc key raw materials¹²⁵.	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc at the chosen organizational level?

Relevant sources to consider include: key raw materials (see glossary for definition), manufacturing/processing, approaching permit pollution limits, contribution to or alleviation of pollution in the use and end-of-life phases, community/regulator/investor/customer expectations or existence of controversies.

If the company answers any question with “yes” or “unknown”, the pollution topic is considered material for the SPARc.

- When the company identifies a pollutant impact, be it positive or negative, in one life-cycle stage, it *shall* consistently verify whether the pollutant may create impacts in other life-cycle stages, or may migrate to other media, in a way to ensure a holistic preparation review.
- The company *shall* then identify the relevant pollutants and associated parameters¹²⁶ by life-cycle stage. The company takes these forward for assessment, at minimum qualitatively, and at minimum for the identified life-cycle stages. This ensures a focus on the pollutants with the greatest potential impact while reducing the risk of overlooking or selectively excluding significant pollution impacts.
- If the company identifies a new pollutant through this process, it *shall* update the company-wide pollutant list accordingly.

If the company answers all questions with “no”, it *may* filter out the pollution topic.

Example

- If a company identifies SO_x as an air pollutant in its own operations, it assesses whether this is relevant for other life-cycle stages and whether SO_x could migrate to another media and create, for example, potential soil and water pollution impacts.
- If heavy metals in tailings cause water pollution during raw material extraction, the company evaluates whether heavy metals also affect air and soil, and whether the presence of the pollutant in this life cycle could lead to its presence in other life-cycle or end-of-life stages.

C.2.2.3 Identifying external standards and thresholds

For each pollutant and parameter identified, the company *shall* determine a threshold prior to assessment, following the robustness hierarchy below in order of preference:

- **Globally recognized and harmonized references** (those developed or recognized through internationally coordinated, multi-stakeholder processes), where they exist (e.g., WHO guidelines on air pollution and human health). These *shall* be preferable as they reflect scientific and societal consensus on the boundary between acceptable and harmful release;
- **Site-specific emissions limits set by competent regulatory authorities** (i.e., permit conditions), applicable to the company's own operations;
Note: Considering that regulatory standards and the stringency of their limits vary significantly across geographies and jurisdictions, the company should consider globally recognized and more restrictive standards, especially where local or permit-based thresholds are not sufficiently protective.
- **Credible, externally reported company targets** for pollution reduction, where no external threshold exists; OR **credible, product level third-party certification/eco-label**.
- **Conservative proxies or modelling**, derived from scientific literature or analogous substances;
- **Internally derived limits**, where none of the above are available.

Examples of thresholds for specific pollutants are available in [Table 38](#).

Table 38: Examples of references providing guidance on specific pollutant thresholds

Type of references	Examples
Globally harmonized references	Air: WHO Air Quality Standards¹²⁷ Water: WHO drinking water guidelines¹²⁸ Multi-media: UNECE POPs (persistent organic pollutants) protocol (air emissions, incineration and waster concentration thresholds for proper destruction or disposal)¹²⁹
Regulatory standards	Water: • European union Water Framework Directive – WFD, 2000/60/EC – covering 33 substances¹³⁰ • Environmental Quality Standards (EQS) – directive 2008/105/EC (as amended by 2013/39/EU) – for priority substances (cadmium, mercury, lead, nickel, benzene, and additional substances)¹³¹ • EU groundwater directives (nitrate, pesticides, specific chemicals incl arsenic, cadmium, lead, mercury, ammonium, chloride, sulfate, nitrites, total phosphorus/phosphates, trichloroethylene, tetrachloroethylene)¹³² • EU surface-water Directive (33 substances, including 11 “priority hazardous substances”)¹³³

Type of references	Examples
Regulatory standards	Soil: • EU Waste framework directive priority substances (annex III)¹³⁴ • EU/national soil quality standards (considering the most stringent) • National soil-screening values (Dutch intervention values,¹³⁵ UK Soil Guideline Values¹³⁶ US Environmental Protection Agency Regional Screening Levels¹³⁷), Food and Agriculture Organization (FAO) of the United Nations/United Nations Environment Programme (UNEP) soil-pollution guidance¹³⁸
Credible certification and ecolabels	• ISO 14024 Type 1 Ecolabels¹³⁹ • Relevant Global Ecolabelling Network audited eco-labels¹⁴⁰ • Volatile organic compound: UL Greenguard/Greenguard Gold¹⁴¹

C.2.3 Assessment

When pollution is material for a SPARc, the company assesses the negative and positive pollution impacts and rates them against an **external fixed threshold** for each indicator/pollutant/parameter identified in the preparation step. It does so using a rating table that guides consistent implementation of the notion of significance (see definition for significance in Step 2.1 Preparation).

This approach reflects the specific and complex nature of pollution, ensures the evaluation of impacts against their real-world consequences, and the alignment of incentives with pollution reduction or elimination. It determines whether the emissions a SPARc generates cross a level harmful to human health or the environment.

Assessing SPARc performance relative to a market benchmark, like whether a Greengard SPARc pollutes more or less than a reference product, is therefore not appropriate. In addition, the company cannot consistently apply a benchmark-based approach across the full value chain. While external standards provide a robust absolute reference for the company's own operations, no equivalent universal benchmarks exist for upstream and downstream life-cycle stages. Using external, fixed thresholds (referenced as "absolute evaluation" in method Step 2.1.4) therefore ensures methodological consistency across all life-cycle stages while anchoring the evaluation in externally validated standards.

The assessment approach differs depending on the life-cycle stage at which the pollution impact occurs: the company's own operations versus upstream/downstream. This differentiation is based on methodological feasibility, as described in the following sections.

The company *shall* conduct the assessment at minimum qualitatively for the life-cycle stages identified as material for the pollutant. The impact assessment *shall* focus on primary pollutants (i.e., at the point of emission). The company *should* also consider the environmental fate of the pollutant, including migration and decomposition products, where feasible, in performing at minimum a qualitative assessment of environmental fate.

The depth of assessment *should* be proportionate to the significance of the identified impacts, data availability and quality, the strategic importance of the SPARc, and stakeholder expectations. For example, the company *shall* include a full environmental fate assessment when the pollutant or its degradation products are known to be persistent, toxic and bioaccumulative (PBT) and very persistent and very bioaccumulative (vPvB).

For initial implementation, the company *may* apply a pragmatic screening approach, prioritizing pollutants with the greatest potential impact or significant risk, and then gradually expanding over time toward a more robust assessment. In practice, insights from environmental, health and safety (EHS) systems, operational and regulatory monitoring systems, as well as product- and market-

specific technical expertise, can support the gradual development of a robust understanding of the fate of key products and materials across the full life cycle.

Assessment of the company's own operations

The company's own operations typically involve point-source pollution that it can directly measure and compare against the threshold determined in the preparation step. For the SPARc with material pollutants in the company's own operations, the thresholds act as the neutral point in the assessment, reflecting the boundary between the acceptable and the harmful release of a substance. This enables the evaluation of pollution impact as close as possible to its real-world consequences and incentivizes pollution reduction or elimination.

Assessment of upstream and downstream value chain activities

Upstream and downstream emissions are inherently more challenging to quantify, due to the:

- Lack of traceability of raw materials to production regions;
- Attribution of pollution to sites that produce multiple products or product lines;
- Dependence on external actors for downstream product use and end-of-life fate.

The availability, completeness and comparability of emissions-related data particularly constrain pollution assessment for upstream and downstream value chain activities. The company *should* use the best available evidence and progressively improve granularity over time. Qualitative assessments, proxy data, supplier assessments, industry datasets, and expert judgement may be appropriate where pollutant-specific information is unavailable.

For SPARcs with material pollutants upstream or downstream in the value chain, the company *shall* apply the following assessment hierarchy:

- **Quantitative:** Where the company established a threshold in the preparation step and sufficient data exist, it *should* conduct a quantitative assessment against that threshold.
- **Semi-quantitative:** Where the company derived a threshold from proxies or modelling, the company *should* conduct a semi-quantitative assessment using the same data sources.
- **Qualitative:** Where neither quantitative nor semi-quantitative assessment is feasible, the company *should* conduct a qualitative assessment, answering the following questions:
 - Is there a known pollution issue, reduction or elimination in the relevant segment or value chain?
 - What is the SPARc's contribution to that known pollution issue, reduction or elimination?
 - What evidence exists (i.e., from peer-reviewed literature, NGO or government reports, or other credible sources) linking the SPARc to the pollution issue, reduction or elimination? What actions exist to mitigate the SPARc's contribution to the known pollution issue?

Pollution avoidance is out of scope for PPRIA. Unlike for climate or the circular economy, there is to date no widely accepted methodological framework or international standard to define, quantify and verify avoided pollution in a credible, consistent and auditable way. PPRIA therefore focuses on measurable pollution impacts and demonstrable pollution reduction, while recognizing the need for future methodological development in this area.

C.2.4 Evaluation

Rating translates the results of the pollution assessment into a standardized performance outcome for relevant pollution indicators. It enables the consistent interpretation of qualitative,

semi-quantitative, and quantitative evidence across SPARcs, while ensuring traceability to underlying material pollutants, relevant metrics, data sources, and documented assumptions.

The depth of assessment *should* be proportionate to the significance of the identified impacts, data availability and quality, the strategic importance of the SPARc, and stakeholder expectations.

Rating rules for individual indicator pollutant parameters

The company *shall* conduct an evaluation for each pollutant/parameter/life-cycle stage combination identified as material for the SPARc in the pollution guideline preparation step.

Interpreting the notion of significance in pollution requires additional guidance given the complex nature of assessing pollution impacts. [Table 39](#) presents the guiding criteria developed to interpret the significance and guide the rating.

Table 39: Pollution rating criteria

Rating	Definition	Description applicable to the specific indicator/parameter considered
A	Significant positive contribution	Best-in-class performance: market-leading solutions that deliver significant pollution reductions compared to the threshold and outperform available alternatives. Meets all criteria for a B rating. <i>Consistent with the definition of a high significance (see definition of significance thresholds in the Method Step 2, Preparation), it can only achieve an A-rating where the SPARc's functional contribution actively reduces pollution across the value chain (upstream, the company's own operations, or downstream). The performance of the company's own operations can lead to a maximum rating of B.</i>
B	Positive contribution	SPARc makes a positive contribution to pollution reduction in: The company's own operations: Its SPARc production and handling demonstrate pollution performance significantly above the threshold and where the company's own operations hold a recognized third-party certification. OR The SPARc value chain (upstream or downstream): The SPARc actively contributes to the reduction of pre-existing pollution, across the value chain where the SPARc: • Directly enables the reduction of existing pollution; OR • Serves as a key component with an essential function in achieving the reduction of existing pollution; OR • Makes a clear and measurable contribution to the reduction of existing pollution. When considering the SPARc value chain, the contribution must be directly attributable to specific function of the SPARc and occur within its area of influence in the value chain (i.e., where the SPARc has a direct and enabling effect).
C	Neutral	In the company's own operations: Emissions are within the external threshold established in the preparation step. OR In the SPARc value chain (upstream or downstream): The SPARc has a direct contribution to a pollution impact for the pollutant considered based on modelling, proxy data, or scientific literature, but mitigation measures are in place to reduce it to within the threshold established in the preparation step, with no significant residual impact.

Rating	Definition	Description applicable to the specific indicator/parameter considered
D	Negative impact	In the company's own operations: The release of the pollutant substance attributed to the SPARc exceeds the external threshold established in the preparation step, but mitigation measures are in place to reduce the impact. OR In the SPARc value chain (upstream or downstream): The SPARc has a direct contribution to a pollution impact for the pollutant considered based on modelling, proxy data, or scientific literature, and mitigation measures are in place.
E	Significant negative impact	In the company's own operations: The release of the pollutant substance attributed to the SPARc significantly exceeds the external threshold established in the preparation step, without mitigation measures in place. OR In the SPARc value chain (upstream or downstream): The SPARc has a direct contribution to a significant pollution impact based on modelling, proxy data, or scientific literature, without mitigation measures in place.

Robustness of threshold and capping rules

The capping rules make the guided flexibility in the use of different type of thresholds credible. The company caps the ratings based on the robustness of the threshold applied. Stronger thresholds enable higher ratings because they provide a more credible basis for assessment.

Table 40: Pollution capping rules

Threshold type	Maximum rating
Globally recognized and harmonized references.	A
Site-specific emissions limits set by competent regulatory authorities OR Credible, externally reported company targets OR Credible, product level certification/ecolabel OR Conservative proxies or modelling	B
Internally derived limits	C

The company can only achieve an **A** rating through the SPARc's functional contribution to pollution reduction across the value chain. The performance of the company's own operations alone leads to a maximum rating of **B**.

Aggregation with a SPARc's overall pollution performance

Where multiple indicators contribute to the SPARc pollution performance, an aggregation logic is required to consolidate indicator-level ratings into a topic-level outcome. Because pollution impacts are local and non-substitutable, aggregation follows a conservative logic:

- If any life-cycle stage for any pollutant parameter is rated **D** or **E**, the worst rating sets the pollution topic rating.
- If no **D** or **E** ratings are present, higher ratings drive the overall result.

This approach ensures that material pollution risks remain visible at the topic level; that neutral or positive performance does not mask significant negative impacts; and that results remain transparent and traceable to the underlying indicators and relevant metrics.

The SPARc pollution outcome, and the main drivers of performance, provide inputs to SPARc- and portfolio-level analysis, prioritization, and the identification of pollution-related risks and opportunities.

C.3 Land- and sea-use change

Under development

C.4 Invasive species

Under development



Appendix D Circular economy thematic guideline for Step 2

Circular practices – such as material efficiency, reuse, recycling, and responsible end-of-life management – play a critical role in shaping a product's environmental and social performance across the value chain. By influencing how resources are extracted, transformed, used and recovered, material circularity directly affects material availability, waste generation, environmental pressures, and exposure to supply chain and regulatory risks. These impacts are increasingly material to ecosystems, communities and societies, as well as to long-term business resilience.

The circular economy thematic guideline focuses on the resource flows and how products and portfolios interact with material systems over their life cycle, including upstream raw material extraction and production, the company's own operations, and downstream use and end-of-life.

For companies, dependence on virgin and scarce materials can increase exposure to price volatility, supply disruptions, regulatory constraints, and reputational risk. Limited recoverability or misaligned design choices can constrain the ability to switch materials, redesign products, or adapt the portfolio to future market and regulatory changes. At the same time, circular solutions can enable cost efficiency, innovation and new value propositions, strengthening competitiveness and long-term resilience.

The circular economy theme assessment supports product portfolio sustainability performance management decisions by identifying:

- Material-intensive or resource-critical products and value chain stages;
- Opportunities to reduce supply disruption risks and reliance on virgin or scarce materials;
- Opportunities to incentivize product, process and system-level design choices that improve circularity over time;
- Risks related to recovery constraints, material scarcity, or misaligned design and end-of-life pathways;
- Opportunities to strengthen circular value propositions.

Scope and definitions

Consistent with the overall PPRIA scope, the circular economy assessment considers impacts across the full value chain – including upstream, the company's own operations, and downstream. Circular economy assessment also involves considering the regeneration of resources and therefore a cradle-to-cradle perspective is required for this topic.

In scope

This guideline applies to physical products and, where relevant, their packaging. While the primary focus is on physical products, the company *may* also consider the contribution of digital products or services to circularity. We will develop further guidelines on this aspect in a future iteration of the method.

The theme has four topics:

- a) Circular inflow;
- b) Circular outflow;
- c) Enabling solutions;
- d) Dematerialization (under development).

Out of scope

The company assesses impacts related to nature, climate, product safety, and social performance under their respective thematic guidelines and are therefore out of scope for the circular economy guideline.

For example, in the circular economy, the company assesses waste as a loss of material resources, whereas the pollution topic under the nature guideline assesses the environmental impacts arising from waste generation and treatment.

Table 41 details the distinction between topic, indicator and metric

Table 41: Circular economy topics, indicators, metrics

Topic	Circular inflow	Circular outflow	Enabling solutions	Dematerialization
Indicator	Circular inflow	Circular outflow	Enabling solutions	Absolute dematerialization Relative dematerialization
Metric	% circular inflow Circular inflow contributors	% circular outflow Overall recovery potential Overall actual recovery Circular outflow contributors	Increase/decrease in circular performance of a third party	For consideration in future iteration

Definitions

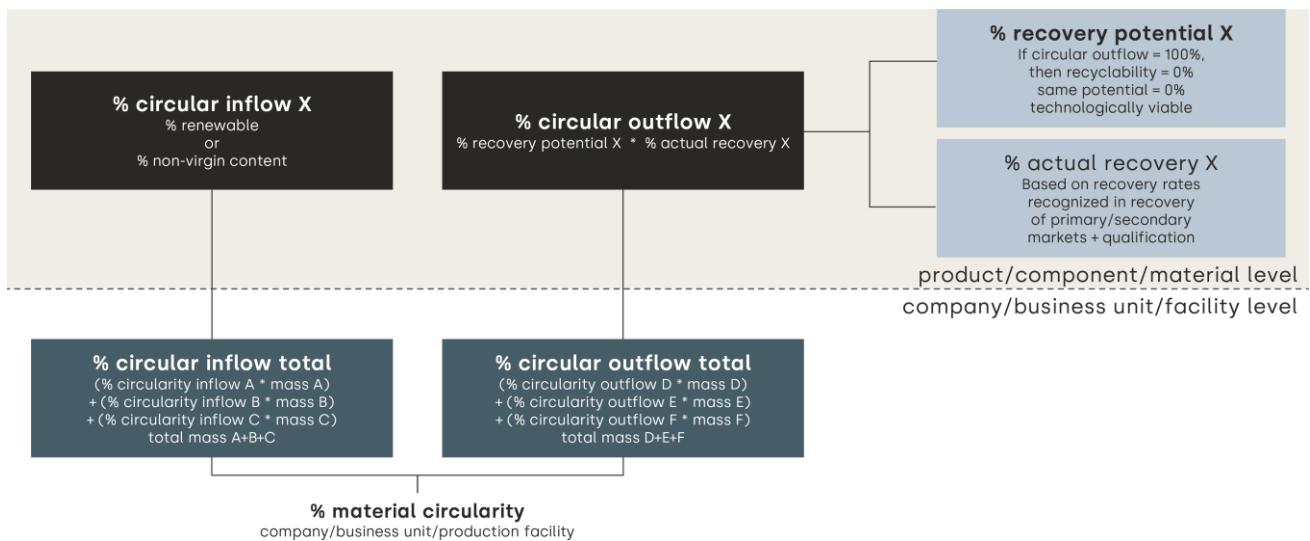
The [Global Circularity Protocol for Business \(GCP v1.0\)](#) defines material flows as the physical movement of nutrients, compounds, materials, parts, components or products into, through and out of a given system, delineated by system boundaries. This has two GCP-adapted distinctions:

- Direct material flows occur at the level of operations the measuring or reporting organization owns or controls.
- Indirect material flows occur in the organization's value chain at the level of operations owned or controlled by another organization or user/consumer.

Circular performance: Consistent with the [GCP v1.0](#) definition, the circular performance of a SPARc includes material circularity, dematerialization and enabling solutions where applicable.

Similarly, the GCP defines material circularity as:

$$\text{SPARc \% material circularity} = \% \text{ circular inflow} + \% \text{ circular outflow}$$

Figure 24: Definition of material circularity

Source: WBCSD & One Planet Network [Global Circularity Protocol for Business](#) (Version 1.0).

Practical considerations

Each *topic* has distinct relevant definitions, indicators, metrics and ratings.

In practice, the company *may* carry out the preparation step jointly across all the topics and can benefit from doing it in a streamlined manner.

Key references

This thematic guideline uses the concepts and definitions from

- The [Global Circularity Protocol GCP v1.0](#)
- The [Circular Transition Indicators v4.0: Metrics for business, by business](#) (CTI v4.0),
- The [Circular Transition Indicators \(CTI\) Enabling Solutions Guide](#) – the only sector-agnostic reference available at the time of writing the PPRIA Method, to assess a product contribution to improve third party circular performance
- ISO Standard 59020:2024 Circular economy—Measuring and assessing circularity performance¹⁴²

The PPRIA circular economy thematic guideline aligns its concepts and terminology of the above while adapting them to ensure pragmatic application at the SPARc level.

D.1 Circular inflow

D.1.1 Scope, standards and definitions

A SPARc inflow includes linear and circular inflows.

Circular inflow refers to the mass of secondary (reused, recycled) or renewable materials entering the system. The PPRIA Method aligns with [GCP v1.0](#) and, by extension, [CTI v4.0](#), and defines the SPARc circular inflow as:

Resources *used to make a given SPARc* that enters the organization, including materials, parts or products (depending on the organization's position within the value chain), categorized as:

- **Non-virgin inflow:** Inflow previously used (secondary), e.g., recycled materials, second-hand products or refurbished parts;
- **Renewable inflow:** Sustainably grown and managed bio-based resources.

Note: Practices are emerging aiming to include CO₂-derived materials as inflow. *GCP v1.0* does not mention it explicitly and the company **may** include this as an additional inflow category, as long as it applies this consistently across all SPARcs and documents their scope.

D.1.2 Preparation

The company *may* benefit from preparing this step jointly across the circular inflow, circular outflow, and enabling solutions topics, where relevant.

D.1.2.1 Method setup

During configuration, establishing a short list of relevant information, material flows and data sets to support the circular economy assessment for all SPARcs where this is material can improve efficiency and reduce the duplication of effort.

D.1.2.2 SPARc-level preparation

The preparation determines whether circular inflow is a material topic for the SPARc evaluation. The materiality filter for circular inflow follows the questionnaire defined in Step 2 Preparation. The company *can* do the preparation step for all circular economy topics in one step when relevant – we have designed the questions to apply equally for circular inflow, outflow and enabling solution.

Table 42: Circular economy materiality filter questions

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the SPARc key raw materials.¹⁴³	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc within the chosen organizational level?

D.1.3 Assessment

Where circular inflow is material for the SPARc, the company assesses the performance using circular inflow indicators (defined in [Table 43](#) and [Table 44](#)), according to the SPARc benchmark with a significance overlay, as defined in Step 2.

Circular inflow is used as the primary indicator: it provides a standardized and comparable evaluation of the extent to which a SPARc relies on virgin non-renewable material inputs. It therefore allows consistent benchmarking across products, sectors and portfolios.

In practice, this requires identifying all circular inflows attributable to the SPARc across operations and the value chain. The company *can* use the [GCP v1.0](#) Prepare stage (GCP page 29, figure 3) to guide this preparation.

PPRIA-use of contributors

Other drivers of resource consumption include critical raw materials, material scarcity or upstream contributions. They are equally relevant impact-wise and represent meaningful efforts to advance circularity (e.g., higher-value R-strategies¹⁴⁴), but are less consistently measurable, standardized and comparable in current practice.

PPRIA captures these aspects through contributors, which act as targeted adjustments to reflect significant improvements or constraints not yet fully represented in available circularity metrics, both for circular inflow and circular outflow, in their respective context.

Contributors are substantiated evidence showing how they may strengthen (amplify) or weaken (dampen) the SPARc circular performance.

Circular contributors do not substitute for the evaluation of circular inflow. They are optional, complementing the circular inflow evaluation. The company *should not* already capture them in inflow or outflow indicators and they are not for independent assessment. They apply only where the company can substantiate, with evidence, that it has implemented actions that meaningfully support circular practices beyond those captured in the core indicator.

As external definitions and methodologies continue to evolve, we will align PPRIA definitions and the rating approach accordingly.

D.1.3.1 Indicators

Table 43: Resource inflow indicators

Indicator	Indicator definition as per GCP v1.0 and CTI v4.0
Circular inflow	<i>Circular inflow</i> refers to the total mass of verified secondary materials (reused/recycled) or renewable (sustainably grown and managed bio-based) resources entering SPARc over the reporting period. In practice, the company calculates this adding up the mass of every material flow it has identified as entering the SPARc from a circular source. The formula shown below is the mathematical expression of that same “sum of masses” description. SPARc % circular inflow (mass-based): $\% \text{ circular inflow}_{\text{SPARc}} = \frac{m_{\text{reused}} + m_{\text{recycled}} + m_{\text{renewable}}}{\text{total of material inflows}}$
Circular inflow contributors (optional, in addition to circular inflow)	In PPRIA, circular inflow contributors include three specific elements: 1) The presence of critical raw materials (CRMs), defined in alignment with the EC CRM list¹⁴⁵ as referenced in GCP v1.0; 2) Material scarcity considerations, referring to the risk that a raw material becomes difficult to access due to limited natural availability, supply concentration, geopolitical or economic constraints, or high likelihood of disruption;¹⁴⁶ and 3) Upstream contributions to reducing the consumption of virgin non-renewable resources – such as sourcing from low-waste or high-efficiency suppliers – which represent meaningful efforts to advance circularity even when current circularity metrics do not yet reflect these actions (i.e., CTI v4.0 or GCP v1.0 indicators).

D.1.3.2 Metrics

The metrics below guide how to assess the circular inflow indicator.

The company *can* conduct the assessment qualitatively, semi-quantitatively or quantitatively as described in [Table 44](#). An example can be found in the [GCP v1.0](#).

Table 44: Resource inflow metrics

Indicator	Metric	Qualitative/ quantitative	Calculation/description
Circular inflow performance	% circular inflow total	Qualitative	Bonus/malus impact resulting from a demonstrable, direct action
		Semi-quantitative	Circular inflow estimated % or kg range
		Quantitative	Total mass of all inflow in % or kg
	Circular inflow contributors Key contributor types: • Use of critical raw materials (CRMs)** • Material scarcity risk • Upstream circularity efforts (e.g., sourcing from low-waste/high-efficiency suppliers) **Critical raw materials (EC CRM list, ¹⁴⁷ referenced in GCP v1.0 – page 112)		
		Qualitative	Amplifier, neutral, dampener

Source: [CTI v4.0](#) or [GCP v1.0](#)

Circular inflow contributor qualitative assessment

The company assesses the circular inflow contributor indicator qualitatively. It is classified as amplifier, neutral or dampener based on substantiated evidence of the SPARc impacts, as illustrated in [Table 45](#).

Table 45: Resource inflow qualitative assessment

Factor	Definition	Assessment logic
Amplifier	The SPARc demonstrates a <i>significant</i> positive contribution to upstream circularity.	Evidence shows that the SPARc is actively and significantly: (i) reducing reliance on critical raw materials (CRMs); (ii) mitigating material scarcity; (iii) advancing upstream circularity, without creating negative impacts along these dimensions.
Neutral	The SPARc's upstream performance is within standard.	Impacts related to CRMs, material scarcity or upstream circularity are consistent with regulatory requirements or industry norms, or are not significant.
Dampener	The SPARc negatively affects upstream circularity significantly.	The SPARc has a moderate or high reliance on CRMs; significantly exacerbates material scarcity; applies upstream practices that increase waste or inefficiency.

Further guidance on critical raw materials contributor assessment

The assessment of circular inflow contributors, including CRMs, in PPRIA remains qualitative in nature, as amplifiers, neutral, dampeners (see above). In the case of critical raw materials, where increased granularity is desirable and possible, [GCP v1.0](#) offers aligned quantitative approaches that the company can reference to substantiate and strengthen the qualitative rating.

D.1.4 Evaluation

The company evaluates its SPARc circular inflow performance by comparing to the benchmark and applying a significance overlay to differentiate impact magnitude, using the A to E scale (as defined in Step 2).

Role of contributors in rating

Contributors aim to incentivize circular strategies whose effect available standardized circular performance indicators cannot yet visibly measure. Making use of these contributor indicators requires evidence of active, substantial (high significance) company action and direct links to the SPARc. Consistent with the definition of significance, this intrinsically means going beyond industry norms or regular practice.

It may then result in an upward or downward adjustment of the SPARc circular inflow performance.

The role of contributors in the indicator rating is as a bonus or malus and leads to a maximum upgrade or downgrade of one letter:

- If a contributor, the rating is boosted by one letter (e.g., a C becomes a B);
- If a dampener, it is penalized by one letter (e.g., a C becomes a D);
- If neutral, no adjustment.

D.2 Circular outflow

D.2.1 Scope, standards and definitions

A SPARc outflow includes linear and circular outflows.

Circular outflow refers to material outputs designed for recovery and that the company effectively recovers in practice (e.g., through reuse, recycling or other recovery pathways).

PPRIA aligns with [GCP v1.0](#) and, by extension, [CTI v4.0](#).

SPARc circular outflow

Circular outflows refer to material flows that leave the organization. They are attributable to a given SPARc, including materials, parts, products, by-products, and waste streams, depending on the organization's position in the value chain. These are categorized as:

- **Recovery potential:** The extent to which the company has designed products and materials within a given SPARc for recovery, considering strategies such as modularity, disassembly and recyclability.
- **Actual recovery:** The share of materials attributable to a given SPARc that the company effectively recovers in practice, based on factors such as existing take-back systems, collection infrastructure and treatment processes.

SPARc circular outflow looks at the share of output materials that are recoverable (recovery potential) and actually recovered (actual recovery). This requires designing products to facilitate the technical or biological recovery of materials and ensuring the necessary infrastructure is in place to support these recovery strategies.

SPARc linear outflow

Linear outflow refers to the remaining share of outflows that the company does not recover and that exit the system as waste or emissions. Incineration or landfill are linear outflow.

D.2.2 Preparation

The company may benefit from carrying out the preparation step jointly across the circular inflow, circular outflow, and enabling solutions topics, where relevant.

D.2.2.1 Method setup

During configuration, establishing a short list of relevant information, material flows and data sets to support the circular economy assessment for all SPARcs where this is material can improve efficiency and reduce the duplication of effort.

D.2.2.2 SPARc-level preparation

The preparation determines whether resource circular outflow is a material topic for SPARc evaluation. The materiality filter for circular outflow follows the questionnaire defined in Step 2 Preparation. The company *can* use the preparation step for all circular economy topics in one step when relevant – the questions apply equally for circular inflow, outflow and enabling solution.

Table 46: Circular economy materiality filter questions

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the SPARc key raw materials.¹⁴⁸	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc within the chosen organizational level?

D.2.3 Assessment

Where circular outflow is material for the SPARc, the company assesses performance considering both recovery potential and actual recovery for all circular outflows attributable to the SPARc (see [Table 47](#) and [Table 48](#)), according to the SPARc benchmark with a significance overlay, as defined in Step 2.

Circular outflow is the primary indicator: it provides a standardized and comparable evaluation of the extent to which the company has designed a SPARc for recovery and is demonstrably recovering it in practice. It therefore allows consistent benchmarking across products, sectors and portfolios.

In practice, this requires identifying all circular outflows attributable to the SPARc across operations and the value chain. The company *can* use the [GCP v1.0](#) Prepare stage (see GCP page 29, Figure 3) to guide this preparation.

PPRIA use of contributors

Other drivers of circular performance at the output stage include effectiveness of recovery systems and lifetime extension strategies (e.g., reuse, repair, refurbishment, remanufacturing, repurposing –, what the European Commission refers to as the R-strategies¹⁴⁹). In addition, design for circularity may take a long time before the company can sensibly measure its impact in the circular outflow metric. When not yet captured or sensibly measurable with the circular outflow indicator, the company *can* consider it under the outflow contributor.

These factors are equally relevant from an impact perspective as they determine whether the company effectively retains the materials in the economic system and avoids linear outflows. They also represent meaningful efforts to advance circularity (e.g., higher-value R-strategies¹⁵⁰), but are less consistently measurable, standardized and comparable in current practice.

In PPRIA, these aspects are therefore captured through contributors, which act as targeted adjustments to reflect significant improvements or constraints not yet fully represented in available circularity metrics, both for circular inflow and circular outflow, in their respective context.

Contributors are substantiated evidence showing how the contributor may strengthen (amplify) or weaken (dampen) the SPARc's circular performance.

Circular contributors do not substitute for the evaluation of circular outflow. They are optional, complementing the circular outflow evaluation. The company *should* therefore not already capture them in inflow or outflow indicators. They are not intended to be assessed independently. They

apply only where the company can substantiate, with evidence, that it has implemented actions that meaningfully support circular practices beyond those captured in the core indicator.

As external definitions and methodologies continue to evolve, we will continue to align PPRIA definitions and the rating approach accordingly.

D.2.3.1 Indicators

The metrics below specify how the company assesses each indicator for the circular outflow indicator.

The company *can* conduct the assessment qualitatively, semi-quantitatively or quantitatively as described in [Table 47](#).

Table 47: Circular outflow indicator

Indicator	Indicator definition as per GCP v1.0 and CTI v4.0
Circular outflow	Circular outflow refers to the total mass calculated using a mass-weighted aggregation across all material outflows attributable to the SPARc. For each material flow x, circular outflow is the product of recovery potential and actual recovery. The company then calculates the SPARc-level circular outflow as the sum of each material flow's circular outflow multiplied by its mass, divided by the total mass of all outflows. SPARc % circular outflow (mass-based) For each individual material flow identified for the SPARc: $\% \text{ Circular outflow}_{SPARC} = \% \text{ recovery potential}_{SPARC} \times \% \text{ actual recovery}_{SPARC}$
Circular outflow contributors (optional, in addition to circular outflow)	Circular outflow contributors refer to downstream factors that affect the circularity performance of a SPARc's outputs, such as design for circularity,¹⁵¹ recovery systems, or lifetime extension (namely R4 – reuse, R5 – repair, R6 – refurbish, R7 – remanufacture, R8 – repurpose – for reference, see the 9 R-strategies¹⁵²).

D.2.3.2 Metrics

The metrics in [Table 48](#) specify how the company assesses the circular outflow indicator qualitatively, semi-quantitatively or quantitatively. Page 66 of [GCP v1.0](#) provides an example.

Table 48: Circular outflow metrics

Indicator	Metric	Qualitative/ quantitative	Calculation/description
Circular outflow performance	% circular outflow total (CTI v4.0) = recovery potential x actual recovery for all SPARc material outflows	Qualitative	Bonus/malus impact resulting from a demonstrable, direct action
		Semi-quantitative	Estimated circular outflow, % range
		Quantitative	See SPARc % circular outflow definition
	Overall recovery potential <i>Consider each relevant type of recovery:</i> - Recyclability %/kg - Biodegradability %/kg - Compostability %/kg	Qualitative	Bonus/malus impact on recovery potential
		Semi-quantitative	Estimated recovery potential, % or kg range
		Quantitative	SPARc recovery potential (%)
			$\frac{\begin{aligned} &(\text{recyclable mass}) \\ &+ (\text{biodegradable mass}) \\ &+ (\text{compostable mass composted}) \end{aligned}}{\text{total mass of all SPARc outflows}}$
	Overall SPARc actual recovery <i>Consider each relevant type of recovery:</i> - Reused/refurbished (end-of-life – EoL) - Recycled (EoL) - Biodegraded - Composted (EoL)	Qualitative	Actual recovery in practice resulting from an active action/effort
		Semi-quantitative	Actual recovery in practice, estimated % or kg range
		Quantitative	SPARc actual recovery (%)
			$\frac{\begin{aligned} &(\text{reused or refurbished mass}) \\ &+ (\text{recycled mass}) \\ &+ (\text{biodegraded mass}) \\ &+ (\text{composted mass}) \end{aligned}}{\text{total mass of all SPARc outflows}}$ <i>(Note: In some companies, actual recovery is also called circular recovery.)</i>
	Circular outflow contributors Key contributor types - Design for circularity (i.e., measured under recovery potential in GCP v1.0), lifetime extension and 9 R-Strategies – CTI v4.0) - Circular recovery systems	Qualitative	Amplifier/neutral/dampener (see Table 49)

Outflow contributor qualitative assessment

The company assesses outflow contributor indicators qualitatively and classifies them as amplifier, neutral or dampener, based on evidence of the SPARc's design for circularity, circular recovery systems, or lifetime extensions.

Table 49: Circular outflow contributor assessment logic

Category	Definition	Assessment logic
Amplifier	The SPARc demonstrates a significant positive contribution to downstream circularity.	Evidence shows that the SPARc is actively and substantially enabling higher-value circular strategies , such as design for circularity, effective recovery systems, or lifetime extension (e.g., reuse, repair, refurbishment, remanufacturing, repurposing), without creating negative impacts on recovery or circular performance.
Neutral	The SPARc's downstream circular performance is in line with standard practice.	Design choices, recovery pathways, and lifetime considerations are consistent with regulatory requirements or prevailing industry norms, or are not significant.
Dampener	The SPARc significantly negatively affects downstream circularity	The SPARc applies design or end-of-life practices that hinder recovery or lifetime extension , such as limiting reusability, reparability or recyclability, or otherwise reducing downstream circular performance.

D.2.4 Evaluation

The company evaluates the SPARc circular outflow performance by comparing it to the benchmark and applying a significance overlay to differentiate the impact magnitude using the A to E scale (as defined in Step 2).

Role of circular outflow contributors in rating

Contributors aim to incentivize circular strategies whose effect the company cannot yet visibly measure by available standardized circular performance indicators.

Making use of circular outflow contributors requires evidence of active, substantial (high significance) company action and a direct link to the SPARc.

Consistent with the definition of significance, this intrinsically means going beyond industry norms or regular practice.

It may then result in an upward or downward adjustment of the SPARc's circular outflow performance.

The role of contributors in the indicator rating is a bonus/malus that can adjust up to one letter:

- If a contributor, the rating is boosted by one letter (e.g., a C becomes a B);
- If a dampener, it is penalized by one letter (e.g., a C becomes a D);
- If neutral, there is no adjustment.

Contributors cannot boost the final rating by more than one letter.

D.3 Enabling solutions

D.3.1 Scope, standards and definitions

A SPARc can also contribute to improving the circularity performance of a product, service or activity of a third party in the value chain. This brings scalable contributions that improve the circularity performance of third-party products or systems, which is distinct from the circularity of the company's own product, based on the [CTI Enabling Solutions Guide](#) (page 22).

While that guide focuses on the positive contribution, we have adapted it to work as well for negative contributions for the purpose of a balanced assessment of third-party contributions in PPRIA.

D.3.2 Preparation

The company may benefit from carrying out the preparation step jointly across the resource circular inflow, resource circular outflow, and enabling solutions topics, where relevant.

D.3.2.1 SPARc-level preparation

Preparation determines whether enabling solutions is a material topic for SPARc evaluation.

The materiality filter for enabling solutions follows the questionnaire defined in Step 2 Preparation. In the context of enabling solutions, the questions apply to whether the SPARc enables **improving circular performance of a third party**.

Table 50: Enabling solutions materiality filter questions

SPARc level	Other organizational levels
a) Are there any signals, based on available evidence, indicating that the SPARc may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions? When assessing upstream, the company <i>should</i> assess the impacts of the SPARc key raw materials.¹⁵³	a) Are there any signals, based on available evidence, indicating that at least one SPARc within the chosen organizational level may exhibit positive or negative impacts related to this topic that could reach at least moderate magnitude in one or more of the magnitude dimensions?
b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for the SPARc?	b) Are there known stakeholder expectations or requirements that make the topic decision-relevant for any SPARc within the chosen organizational level?

D.3.3 Assessment

Consistent with the [CTI Enabling Solutions Guide](#), an enabling solution is “better than the conventional solution, when compared in a reference scenario” for its circular performance according to five criteria ([Table 51](#)). In PPRIA, we have adapted it to capture negative or positive impact.

Benchmark and reference scenario

When the SPARc benchmark (as defined in Step 2) used for the PPRIA circular economy theme differs from the definition of a reference scenario described in the CTI guidance, the company *may*

use the assessment against the SPARc benchmark as a first step to pragmatically get started and to encourage progress.

As companies mature in their use of PPRIA, enabling-solution assessments should transition to the full reference-scenario definition according to the [CTI Enabling Solutions Guide](#), in particular for SPARcs rated “A”. Internal benchmarks have no equivalence in that guidance and the company cannot use them to assess enabling solutions in PPRIA.

Assessment in PPRIA does not substitute for the guidance in the [CTI Enabling Solutions Guide](#): companies seeking the “enabling solution” label for their solution according to the CTI guidance requires adhesion to the full guidance requirement. This is out of scope of the PPRIA.

Indicators and metrics

The indicator for the SPARc circularity enabling solution performance is the increase or decrease of third-party circular performance. The company assesses it according to the first three criteria of [CTI Enabling Solutions Guide](#) (see [Table 51](#)). The PPRIA core concepts (benchmark and significance) are part of the PPRIA Method and are equivalent to criteria 4 and 5.

Table 51: Enabling solutions metrics

Indicator	Metric	Qualitative/ quantitative	Calculation/description
Increase/decrease in circular performance of a third-party product/system	Impact on third party's circular performance as per Table 52	Qualitative	Bonus/malus impact on circularity performance of a third party in the value chain resulting from a demonstrable, direct action
		Semi-quantitative	An estimated increase in the third party's circular performance
		Quantitative	e.g., a % increase in the third party's circular performance

Table 52: Enabling solutions criteria

Enabling solution criteria
Implemented in PPRIA 1. Demonstrably increases a customer's or a partner's circular performance for at least one of the CTI circular inflow and outflow indicators 2. Does not inhibit either potential or actual recovery across the life cycle of the product and at the end of the life of the product or material 3. Has a positive or at least a neutral impact on the lifetime of the product, service or activity
Original criteria replaced by PPRIA benchmark and significance 4. Is demonstrably better than the conventional solution when compared in a reference scenario 5. Has demonstrable potential to enable circularity at scale

Source: [CTI Enabling Solutions Guide](#)

In practice, to identify potential enabling solutions, PPRIA encourages the company to consistently consider potential enablers that it may not yet capture in the SPARc's own circular performance, including actions that:

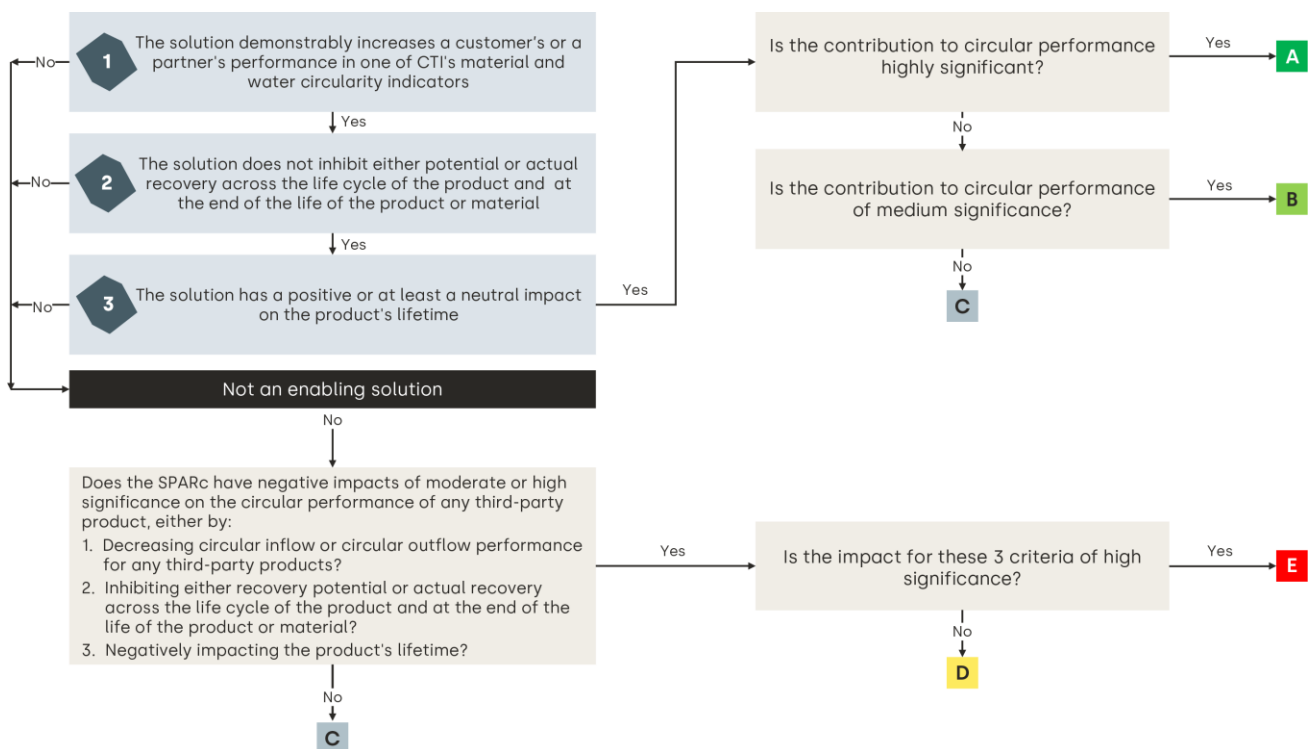
- Replace linear (virgin/non-renewable) materials with circular (secondary/renewable) materials;
- Support the diversification of recovery types, including enablers of lifetime extension, compostability, and R-strategies (R4 reuse, R5 repair, R6 refurbish, R7 remanufacture, R8 repurpose, R9 recycle);
- Enable circular recovery systems, such as take-back schemes, or reduce waste in downstream production.

See examples in the [CTI Enabling Solutions Guide](#): page 16, Figure 2; pages 20-22; and page 35, Annex 2.

D.3.4 Evaluation

The company compares the positive and negative impacts to the benchmark (reference scenario) and it differentiates the magnitude of impacts using a significance overlay (A from B, D from E) as defined in Step 2. [Figure 25](#) illustrates this decision tree. "Yes" means the condition is true, "no" the condition is "false".

Figure 25: Enabling solutions decision tree



D.4 Dematerialization

Dematerialization, as defined by [GCP v1.0](#) (see page 75), aims to measure the contribution to decoupling resource use from value creation or “using fewer materials to deliver the same value”.

When WBCSD developed the PPRIA circular economy guideline, the authors of [GCP v1.0](#) were still in the process of developing the dematerialization indicators. Therefore, we were unable to fully integrate them in this version of the PPRIA. Dematerialization will be subject to further development for full integration in the future.



Appendix E Product safety thematic guideline for Step 2

Product safety captures specific product impacts on human health and the environment not covered by other environmental and social performance. It ensures the company is not achieving sustainability performance at the expense of health or environmental risk. This theme enables companies to anticipate regulatory development and societal expectations, address emerging compliance risks, preserve their license to operate, and avoid value erosion.

In this theme, we have identified one topic to date. Chemical safety covers the impacts of product composition on human health and the environment, assessing chemical hazards and exposure associated with product composition and their resulting impacts across the life cycle.

It relates to the intrinsic properties of substances and their potential risk. It is explicitly distinct from pollution, which assesses the actual release/removal of substances in the air, water, soil or other media, and their adverse effects on human health or the environment, as defined in the “pollution” topic guideline (Appendix C.2).

The theme is intentionally open and evolutive: we may need to integrate additional product-specific safety topics and their guidelines over time. We hadn’t identified any at the time of writing.

E.1 Chemical safety

Under development

E.2 Other product safety-related topic

If additional relevant needs emerge.



Appendix F Technical concepts for Step 3

The appendix provides more details about the technical concepts used in Step 3.

It covers the following:

- **F.1** – Double materiality: from real-world impacts to financial relevance.
- **F.2** – Financial pathway and O&R catalogue.
- **F.3** – Scenario selection and future-proofing: choosing a narrative or quantitative scenario space and aligning it with standards.
- **F.4** – Attribution keys: cluster-to-SPARc allocation; splitting one shared measure across the O&R types it affects; allocating a shared investment down to the SPARcs it serves; and the sensitivity check on each split.
- **F.5** – Assessment techniques: the three types of techniques, from qualitative to semi-quantitative to quantitative valuation and static/dynamic integrated assessment modeling (IAM).
- **F.6** – Granular SPARc O&R performance card.
- **F.7** – A two-SPARc portfolio example carried through the full Step 3 method.

Key references

- EU Corporate Sustainability Reporting Directive (CSRD)¹⁵⁴
- European Sustainability Reporting Standards (ESRS) E1: Climate Change¹⁵⁵
- International Sustainability Standards Board (ISSB) IFRS S1 – General Requirements for Disclosure of Sustainability-related Financial Information¹⁵⁶
- International Sustainability Standards Board (ISSB) IFRS S2 Climate-related Disclosures¹⁵⁷
- Taskforce on Nature-related Financial Disclosures (TNFD) recommendations¹⁵⁸
- TNFD LEAP (Locate, Evaluate, Assess, and Prepare) – Guidance on the identification and assessment of nature-related issues: the LEAP approach¹⁵⁹

See [Table 12](#) for a reminder of when defining MECE is required and when it is not.

F.1 Double materiality: from real-world impacts to financial relevance

The materiality mindset¹⁶⁰

Applying double materiality well is a continuous management and strategy discipline to capture signals about emerging risks, dependencies and opportunities that influence costs, resilience, growth pathways and access to capital. Capturing value from materiality requires operationalizing and integrating it into existing company processes, from governance to strategy, capital allocation and risk management.

PPRIA operationalizes the materiality mindset at the product and portfolio level

Materiality is central to PPRIA: companies assess each product in their portfolio (SPARc):

- **Inside-out:** Does the product create real-world harm or benefits for people, ecosystems or society? This is done in Step 2, using significance (scale, extent and irremediability).

- **Outside-in:** Does the product, or its suppliers or customers, rely on an external resource, condition, or relationship affected by this material physical impact? When dependency exists, Step 3 assesses the related financial risk or opportunity.

This dual lens assessment enables the capturing of physical impacts connected to business dependencies and those that remain a real-world concern with no financial consequences for the business. Companies monitor the latter as regulation or market shifts could create a new dependency over time.

Example: When the production of a product contributes to water stress and depends on stable water supplies, high water consumption can become a financial material risk. When it does not, the company will still document and monitor its consumption in case the business environment changes.

The company then structures the assessment results to input typical decision processes to inform action in Step 4.

Framework alignment

This two-lens approach is the foundation of double materiality as required by the EU CSRD (ESRS 1).¹⁶¹ ISSB S1/S2¹⁶² applies only the outside-in lens – financial relevance – but rests on the same dependency concept. Both build on the 2023 TNFD recommendations,¹⁶³ which integrates the 2017 TCFD¹⁶⁴ recommendations and offers the most complete company guidance for identifying nature- and climate-related dependencies. For the dependency identification step, the TNFD LEAP approach¹⁶⁵ is the most detailed publicly available resource.

F.2 Financial pathway and O&R catalogue examples

Financial pathways

Financial pathways describe how a sustainability-related impact can affect financial performance, position, or long-term prospects. They provide the link between environmental and social (E&S) impacts identified in Step 2 and the financial opportunities and risks (O&R) assessed in Step 3.

A financial pathway:

- Is defined by the company before it assesses the magnitude and likelihood;
- Identifies the financial dimension affected (e.g., revenue, costs, assets or operational continuity);
- Establishes the financial reference point used throughout the assessment;
- Guides the selection of the most appropriate assessment approach (qualitative, semi-quantitative, quantitative, scenario-based, or cost-based).

Sustainability impacts only become decision-relevant when their financial transmission mechanism is made explicit. The company *should* therefore map each material E&S impact to the channel through which it may influence financial performance. This ensures the consistent assessment of the impacts and prevents different financial effects from being blended together, which can lead to inconsistent judgements of magnitude and likelihood.

Defining pathways upfront ensures that assessment techniques follow the nature of the financial effect rather than data availability alone. This improves transparency, strengthens methodological consistency, and enhances comparability across topics, business units, and assessment cycles. It also creates a practical bridge between sustainability performance and financial relevance, consistent with the principles of ISSB, IFRS S2, and TCFD-aligned approaches.

There are five illustrative financial pathway categories, reflecting the principal mechanisms through which sustainability factors affect enterprise value:

1. **Bottom-line pathways:** Have direct effects on costs and profitability, including changes in energy, water, raw material, compliance, remediation, or abatement costs, as well as margin erosion resulting from the internalization of previously externalized costs.
2. **Top-line pathways:** Have effects on revenue generation, including changes in demand, sales volumes, pricing power, market access, customer preference, and the ability to capture sustainability-related market opportunities.
3. **Balance-sheet and asset-value pathways:** Have effects on the value of the asset base, including asset impairment, stranded assets, capital revaluation, write-downs, or additional capital expenditure requirements.
4. **Operational continuity pathways:** Have effects arising from disruptions to business operations, including supply shortages, production interruptions, infrastructure constraints, workforce availability, health and safety incidents, or other factors affecting operational resilience.
5. **Strategic option-value pathways:** Have longer-term effects on competitive positioning and future growth potential, including access to emerging markets, portfolio resilience, innovation opportunities, technology leadership, and strategic flexibility.

This pathway structure is illustrative rather than exhaustive. Companies *may* adapt or extend it to reflect sector-specific characteristics, business models, and decision-making needs.

Building an O&R type catalogue

The company uses the O&R catalogue to map each E&S impact to an O&R. It builds the catalogue using the TNFD standards symmetrically:

- Opportunity categories typically include: resource efficiency, energy source, products and services, markets, resilience, positive social outcomes;
- Risks categories include policy and legal, technology, market, reputation, physical, social.

It ensures O&R types are mutually exclusive and collectively exhaustive, i.e., non-overlapping and complete. The company enriches this O&R catalogue at each new portfolio assessment cycle.

Table 53 illustrates a mapping of E&S impacts to both risk and opportunity categories, while Table 54 provides an additional example of opportunities and risks derived for specific O&R types.

Table 53: Mapping E&S themes to O&R categories

Theme	Risk category	Risk definition	Opportunity category	Opportunity definition
Climate action	Transition policy and pricing risk	Increased costs or asset impairment from carbon pricing, regulation, standards or phase-out requirements	Cost-efficiency opportunity	Reduced operating and capital costs through energy efficiency, electrification and low-carbon inputs
	Technology transition risk	Loss of competitiveness or stranded assets due to rapid shifts towards low-carbon technologies	Growth and access opportunity	Revenue growth and improved access to capital from low-carbon products, services or markets
Social impact	Labor and human rights risk	Financial, legal or operational impacts arising from poor labor conditions, wages, health and safety, or rights violations	Productivity and resilience opportunity	Improved workforce stability, productivity and supply reliability through stronger social practices
	License-to-operate risk	Disruption, delays or cost increases due to community opposition or loss of social acceptance	Trust and brand opportunity	Enhanced brand value and stakeholder trust driven by positive social outcomes
Nature	Dependency risk	Exposure to freshwater availability and quality constraints affecting operations or suppliers	Efficiency opportunity	Cost and risk reduction through water efficiency, reuse and alternative sourcing.
	Physical risk	Production disruption or rising costs due to drought, depletion or competing water demand	Resilience opportunity	Increased operational and supply chain resilience through diversified water strategies.
	Regulatory and liability risk	Fines, remediation costs or shutdowns from stricter discharge limits, bans or enforcement	Reformulation and abatement opportunity	Cost avoidance and differentiation through cleaner processes, substitution or treatment technologies
	Reputational escalation risk	Brand damage and stakeholder backlash from visible pollution impacts on ecosystems or communities	Innovation opportunity	Development of cleaner products or services aligned with tightening environmental standards.
Circular economy	Resource volatility risk	Input cost volatility or supply disruption due to scarcity, geopolitics or constraints on virgin materials	Input substitution opportunity	Reduced costs and risks through secondary, recycled or bio-based materials
	Concentration dependency risk	Over-reliance on a limited set of primary material sources	Supply security opportunity	More stable and diversified sourcing through circular inputs
	End-of life cost risk	Rising disposal, take-back or extend producer responsibility costs	Value recovery opportunity	Revenue or cost offsets from recycling, reuse or by-product valorization
	Compliance risk	Penalties or market exclusion due to non-compliance with waste and recycling regulation	Cost avoidance opportunity	Lower disposal and compliance costs through design-for-circularity
	Execution and scaling risk	Economic or operational failure of circular technologies or business models to scale	New business model opportunity	Revenue from product-as-a-service, refurbishment, take-back or circular platforms
	Capital allocation risk	Misallocation of capital to immature or non-scalable circular solutions	System efficiency opportunity	Margin and resilience gains from system-level optimization
	Systemic transition risk	Competitive disadvantage from remaining linear while markets and regulation shift to circular systems	Resilience opportunity	Long-term resilience by decoupling revenue from virgin resource use
	Stranded asset risk	Economic obsolescence of assets designed for linear throughput	Strategic differentiation opportunity	Competitive advance from early positioning in circular value chains

WBCSD's [*Building the business case for sustainability: A practical guide for business connecting financial drivers and opportunities*](#) provides more examples of translating E&S impacts into opportunities

Table 54: Additional examples of O&R derived for specific O&R types

Opportunities	
Efficiency-related opportunities	Gains from improved resource use (e.g., energy, water, materials)
	Cost savings through process optimization
Technology opportunities	Adoption of new or alternative technologies that reduce environmental impact
	R&D investments in nature-positive or low-carbon solutions
Market opportunities	Access to new or expanding markets due to sustainability trends
	Shifts in consumer preferences towards sustainable products
Products and services	Development of nature-positive or climate-resilient offerings
	Innovation in sustainable packaging, materials or services
Capital flow and financing	Access to green finance instruments (e.g., green bonds, ESG-linked loans)
	Improved investor perception and funding opportunities
Reputational capital	Enhanced brand value and stakeholder trust through sustainability leadership

Risks	
Physical risks	Acute: sudden events like floods, wildfires or storms
	Chronic: long-term changes, such as rising temperatures or biodiversity loss
Transition risks	Those resulting from the shift to a low-carbon or nature-positive economy , Including : policy, legal, market and technology changes
Policy & legal risks	Regulatory changes, such as carbon pricing, biodiversity protection laws
	Legal liabilities from environmental damage
Market risks	Loss of market access or increased costs due to supply constraints or shifting demand
Technology risks	Obsolescence of current technologies
	High costs of transitioning to new systems
Reputational risks	Damage to brand or stakeholder trust due to poor environmental performance
Liability risks	Legal actions or fines due to environmental harm or non-compliance

F.3 Scenario space: Technical specifications and alignment with key reference frameworks

A scenario space is **future-proofed** when no material possible future falls entirely outside it. This requirement is embedded in the major disclosure frameworks:

- TNFD (LEAP approach and supplementary guidance)¹⁶⁶ requires that scenarios collectively reflect the plausible range of futures relevant to the organization's dependencies and impacts, including both transition and physical pathways, and that the company disclose the rationale for scenario selection.
- IFRS S2/ISSB¹⁶⁷ requires that companies use climate-related scenario analysis that is appropriate to their circumstances and reflects a range of possible future states, including both low-emissions and high physical-risk futures. The company *shall* explain how it has addressed climate-related risks and opportunities that a single scenario may not capture.
- CSRD/ESRS E1¹⁶⁸ requires companies to use more than one climate scenario, covering at least a 1.5°C-aligned transition pathway and a higher warming/physical scenario. It also requires scenarios to be consistent with the current best available science.

In practice, a **minimum viable scenario set** for PPRIA comprises the full range, from orderly transition to physical disruption:

- (1) A **transition** scenario;
- (2) A **baseline/delayed-action** scenario; and
- (3) A **physical/stress** scenario.

Together, these three scenarios ensure that no major class of future – orderly transition, delayed transition, or physical – is invisible to the assessment.

Specifically, this means:

- For **climate transition and physical risk**, a minimum viable set includes an accelerated-transition pathway (accelerated policy and market change consistent with a 1.5–2°C pathway (Network for Greening the Financial System (NGFS) Net Zero 2050¹⁶⁹ or equivalent), a baseline/delayed-action pathway based on the trajectory of current policies, and a high physical risk/stress pathway (higher warming or abrupt disruption pathway that stresses physical and systemic risks) – covering the full range, from orderly transition to physical disruption.
- For **water use**, relevant scenarios address water stress trajectories and ecosystem change pathways under different policy and demand conditions.
- For **social impact**, they address regulatory enforcement pace and supply chain disruption events.
- For **circularity**, they address market transformation speed and tightening product standards.

In many companies, strategy departments or businesses develop scenarios on business-relevant topics that are not explicitly mentioned in sustainability frameworks – geo-political conflicts, consumer behavior, raw material and energy markets, etc. We advise companies to consider these topics for scenario construction and to align time horizons for data and assumptions. This will improve the credibility and weight of scenarios for decision-making in different functions for different purposes throughout the company. It will also ensure the frequent review and updating of the scenarios (typically one per year).

Consolidation and harmonization: For each O&R type and time horizon, the company consolidates each scenario result into a single value using one of three approaches – an average across scenarios, a worst-case value, or a single scenario justified as most decision-relevant. Where results for the same O&R already exist under a different scenario or time horizon, the company first restates it in the current scenario set and time horizons before consolidation. It documents the method used in each case to keep the results reproducible.

F.4 Attribution keys: cluster-to-SPARc, shared-measure splitting, and sensitivity

Step 3 has two types of technical attribution.

The first is **the cluster-to-SPARc attribution**: Where the company assesses the O&R for a cluster of SPARcs, the attribution key (one-to-one or one-to-many; revenue-based, cost-based, or economic allocation) assigns the cluster result back to each SPARc. The step-by-step attribution table, the rule for how the use case and organizational level set the clustering granularity, when clustering is optional, and the effort-versus-value guidance all sit here. This is how Step 4 aggregates and declusters.

The second is **attributing a single shared measure across the several opportunities and risks** it affects. Because one CapEx or OpEx measure can address several O&R types at once (measures deliberately overlap), the measure's gross-to-net effect must be split across those types to produce a net result per type. The company *can* make the split through relative gross exposure, causal weighting, or structured expert judgement.

It documents the chosen basis. Because the net result per O&R type – and therefore the SPARc's category in Step 4 – depends on this split, **a sensitivity analysis** on the attribution key is required. The company tests how the SPARc's net opportunity and net risk vary under a different but defensible split, and how this may impact the categorization of the SPARc in Step 4 (i.e., scale; investigate – mitigate - improve; challenge). Where a category is sensitive to the attribution choice, the company records that fragility and carries it forward rather than hiding it, such that measures overlap without the overlap corrupting the per-type results. The sensitivity analysis and the plausibility check on profitability (if based on a quantitative gross assessment) will result in a prioritization of O&R measures to improve the resilience of a company's portfolio with the best use of limited financial resources.

F.5 Assessment techniques

F.5.1 Introduction

There is no single answer to the best assessment technique to use for a portfolio. A company makes the choice depending on E&S topic and O&R type, as well as the data, data set and models available. A technique that works for climate – where unit-level energy data, carbon price trajectories and transition pathways all exist – may not be applicable for social impacts for suppliers further up in the complex and long supply chains (rereferred as to suppliers in tiers 2, 3, etc.), where the evidence base is thin.

Note: A tier 1 supplier is a direct supplier to the company. Tier 2 suppliers are supplying Tier 1, and Tier 3 suppliers deliver materials to Tier 2.

The technique for assessment selection involves three linked decisions:

1. **Valuation basis:** assumed costs, true costs and externalities, or scenario-based estimation; driven by the O&R type and its financial pathway.
2. **Techniques and time treatment:** which valuation and risk-assessment techniques to use, and whether to model statically or dynamically; driven by the time horizon assessed and by whether a topic-specific scenario set exists.
3. **Output form:** qualitative, semi-quantitative, or quantitative; driven by data availability and topic maturity.

Take two example combinations, such as (A) a quantitative, externality-based, static assessment or (B) a quantitative, scenario-based, dynamic one: both are “quantitative” but demand very different data, effort and interpretation.

Each combination requires expert time, data licenses, modelling capability and documentation – all of which bear consequences. Each determines how the company nets, normalizes, aggregates and discloses the results: a qualitative result stays a band, while a quantified one retains its monetary value, can be tested against profitability hurdles and aggregates cleanly. The choice of assessment technique therefore requires attention.

F.5.2 Selecting an assessment technique

To assess portfolio opportunities and risks, the company defines future scenario estimates using various techniques, models and data sources, then explores these resources and applies them throughout the scoring process.

Opportunities and risks can differ across geographies, markets and business contexts. Selecting an assessment approach that fits the context while keeping consistency across comparable SPARcs is important.

1. Valuation basis

The company *may* base the assessment on:

- **Assumed costs**, where it estimates future costs using predefined assumptions;
- **True costs or externalities**, where the company translates environmental and social impacts into economic value;
- **Scenario-based assessments**, where it evaluates future opportunities and risks under defined alternative futures.

The company *can* apply one or several of these approaches, considering the differences and overlaps between them, and use each approach as part of a broader quantitative or qualitative assessment framework.

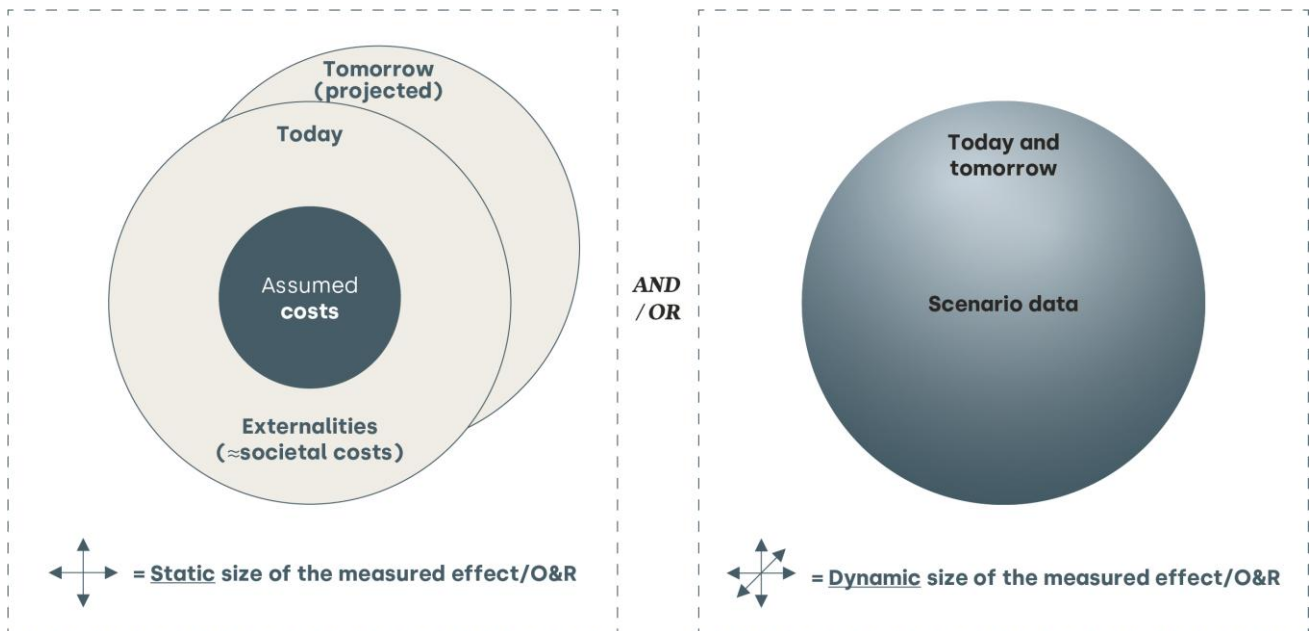
2. Techniques and time treatment

To support these approaches, the company *can* use a range of valuation and risk assessment techniques, including:

- Abatement-cost approaches;
- Willingness-to-pay (WTP) methods;
- Damage-cost approaches;
- Cost-benefit analysis;
- ESG ratings and sustainability-performance indicators;
- Risk and vulnerability assessments;
- Value-at-risk models;
- Other recognized methods appropriate to the opportunity or risk being assessed.

The company *can* conduct the assessment using either static or dynamic modelling. Static approaches assess O&R exposure at a defined point in time, whereas dynamic approaches evaluate how exposures evolve under changing market, regulatory, technological or environmental conditions across scenarios and time horizons.

Figure 26: Static vs dynamic techniques



3. Granularity of output

It is important to express the output of the technique in a way that support comparability and decision making (see [Table 55](#)). Outputs take one of three forms: qualitative, semi-quantitative or quantitative.

Table 55: O&R assessment techniques mapped to output

Qualitative	Quantitative	Semi-quantitative
• Scenario narratives • Stakeholder needs analysis • Theory of change • Mapping to intention frameworks • Expert judgement	• Cost-benefit analysis Value-at-risk model • Abatement cost approach • Social return on investment • Willingness to pay • Damage cost approach • Marginal abatement cost curve	• Double materiality in CSRD • ESG ratings • Expert judgement

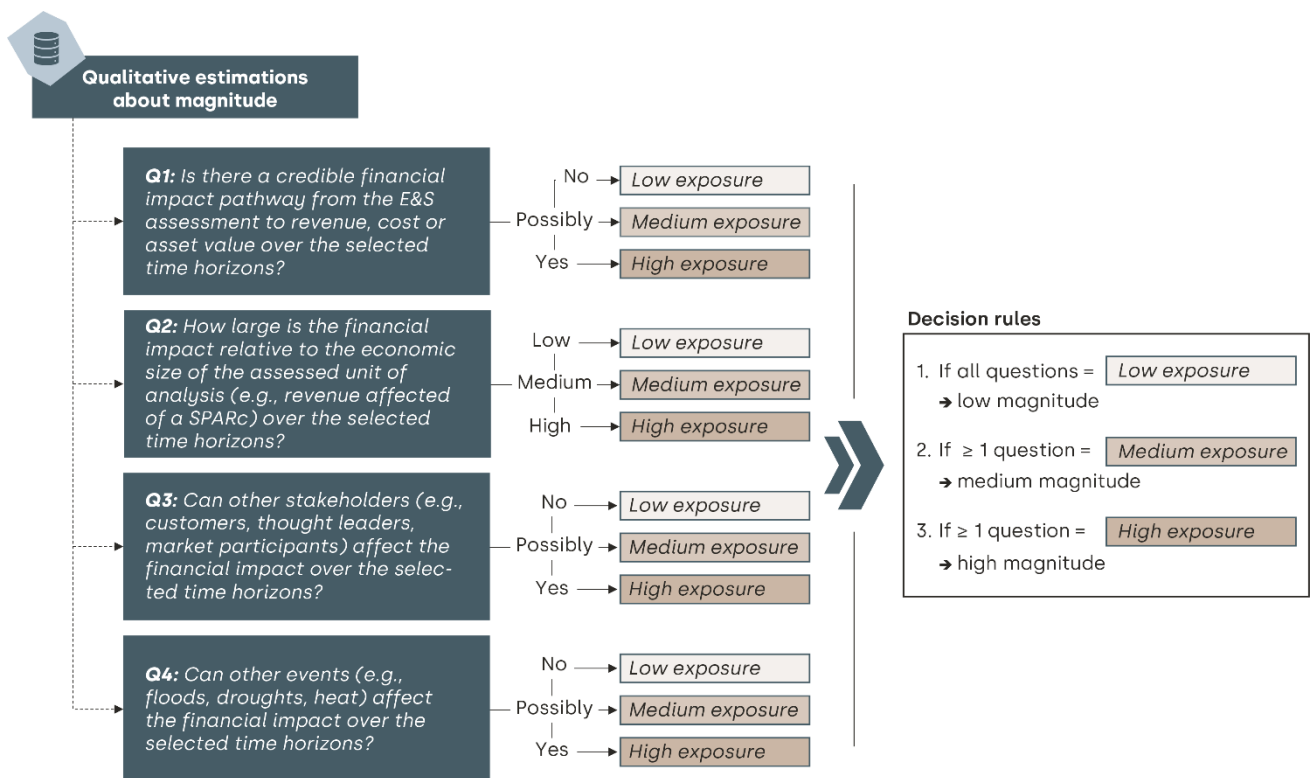
Potential tradeoffs to consider when selecting assessment techniques include:

- **Cost-based techniques**, which rely on assumed or actual company costs. Unlike externality-based methods, they capture only the company's financial burden rather than the full societal cost across stakeholders. They are also relatively **static**, as projections require additional assumptions to extend a single point-in-time estimate into the future.
- **Scenario-based techniques** use predefined scenario spaces and incorporate interdependencies within the model. They typically provide **multi-year outlooks** and allow more dynamic assessments. However, scenario sets are often **topic-specific**, meaning suitable scenarios may not exist for all issues.

F.5.3 Output granularity in detail: qualitative, semi-quantitative, quantitative

A company may prefer **qualitative techniques** (structured expert judgement) when it cannot robustly quantify opportunities and risks, data is limited, or key data points are missing. Qualitative techniques include externality-based reasoning, scenario narratives, stakeholder needs analysis, theory of change approaches, mapping against intention frameworks, and structured expert judgement. These approaches provide an organized and transparent way to assess the magnitude, likelihood and business relevance of opportunities and risks, while making assumptions and sources of evidence explicit. They work well as an initial screening and prioritization tool, and the company *can* later complement them with semi-quantitative or quantitative methods as data improves.

Figure 27 illustrates an example of a qualitative evaluation of a gross O&R exposure.

Figure 27: Illustrative example of a qualitative evaluation of gross O&R exposure

The qualitative assessment produces a structured evaluation of the magnitude of an opportunity or risk. Responses to the assessment questions classify the exposure as low, medium or high. The resulting magnitude assessment provides a transparent basis for prioritization, comparison across SPARcs, and, where appropriate, progression to semi-quantitative or quantitative assessment. The company documents the rationale, assumptions and supporting evidence to keep results traceable and consistent across the portfolio.

The qualitative assessment follows a **precautionary approach**. If all assessment questions indicate low exposure, the magnitude is low. If one or more indicate medium exposure, the magnitude is medium. If one or more indicate high exposure, the magnitude is high. The highest exposure across the assessment questions therefore sets the final qualitative magnitude for the opportunity or risk.

The company *can* also translate low, medium and high magnitudes into financial values by defining corresponding monetary thresholds.

Semi-quantitative techniques anchor expert judgement in external datasets. Rather than relying on judgement alone, the company *can* use published indicators (water stress, climate hazard, biodiversity, commodity price and supplier concentration data) as proxies for magnitude and likelihood, evaluated across the defined scenarios. The estimate is therefore bounded by evidence, while the company still interprets what each indicator means for the specific opportunity or risk.

Typical dataset libraries include WRI Aqueduct,¹⁷⁰ Food and Agriculture Organization (FAO) of the United Nations,¹⁷¹ Intergovernmental Panel on Climate Change (IPCC),¹⁷² TNFD LEAP,¹⁷³ IBAT,¹⁷⁴ Organisation for Economic Co-operation and Development (OECD),¹⁷⁵ World Bank,¹⁷⁶ International Energy Agency (IEA),¹⁷⁷ datasets, and commodity price and supplier concentration sources.

Quantitative techniques calculate the effect through one of three methods: externality valuation (abatement cost, damage cost or willingness-to-pay), static modelling of a cost or revenue change per scenario, or dynamic modelling via integrated assessment models (IAMs) that capture system

feedback and transition pathways. They draw on the company's cost and revenue models and on externality price sets and transition or physical pathways from NGFS,¹⁷⁸ IEA,¹⁷⁹ and IPCC.¹⁸⁰

The company will rarely use these techniques in isolation. They typically sit at the end of a layered workflow: a qualitative screen to prioritize, semi-quantitative analysis to narrow, and quantitative depth where the opportunity or risk is material.

Table 56 illustrates further examples of models and data sources for robust O&R assessments.

Table 56: Example models and data sources for robust O&R assessments (illustrative)

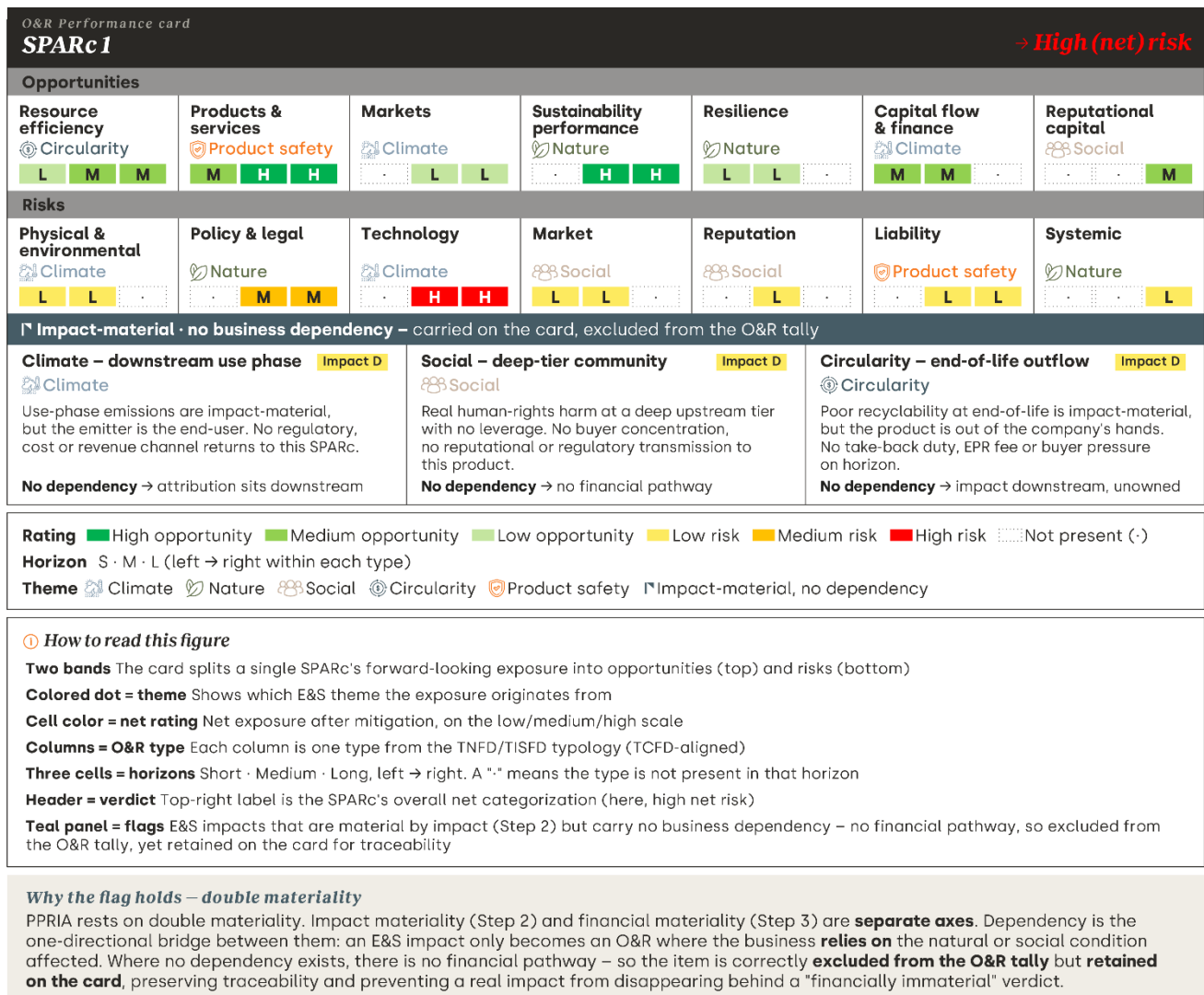
Source/model	Full name	E&S topic	Static/ dynamic	Description
<u>EU ETS</u>	European Union Emissions Trading System	Climate	Static	Fixed CO ₂ price benchmark
<u>IEA CO₂ price</u>	International Energy Agency CO ₂ price benchmarks	Climate	Static	Projected carbon price thresholds
<u>Discharge & abstraction limits</u>	EU Water Framework Directive limits	Water	Static	Regulatory water use and effluent limits
<u>ESA CCI</u>	European Space Agency Climate Change Initiative	Ecosystems	Static	Land cover baseline data
<u>IUCN Red List</u>	International Union for Conservation of Nature Red List	Ecosystems	Static	Global database of species conservation status
<u>Natura 2000</u>	European Network of Protected Areas	Land	Static	Land-use and biodiversity protection network
<u>World Bank</u>	The World Bank Group	Other	Static	Macroeconomic and demographic data
<u>UN</u>	United Nations	Other	Static	Statistical and demographic datasets
<u>IMF</u>	International Monetary Fund	Other	Static	Macroeconomic projections and financial indicators
<u>UNDP</u>	United Nations Development Programme	Other	Static	Socioeconomic and inequality data
<u>WID</u>	World Inequality Database	Other	Static	Global income and wealth inequality data
<u>RMS</u>	Risk Management Solutions	Climate	Dynamic	Insurance model for climate risk assessment
<u>Verisk</u>	Verisk Analytics	Climate	Dynamic	Risk modelling and data analytics platform
<u>NGFS</u>	Network for Greening the Financial System	Climate; Other	Dynamic	Climate and transition scenario framework
<u>CORDEX</u>	Coordinated Regional Climate Downscaling Experiment	Climate	Dynamic	Regional climate data and downscaled GCMs
<u>IEA STEPS/ NZE</u>	IEA Stated Policies Scenario / Net Zero Emissions Scenario	Climate	Dynamic	Transition scenario model
<u>IPCC</u>	Intergovernmental Panel on Climate Change	Climate	Dynamic	Global climate change projections
<u>WEAP</u>	Water Evaluation and Planning System	Water	Dynamic	Hydrological and water resources planning model

Source/model	Full name	E&S topic	Static/ dynamic	Description
<u>WWF Water Filter</u>	World Wide Fund for Nature Water Risk Filter	Water	Dynamic	Freshwater risk and impact tool
<u>WRI Aqueduct</u>	WRI Aqueduct Water Risk Atlas	Water	Dynamic	Global water risk mapping tool
<u>ENCORE</u>	Exploring Natural Capital Opportunities, Risks and Exposure	Water; Ecosystems	Dynamic	Environmental dependency and risk database
<u>GLOBIO/GBIF</u>	Global Biodiversity Model / Global Biodiversity Information Facility	Ecosystems	Dynamic	Biodiversity and land-use impact model
<u>ARIES for SEEA</u>	Artificial Intelligence for Ecosystem Services for SEEA	Ecosystems	Dynamic	Ecosystem service valuation (EU & UN)
<u>WWF Biodiversity Risk Filter</u>	WWF Biodiversity Risk Filter	Ecosystems	Dynamic	Global biodiversity and ecosystem risk tool
<u>InVEST</u>	Integrated Valuation of Ecosystem Services and Tradeoffs	Ecosystems; Land	Dynamic	Ecosystem service valuation and spatial tool
<u>FAO SOILS Portal</u>	Food and Agriculture Organization Soils Portal	Land	Dynamic	Soil and land-use data
<u>European Soil Database v2.0</u>	European Commission JRC Soil Database	Land	Dynamic	EU-level soil and land-use data
<u>GLOBIO model</u>	Global Biodiversity Model	Land	Dynamic	Land-use and biodiversity model
<u>LandSHIFT</u>	Land Simulation to Harmonize and Integrate Freshwater and Terrestrial Systems	Land	Dynamic	Land-use change and scenario model
<u>ILO Just Transition Tool</u>	International Labour Organization Just Transition Tool	Other	Dynamic	Labor and skill transition modelling
<u>ENVISAGE</u>	Environmental Impact and Sustainability Applied General Equilibrium Model	Other	Dynamic	World Bank macroeconomic and social transition model

F.6 Granular SPARc O&R performance card

This example shows the card for a single SPARc, disaggregated by O&R type and time horizon. Each type is tagged to its PPRIA theme and read from left to right over the short-, medium- and long-term horizons.

Figure 28: Granular O&R performance card for a single SPARc – disaggregated by O&R type, with impact-material flags



Interpretation

The company tags each type with its PPRIA theme (climate, nature, social impacts, circular economy, product safety) and reads short – medium – long, from left to right within each type; a "." means the type is not present in that horizon.

Cell color indicates the net rating after mitigation on the low/medium/high scale; the top label on the right is the SPARc's overall net categorization.

A dedicated panel shows impact-material topics (Step 2) that carry no business dependency. They therefore have no financial pathway to this SPARc. They are excluded from the O&R categorization, but they stay visible for traceability.

This is the double-materiality bridge: an E&S impact becomes an O&R only where the business relies on the environmental or social condition affected. O&R types follow the TNFD/TISFD typology (TCFD-aligned).



F.7 Step-by-step example: MountVacuum

This example carries a (fictitious) two-SPARc portfolio through the full Step 3 method, following the eight-waypoint calculation sequence of the Step 3.4 assessment sequence, one waypoint at a time. It shows one shared, cluster-level effect (water) allocated unequally and assessed against each SPARc's own financial base, alongside an entity-level effect (social) where equal allocation is appropriate.

MountVacuum distributes vacuum cleaners. It does not manufacture them, but purchases finished vacuum cleaners from suppliers worldwide and focuses on marketing and distribution. It operates globally but sells predominantly to the European market. A vacuum cleaner consists of housing (plastic casing), electronics (printed circuit board assembly, motor, battery), consumables (dust bags, filters) and packaging.

F.7.1 Waypoint 1: Inherit the E&S assessment from Step 2

Waypoint 1 carries forward the Step 2 performance rating, benchmark logic and quantified assessment result for each material topic.

MountVacuum segmented its portfolio into two SPARcs in Step 2 because the application dimension differs materially:

- SPARc 1 is sold to European customers under MountVacuum's own brand;
- SPARc 2 is sold as a white-label product, so its end application is not fully known.

The two SPARcs also differ in E&S performance (circular economy) and in commercial positioning – the reason their financial exposures diverge later. [Table 57](#) shows how the company carries Step 2 record forward.

Table 57: SPARc 1 (branded, European)

Inherited Step 2 E&S outputs and ratings used as inputs for Step 3. In this fictional, simplified example, the E&S topics below have been identified as material (Step2 Preparation - materiality filter) and the other non-material topics have therefore not been assessed.

E&S topics	Segmentation assessment	Benchmark	Quantified E&S impact	E&S rating
Climate change mitigation	Use-phase electricity + embedded carbon (battery, motor, plastics, electronics)	Market practice	Lifetime electricity 280 kWh/unit vs market 250 kWh/unit	D
Water use	Indirect water footprint, mainly upstream metals, electronics, electricity generation	Market practice	Embedded water 2.6 m ³ /unit vs market 2.4 m ³ /unit	C
Circular economy	Recycled content, reparability, modularity, packaging, material intensity	Market practice	Recycled plastic 25% vs 15%; reparability 6/10 vs 4/10; 4.0 kg with -0.5 kg redesign potential	B
Social impacts	Labor and human rights exposure in electronics, metals, battery supply chain	Absolute significance/ minimum expectation	EUR €32 million in exposed procurement spending; tier 1 audit 45%; low tiers 2/3 transparency; 20% critical spending concentrated	D

Table 58: SPARc 2 (white-label)

The difference with SPARc 1 is the circular economy performance (equal to market practice for Sparc 2, rather than above it for Sparc 1).

E&S topics	Segmentation assessment	Benchmark	Quantified E&S impact	E&S rating
Climate change mitigation	Same footprint basis as SPARc 1	Market practice	Same as SPARc 1	D
Water use	Same as SPARc 1	Market practice	Same as SPARc 1	C
Circular economy	Same categories as SPARc 1	Market practice	Reparability equal to market practice (white-label, no special repair offering)	C
Social impacts	Same as SPARc 1	Absolute significance/ minimum expectation	Same as SPARc 1	D

Using each product line's business and financial profile to decide what counts as financially material

Alongside the E&S impacts assessment, the company also carries each product line's financial key performance indicators used later to compare every exposure (waypoints 4, 7 and 8). In this example, annual revenue and gross margin are the target data points for each product.

SPARc 1 is an own-brand line sold through European retail at a premium; SPARc 2 is a white-label line sold to third parties at a low margin (fictional example in [Table 59](#))

Table 59: Fictional financial KPIs for the two SPARcs

Commercial basis (illustrative, annual)	SPARc 1 – branded	SPARc 2 – white-label
Units sold	≈ 200,000	≈ 300,000
Average selling price	EUR €320/unit	EUR €160/unit
Annual revenue	≈ EUR €64 million	≈ EUR €48 million
Gross margin	≈ 35% (≈ EUR €112/unit)	≈ 12% (≈ EUR €19/unit)
Cost pass-through ability	Partial – brand pricing power	Limited – price taker

This shows that a cost increase induced by an E&S impact will affect the two SPARcs differently.

In practice, when fewer financial data are available, and until this information is made available, the company *can* do the assessment by documenting assumptions made.

F.7.2 Waypoint 2: Map financial pathways and O&R types

Waypoint 2 maps **financial pathways** that will translate impact into a business value (leverage or exposure) so that each value lever generates one O&R type:

E&S impact → dependency → financial effect → O&R type → time horizon

Each material E&S topic is translated by identifying the dependency, the financial effect, the O&R category and the time horizon. [Table 60](#) demonstrates how the company avoids redundancies in O&R by deciding which financial impacts to consider as opportunity and risk and which to consider as CapEx or OpEx measures to seize opportunities and to mitigate risks. The right-hand column records the level at which the company assesses each topic – per SPARc, at cluster level, or at entity level – which then determines how the result is declustered in Waypoint 8:

Table 60: Financial-pathway mapping

E&S topic associated with the impact in Table 57 and Table 58	Dependency	Main financial effect	Time horizon	O&R type	Level of assessment
Climate change mitigation	Competitive energy and carbon performance	Higher electricity use and embedded carbon weaken market position. The company does not quantify as risk the exposure to cost increase related to redesigning the product and its subcomponents for better GHG emissions performance to align or exceed market standard. It addresses it as effort and measures to innovate and capture it as a new product opportunity	Short–medium–long	Policy – risk: higher input cost on existing model Market – risk: loss of market share because of non-competitive energy performance for existing model	Per SPARc (footprints differ)
Water use	Available, stable, water-secure upstream supply chains	Higher embedded water use in raw material and subcomponents leads to increased supply costs and exposure to supply chain disruption. The risk and financial exposure are today already significant and expected to continue to increase exponentially with climate change, the company decides to capture it under physical risk	Medium–long	Physical – risk	Cluster (shared suppliers)
Circular economy	Material efficiency and circular market fit	Better circular performance strengthens product attractiveness and builds resilience against virgin material cost pressure. The company decides that the most relevant financial pathway is the opportunity to gain market share with a better circularity performance and makes this part of its brand promise.	Short–medium	Market – opportunity	Per SPARc (products differ)

E&S topic associated with the impact in Table 57 and Table 58	Dependency	Main financial effect	Time horizon	O&R type	Level of assessment
Social impacts	Reliable and socially compliant supply chains	Human rights exposure can trigger remediation costs, supplier replacement, reputational damage and regulatory consequences. Available statistical data suggest litigation is very unlikely. However, non-compliant supply chains are a threat to the brand promise through their social impact. The company decides to quantify sales at risk for a specific customer segment, because managers pay more attention to lost sales than to higher purchasing costs.	Short–medium	Market – risk	Cluster (entity-level)

One E&S topic can generate several O&R types, but the assessment must allow the company to decide which financial pathway is predominant – considering the impact on its business and business model, as well as the effectiveness in pointing to the measures that mitigate risks and seize opportunities. The company counts each effect only once so that the O&R types add up without double counting. Climate change affects market share (revenue), redesign and embedded carbon input cost (COGS/CapEx) and ecodesign compliance (policy). The table records the main financial pathway per topic for readability. For more insights on how to map E&S themes to O&R categories, please see Appendix F.2.

Note on double counting: a design or raw material change to an existing product that reduces a gross risk is the mitigation of that risk, not a separate opportunity. Companies can, in principle, reframe any risk as an opportunity; but at the product level, it can only account for it once. Only where the change results in a genuinely new or improved product, sold as such, does a distinct opportunity arise – and the company then models it as a new SPARc, which again avoids double counting.

Level of assessment and clustering

A decision to cluster a group of SPARcs is motivated by the nature of the O&R type:

- The company assesses climate and circular economy per SPARc, because the two product lines have different footprints and E&S performance.
- It assesses water once and clusters the suppliers for both SPARcs together, because both SPARcs draw on the same water-stressed upstream suppliers with the same embedded water per unit. This requires the declustering of the shared result for each SPARc at the end of the assessment.
- Social impacts affect the brand promise and sales for a specific customer segment. The company therefore assesses the related risk exposure at the entity level. The attribution key differs by theme; and, as the water effect shows, one shared effect does not mean one identical result.

F.7.3 Waypoint 3: Define the assessment approach

Waypoint 3 sets the scenario space including physical/stress, baseline and transition considerations. The assessment technique is selected by O&R type and so are the financial thresholds.

MountVacuum chooses a narrative (qualitative) approach considering their business model – as a distribution-focused company without in-house manufacturing – and the current maturity of available data. It defines three scenarios, each spanning all four E&S themes so that nothing is left out in the forward-looking scenario. The transition case aligns with a 1.5–2°C pathway (NGFS “Net Zero 2050”¹⁸¹ or equivalent). See [Table 61](#).

Table 61: Narrative scenario space

Scenario	Description	Key assumptions for MountVacuum
Baseline (business as usual)	Current regulatory and market trends continue; exposure to physical impacts of climate change grow exponentially	EU ecodesign standards tighten modestly; carbon and water pricing stay low; circularity preference grows gradually; supplier audits remain largely voluntarily; water stress grows exponentially with supply curtailments for industrial water users.
Transition (accelerated sustainability shift)	Regulatory, technological and market transition accelerates; compliance requirements and customer expectations rise significantly, global collaboration and trade support transition on a global scale; social and health issues are addressed together with climate- and nature-related issues	Mandatory ecodesign targets tighten substantially by 2030; EU Corporate Sustainability Due Diligence Directive (CSDDD) enforcement begins; white-label customers impose binding ESG criteria; carbon and water costs rise moderately; suppliers face rising raw-material costs but better supply security. Consumer purchasing decisions reward higher energy/embedded carbon/embedded water efficiency.
Stress (severe disruption)	Abrupt regulatory intervention, supply chain shock or reputational event	Sudden product standard tightening renders current models non-compliant; a supply chain human rights incident triggers public exposure; acute water stress in sourcing regions causes disruption and cost spikes.

The company applies three time horizons consistently across all scenarios and both SPARCs, aligned with the strategic planning cycle:

short-term (0–2 years) **medium-term** (3–5 years) **long-term** (6–10 years)

The time horizons align with company’s planning and strategy horizons.

- Short-term: sales targets and financial performance targets, price and volume purchasing contracts;
- Medium-term: commitments to partners, execution of decided measures, mid-term financial planning mainly based on projections;
- Long-term: product portfolio management, innovation management.

MountVacuum has done a CSRD double materiality assessment and derives its normalization **thresholds** from this. The company translates gross financial exposure and likelihood into a common low/medium/high scale. The exposure thresholds are expressed as percentages. In that way, the same absolute effect can fall in different bands depending on the SPARC revenue and margin (see [Table 62](#)). This is exactly what happens to the shared water effect. The company applies the same threshold scale to both SPARCs, which is what keeps their results comparable in Step 4.

Table 62: Gross financial exposure thresholds, aligned with MountVacuum's CSRD double materiality assessment.

Financial impact pathway	Low	Medium	High
Revenue exposure	< 1% of annual revenue	1–3% of revenue	> 3% of revenue
Cost of goods sold (as a proxy for gross margin exposure)	< 2% of annual COGS	2–5% of COGS	> 5% of COGS

The company applies percentages to each SPARc's own revenue and COGS.

Assessment technique per topic

Table 63 details how the company chooses the technique according to the E&S topic, reflecting data availability, topic maturity and the nature of each O&R category.

Table 63: Technique per theme

E&S topics	Assessment technique	Rationale
Climate change mitigation	Quantitative	Unit-level energy and carbon data enable direct monetization of competitive gaps and regulatory exposure under defined carbon price trajectories.
Water use	Quantitative	Embedded water use per unit allows for the modelling of procurement cost and supply disruption exposure against water risk scenarios and sourcing geographies.
Circular economy	Quantitative	Product-level performance data (recycled content, reparability, weight) monetizes both the opportunity side and regulatory compliance exposure.
Social impacts	Qualitative	Limited tier 2/3 data prevents reliable quantification; calling for a structured expert judgement across four exposure dimensions (remediation, supplier replacement, reputation, regulatory)

Note: Where full quantitative modelling is not possible, semi-quantitative tools (e.g., WRI Aqueduct, WWF Water Risk Filter, ENCORE, CLIMRISK) can provide a credible alternative. Here, the social assessment is flagged for upgrade to semi-quantitative next cycle.

F.7.4 Waypoint 4: Assess gross exposure per scenario

Waypoint 4 estimates gross financial effect using scenario, financial pathway and valuation techniques. The company assesses gross exposure for each E&S topic on the transition scenario (the primary reference), for each SPARc according to the identified KPIs (revenues and cogs). Waypoint 7 provides a deep dive into the shared water effect.

1. Climate change mitigation – quantitative, per SPARc.

SPARc 1 and SPARc 2 carry a 12% energy-performance gap (280 vs 250 kWh/unit) that adds market share pressure from energy-conscious buyers on top of the same compliance and input-cost channels – medium, at the upper end and approaching High under stress.

2. Water use – quantitative, shared cluster effect.

Both lines embed the same 2.6 m³/unit and source from the same water stressed regions (according to WRI Aqueduct). Under transition, suppliers pass a water stress-related cost increase to MountVacuum, estimated at ≈ EUR €8/unit. This company assesses this exposure

once, allocates it to each SPARc proportionally and normalizes it against its financial profile. This produces different gross bands (see [Table 64](#)).

3. Circular economy – quantitative, per SPARc.

SPARc 1 circular economy performance is above-market with a recycled plastic content of 25% vs 15% for the benchmark. Its reparability is rated 6/10 vs 4/10 (benchmark); and there is 0.5 kg/unit redesign potential. This creates a revenue upside opportunity derived from better market differentiation vs competition, lower virgin material cost exposure and stronger preparedness for upcoming ESPR regulation for sales in the European market. This leads to a gross high opportunity of $\approx 1\text{--}2\%$ revenues for SPARc 1. SPARc 2 remains comparable to the market benchmark with no repair offering, so its circular opportunity is negligible – therefore classified as low opportunity.

4. Social impacts – qualitative, entity-level.

There is a EUR €32 million exposure for procurement cost as only 45% of Tier 1 suppliers are audited and the company lacks transparency on social impact for their sub-suppliers (tiers 2 and 3). This impacts the sales of a specific customer segment and potential the entire sales of SPARc 1.

F.7.5 Waypoint 5: Apply likelihood within each scenario

Waypoint 5 assesses the probability the gross exposure will materialize under the scenario's conditions and combine gross $\times$ likelihood.

Likelihood here is a residual probability and depends on the scenario – this is not a forecast of the scenario itself.

This leads, in the case of the **transition scenario**, to:

1. Climate change mitigation. As MountVacuum's business model depends on global supply chains and the company has little influence on them, the likelihood that the scenario narrative directly impacts the company is set at 100%.

2. Water use. As governments do a lot to protect their own industries during global manufacturing consolidation and the company sees governments reduce their carbon pricing ambition, the company put a medium likelihood to the appetite of governments to increase water prices.

3. Circular economy. Circular economy policies struggle worldwide to regulate circularity at the product level. Consumers are more sensitive to it and circularity becomes more relevant for consumer products. Captured as a market opportunity, the company rates the likelihood in this scenario high, at 100%

4. Social impacts. As the transition scenario assumes global collaboration, social issues in supply chains will become more transparent and will be relevant for consumer decisions. As the company has captured the financial impact as market risk with brand sales exposed, it rates the likelihood at 100%

F.7.6 Waypoint 6: Consolidate across scenarios

Waypoint 6 applies the consolidation rule (most plausible, weighted or stress informed) to produce one consolidated gross figure per O&R.

MountVacuum uses the most plausible rule: it chooses the transition scenario as the leading scenario, while it uses the stress scenario as a resilience check (worst case scenario) and the baseline to set the floor. Because of this, the low/medium/high ratings (bands) from the transition scenario assessed in waypoints 4 and 5 carry straight through as the final reported figure. Under the stress scenario, the climate risk for SPARc 2 would rise too high and both the water and social risks would get worse. The company notes this as a resilience warning for SPARc 2 without changing

performance. By keeping the scenarios separate and reporting only on the transition case, the company lets the worst case results inform its judgement without overstating the reported risk exposure.

F.7.7 Waypoint 7: Assess net exposure

Waypoint 7 measures the residual risk or opportunity once the company has considered committed business responses – such as investments, mitigation or controls.

MountVacuum has limited committed mitigation in place, so for most themes the consolidated gross-x-likelihood result from waypoints 5 and 6 carries through to net. Two adjustments apply:

1. As supplier switching is the main way for the company to mitigate the social compliance risk, and switching comes with an OpEx cost, the net exposure reflects this;
2. Where the company can substantiate how and how much it can pass some of the cost through to customers (e.g., via pricing), it *may* deduct it from the net risk exposure.

Applied to this example this could mean:

- For SPARc 2, it cannot pass the extra cost to customers who are more price sensitive;
- For SPARc 1, the gross margin allows it to offset part of the water cost increase but not the entity-level social exposure.

Deep dive into the shared water use effect

Water use is the clearest illustration of unequal allocation – gross exposure, normalization, likelihood and net all together. The upstream dependency is identical for both SPARcs: they have the same suppliers, the same 2.6 m³/unit embedded water, the same ≈ EUR €8/unit water stress procurement cost increase in the transition scenario. The company allocates the cost increase to each SPARc by volume: each SPARc has the same ≈ EUR €8 cost increase; in absolute per-unit terms, the allocation is equal. What differs is the relative financial exposure once the company has normalized that equal absolute cost increase against each SPARc's own revenue and margin, on the same threshold scale, as shown in [Table 64](#).

Table 64: Shared water effect, step-by-step

Water effect (transition, illustrative)	Cluster (shared)	SPARc 1 – branded	SPARc 2 – white-label
Embedded water	2.6 m ³ /unit	2.6 m ³ /unit (same)	2.6 m ³ /unit (same)
Water stress procurement premium	≈ EUR €8/unit	≈ EUR €8/unit (by volume)	≈ EUR €8/unit (by volume)
SPARc average selling price	—	EUR €320/unit	€160/unit
Premium as % of revenue	—	2.5%	5.0%
Premium as % of gross margin	—	≈ 7%	≈ 42%
Cost pass-through	—	Partial (brand pricing power)	None (price-taker)
Gross band (vs thresholds)	—	Medium (1–3% rev.)	High (>3% rev.)
Net band	—	Medium risk	High risk

The same EUR €8/unit leads to medium financial risk for the premium-priced branded line (SPARc 1) and high financial exposure for the thin margin white-label line. The likelihood is the same for both ($\approx 50\%$, medium) – upstream water stress is structural, documented and medium-term. As a distributor, MountVacuum has limited direct mitigation. The net bands differ because the gross bands differ (normalization against each base) and because SPARc 1 can pass part of the premium through while SPARc 2, a price-taker, cannot.

F.7.8 Waypoint 8: Normalize, decluster, compile the O&R performance card

Waypoint 8 translates the net exposure to low/medium/high; declusters water- and social impact-related exposure results for each SPARc following the **attribution key** chosen for social and water impacts; compiles the O&R performance card by separating opportunities from risks; and hands off to Step 4.

When are equal allocation vs weighted by economics appropriate?

Allocating a risk or opportunity between the two SPARcs (in this example) depends on the type of risk:

- **Social/market risk** is treated as a **shared, indivisible cost** – it belongs to the company and does not vary with the business performance of the SPARc. So, it's split evenly between the two SPARcs.
- **Water risk** follows a weight allocation (per unit cost) as it actually does scale with the SPARc financials. Even though the cost is the same in euros per unit, it lands as medium risk for the higher-margin branded line and high risk for the thin-margin white-label line, because the same cost hits a thinner margin harder.

In this example, this means the following:

- Financial consequences for **climate and circularity** are already scored at the SPARc level and their resulting financial performance carries straight over.
- The company assessed the **water impact** for a supplier cluster – originally one combined score for both lines. The company split the shared ~EUR €8-per-unit cost increase based on each SPARc volume, then normalized for revenue and margin. This led to a medium net risk for SPARc 1 and a high net risk for SPARc 2
- The company assessed **social/compliance impact** at the entity level, then allocated it proportionally as the compliance and supply chain exposure are not divisible across product lines – both SPARcs carry the same high net risk

The consolidated, declustered result is the O&R performance card, which shows opportunities and risks separately (i.e., no offsetting), as shown in [Table 65](#): SPARc 1's high opportunity for circular economy and one high risk for social impacts.

Table 65: O&R performance card

E&S topic	O&R type	Level	Net – SPARc 1	Net – SPARc 2
Climate mitigation change	Market risk/policy & legal	Per SPARc	Medium – Risk (upper)	Medium – Risk (upper)
Water use	Physical risk	Cluster → declustered	Medium – Risk	High – Risk
Circular economy	Market risk	Per SPARc	High – Opportunity	Low – Opportunity
Social impacts	Market risk	Cluster (entity)	High – Risk	High – Risk

The two SPARCs can be read side by side because three comparability conditions hold (Step 2.2 Assessment): the company assessed both under the **same scenario space**, against the **same thresholds**, and with the **same definition of committed response** (only implemented or credibly committed measures reduce net).

This is the Step 3 output that Step 4 uses as input. As shown in [Table 66](#), the two SPARCs hand off materially different profiles:

Table 66: Step 3 outputs

Step 3 output (transition scenario)	SPARc 1 – branded	SPARc 2 – white-label
Risk side	Medium – climate (upper) Medium – water High – social impacts (non-compensable)	Medium – climate (upper) High – water High – social impacts (non-compensable)
Opportunity side	High – circularity opportunity	Low – circularity opportunity
Overall	High – net risk , driven by social, with a genuine high opportunity carried alongside	High – net risk , driven by social and water, with no offsetting opportunity

Note: Two SPARCs enter Step 4 with materially different priorities.

In both cases, the high social impact risk is non-compensable and the circularity opportunity cannot offset it. Therefore, in Step 4’s categorization matrix, SPARc 1 is the “high risk with a genuine high opportunity” case that the company must weigh with judgement rather than resolve it by either signal alone; SPARc 2 is more exposed, carrying the same non-compensable social impact risk, a high water use risk and no opportunity to weigh against it.

F.7.9 Use of results: Product line management example

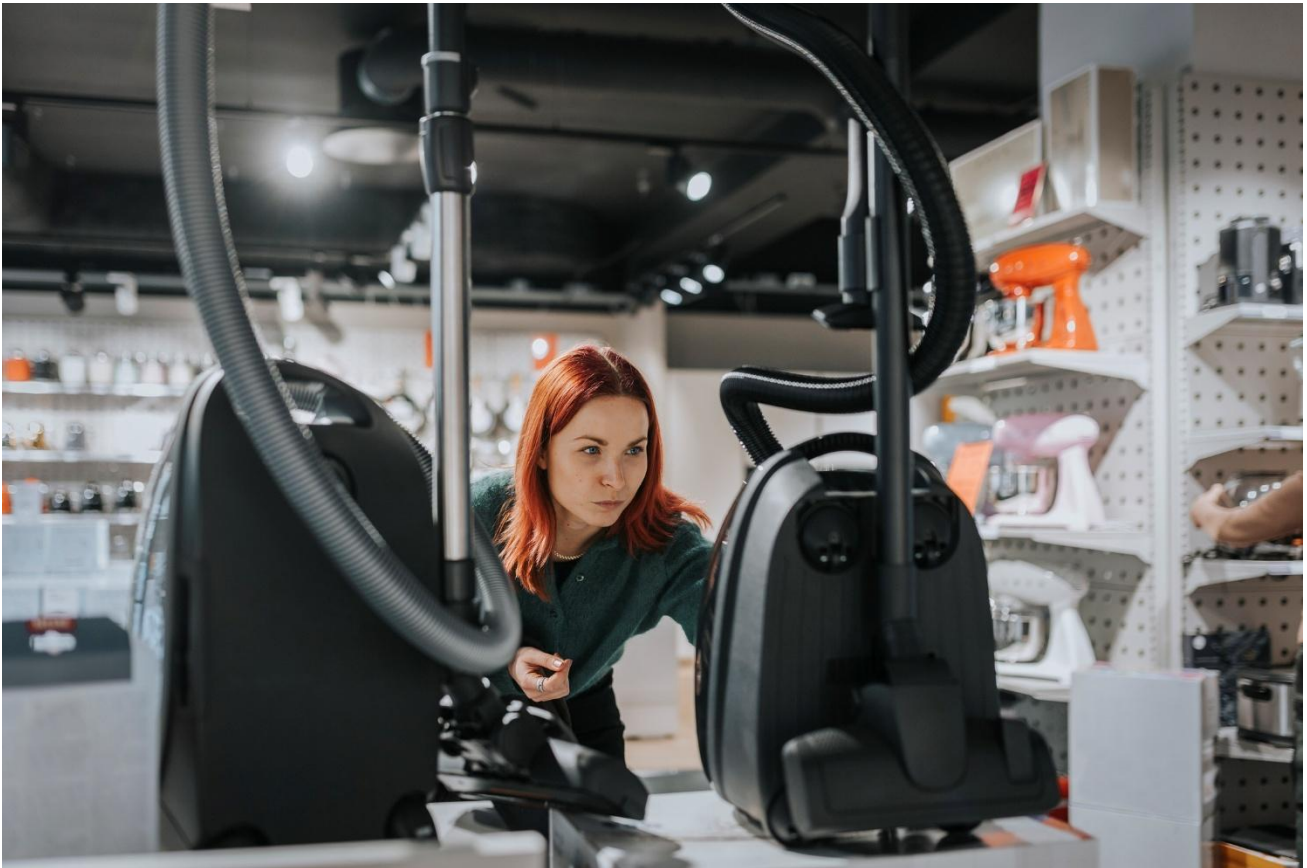
For the business line manager (called product manager or category manager depending on sectors), this is where the sustainability findings meet the product roadmap. Conversations with company managers brought other, non-sustainability performance issues to the surface too – meaning both SPARc 1 and SPARc 2 have room to improve as products overall, on top of the energy-efficiency gains, circularity upside, and supplier engagement already flagged.

The business line manager uses the O&R and E&S performance to inform his/her product line decision. The company uses the categorization matrix (Step 4) to classify the SPARc’s overall performance for integrated portfolio performance management. Seen through a product manager’s eyes, the two product lines (SPARCs) call for very different decisions:

- SPARc 1’s rate is “investigate”, which translates into a product worth defending and growing – and real – social risk; but paired with a genuine circularity upside – investing in deeper supplier engagement and wider audits. Doubling down on the recycled content and repairability story has the potential to move up the SPARC to the “Scale” category and lead in growing sales.

- SPARc 2 is the harder conversation: high social and water risk with nothing on the opportunity side to offset it. For a product manager, that is a mitigate-or-transform the product line discussion.

It could equally be used in the context of **innovation management and product design and lead to the investment in a SPARc 3**. For more insights on business decisions use case, see Step 4.2 Connecting PPRIA output to business decisions.



Appendix G Additional insights for Step 4

G.1 Structuring PPRIA results for other types of decisions: examples

Because every result stays at the SPARc level and remains traceable, companies can structure PPRIA SPARc results in different ways using aggregation and relevant thresholds for different interpretation. For example:

- **The portfolio hotspot map plots net opportunity vs net risk by SPARc:** for use at the product level. Use case: product line management. See example 2 (Appendix G.2)
- **The value chain view – E&S impact by life cycle stages:** impact split across upstream, the company's own operations and downstream. Use case: targeted supplier engagement (sourcing).
- **The gross exposure map – E&S impact vs gross O&R:** for one time horizon, consolidating results to meet the need for product portfolio sustainability performance management (use case : enterprise value& materiality). The company *can* also prepare the chart for established financial reporting risk management categories to align PPRIA outcomes with established risk management.
- **The net exposure map – E&S impact vs net O&R:** the same view after measures, aligned with the resources actually secured in strategy and planning – the effect of the measurement (from gross to net) is visible. The company *can* also prepare the financial reporting chart for established risk management categories to align PPRIA outcomes with established risk management (use case : enterprise value& materiality).
- **The gross-to-net over time view:** comparing the gross (before the strategic exercise) with the net (after strategic exercise and the related mitigation measures post-strategy) exposure across short-, mid- and long-term horizons. This shows how measures and resources shift the exposure. Use case: business portfolio management. See step-by-step example 3 (Appendix G.2)
- **The margin under scenarios view:** standard margin development of a SPARc under different scenarios for a specific horizon. Use case: product line management

G.2 Business decision examples

The following three cases draw on the same underlying data and use different aggregation and materiality thresholds depending on audiences and for different decisions.

- **Business use cases and their audiences:** a financing-and-rating case for investors and the board, a growth and margin case for the business and its customers, and a capital and license case for the site and its regulators.
- **Aggregation:** at the group level for the board, granular at the product level for the business line manager, and by economic weight per product group for the site.
- **Thresholds:** coarse at the corporate level, where only large financial movements matter; low at the product level, so small exposures accumulate into a visible signal; and set per product group for the site, reflecting what each group can bear.
- **Way to structure results for decision** (categorization matrix, gross-to-net over time view and hotspot map)

Example 1 – Enterprise value: guiding capital decisions

Objective: The company is doing a credit rating review as it evaluates whether it can service its debt and sustain dividends as decarbonization advances and water availability tightens. The objective is to secure access to and the cost of capital: its rating, insurance terms, and investor confidence.

The audience targeted is internal (strategy, investor relations and the CFO, sustainability leadership and, more broadly, the board) and external (rating agencies, lenders, investors and insurers).

Aggregation is done at group level. That means each product's net opportunity-and-risk is consolidated into a group-wide figure for a priority topic, climate change transition.

The materiality threshold is coarse and high, expressed in terms the rating agency uses – the group's profit margin.

PPRIA added value: It provides the bottom-up, data-driven basis required to build confidence and narrative for investors, bondholders and rating agencies, so that they can assess resilience beyond broad sector-based ratings. This enables better capital allocation and risk management, influencing the cost of capital.

The portfolio overview, where products are categorized with the **categorization matrix**, maps businesses according to their E&S performance and net O&R impact. By combining this with the CapEx and OpEx required to enhance resilience, it highlights where capital can create the greatest value: which businesses sit in the Scale, Improve or Challenge category. The board can direct capital to the most resilient positions in the scenario space, preparing for capital market dialogue.

Example 2 – Product portfolio: guiding business line decisions

Objective: The company is evaluating product-level decisions: which products to grow, which ones to improve, and where further evidence is required before acting. The objective is to secure growth, margin and resilience at the level of product management.

The audience is primarily internal recipients such as the business line manager, while also informing the external commercial narrative, providing business-to-business customer evidence and supporting consumer-facing brand claims.

Aggregation is done at individual product level, in each business unit, so that each product can be acted on individually – mitigated, scaled, transformed or held for further investigation.

The materiality threshold is business-unit specific to capture small exposures that become material when aggregated across products and sites. This is particularly important for risks such as climate exposure, which may be distributed across many products and sites.

PPRIA added value: It enables business lines to engage customers in portfolio transition decisions based on robust, data-driven insights, moving discussions beyond price and volume. It supports conversations on how to replace high-risk products critical to customer performance, co-develop next-generation solutions, protect future brand value, and coordinate actions across suppliers and customers to mitigate risks and capture opportunities throughout the value chain.

The portfolio hotspot map illustrates net opportunity against net risk, one dot per product/SPARc, for example, colored by action category and sized by revenue. Hotspots immediately highlight priority areas, while the three quadrants translate into clear Scale, Improve and Challenge discussions with business line managers and strategic customers. Adding the value chain perspective helps identify where action is needed, where the company *should* mobilize support, and where collaboration with partners can strengthen resilience and value creation.

Example 3 – Manufacturing asset management: the business case for the site director

Objective: The company is evaluating potential capital allocation on a manufacturing site that produces for several businesses with materially different margins. The objective is to secure the site's capital, its competitiveness, and its license to operate.

The audience is the site director, the operations function and site management (internal), and the permitting authority and the local community as boundary stakeholders (external).

Aggregation is allocated economically, by each product group's profit contribution – the company assesses its (earnings before interest, taxes, depreciation and amortization, return on capital, or total cost of ownership per product group.

The materiality threshold is set at the product group level to reflect each product group's ability to compete in its market.

PPRIA added value: It reveals how market, supply chain and sustainability pressures combined affect competitiveness, margins and future viability. By making long-term risks and cost exposures visible, it supports better investment decisions and helps secure the site's license to operate. It supports sites in building an integrated view that informs how supply chain and market forces will impact its future competitiveness: what cost increase exposure arises from the internalization of externalities, the cost increases it can pass on customers and those that will erode its margins and competitiveness. Understanding long-term exposure to the physical impacts of climate change, developing regulations or the limitations of natural resources enables the company to engage in a proactive and constructive dialogue with communities and permit authorities to sustain its license to operate over the long term.

The gross-to-net over time view compares gross and net opportunities and risks across short-, medium- and long-term horizons for each product group, weighted by their economic contribution (earnings before interest and taxes/return on capital employed). It shows the site director how much planned actions reduce risk and where significant exposure remains, particularly from climate impacts and regulatory change. This provides the foundation for discussions on capital allocation, future competitiveness and license to operate with operations teams, communities and permitting authorities.

Table 67: Business decision examples: summary table

	Example 1	Example 2	Example 3
	Enterprise value: guiding capital decisions	Product portfolio: guiding business line decisions	Manufacturing asset management: the business case for the site director
Objective	Secure access to, and cost of, capital, including the company's rating, insurance terms and investor confidence	Secure growth, margin and resilience at the level of product management	Secure the site's capital, competitiveness and license to operate
Audience	Internal: strategy, investment and sustainability leadership, the board External: rating agencies, lenders, investors and insurers	Internal: business line manager External: B2B customers and consumer-facing brand stakeholders	Internal: site director, operations function, site management External: permitting authority and local community
Aggregation	Group level, consolidating each product's net opportunity and risk into a group-wide figure for a priority topic	Individual product level, down to the business unit portfolio, so the company can act on each product individually	Economic allocation by product group's profit contribution, such as earnings before interest and taxes, return on capital or total cost of ownership
Materiality threshold	Coarse and high, expressed in terms used by rating agencies, such as the group's profit margin	Set at the SPARc level to capture small exposures that become material when aggregated across products and sites	Set at product group level to reflect each group's ability to compete in its market
PPRIA added value	Provides the bottom-up, data-driven basis required to build confidence and narrative for investors, bondholders and rating agencies	Enables business lines to engage customers in portfolio transition decisions using robust, data-driven insights beyond price and volume	Reveals how market, supply chain and sustainability pressures affect competitiveness, margins and future viability
Structuring results for decisions	The categorization matrix maps businesses by E&S performance and net O&R impact	The portfolio hotspot map compares net opportunity against net risk by product/SPARc, action category and revenue size	The gross-to-net over time view compares gross and net O&R across time horizons for each product group

Appendix H Disclosure principles

The disclosure of the company's adherence to the PPRIA Method is **voluntary**.

Companies *may* use PPRIA entirely for internal decision-making, without any external reference. There are then no reporting requirements, no obligations related to audit, assurance or financial reporting, nor any implication of full coverage, full comparability or full assurance.

Where a company chooses to refer to its **PPRIA portfolio performance** externally, this appendix describes **the minimum requirements** and **recommended practices** for providing transparency on how it applies the method. The aim is to make scope, assumptions and limitations transparent. This concerns external disclosure only.

The elements presented in this appendix correspond to PPRIA version 1.0 and represent preliminary disclosure elements. It may evolve in subsequent version as practice develops. We are providing them to support early transparency and a shared understanding of how the company has applied PPRIA.

External disclosure

Where a company refers to its PPRIA **portfolio sustainability performance** externally, it *shall*:

- Disclose portfolio performance according to the categorization rules laid out in Step 4 (E&S performance categorization, O&R performance categorization, use of the categorization matrix);
- Provide external transparency on how the method has been applied.

To provide external transparency on how the method has been applied, the company *should* use the guidance provided on [Table 68](#) and address each element listed in a way proportionate to its scope and maturity



Table 68: Guidance on disclosure content (preliminary, v1)

Element	What the company <i>should</i> describe
Scope of the assessment	The disclosure states the reporting entity, reporting period, and the share of revenues assessed. If applied to the innovation pipeline, it <i>may</i> include the share of innovation pipeline as a separate element. Where coverage is partial, the company states this clearly and prominently.
Assessment depth, consistency and integrity	The disclosure describes how the company conducted the portfolio assessment: the extent to which it draws on externally recognized standards and data rather than internal judgment alone; the reference points used for benchmarking, the O&R assessment approach applied, including type of techniques used; and any exclusions and deviation from the method, so that others can interpret the results in good faith.
Topic-level application	The PPRIA pollution core list (pollution/nature) and the social impact heat map (social impacts) are two levers to adapt the assessment for the company context and prioritize. Their disclosure clarifies the scope assessed. (See pollution and social impact guidelines respectively for more details.)
Credibility and trust in process and results	The disclosure explains the internal governance and control applied to the PPRIA portfolio assessment. It states whether the company obtained any external review, verification or assurance, including its scope and level. Where it sought no external assurance, the company states this plainly, so that no assurance is implied where none exists. The company <i>may</i> also describe the traceability of the underlying data and the main limitations of the approach, so that others can interpret the results in good faith.
Reporting over time and evolution	When the company's application of PPRIA evolves, the disclosure describes significant changes to enable distinguishing changes in portfolio performance from changes in method or coverage.

Appendix I Terminology

Specific definitions used in the PPRIA Method

Key raw material definition

Inspired from business practices and the EU Critical Raw Materials Act (CRMA),¹⁸² the PPRIA Method defines key raw materials as those with an economic or strategic importance, or both, for the company under assessment.

The economic importance can be typically defined by purchase volumes (mass or spending)

The strategic importance typically includes raw materials with:

- High supply risk;
- Critical functionality of the product;
- Strategic to their business model and operations;
- High relevance for the sustainability topic under assessment due to their impact intensity, risk profile (e.g., water, pollution, scarcity, CO₂) or are strategic to transition planning risk-based relevance.

Companies *may* add alternative criteria to further define what "strategic importance" means to them, as long as they document these criteria, ensure they are transparent for internal stakeholders and consistently apply them throughout the PPRIA.

Glossary

Term	Explanation
Application and end-of-life	How and where the product is used and how it is treated at the end of its life, including key use-phase impact drivers and typical disposal, recovery, or recycling pathways
Benchmark	A reference point used to compare the sustainability performance of a SPARc. <i>See also: Reference benchmark.</i>
Business opportunities & risks	The integration of sustainability-related business opportunities and risks into comprehensive financial analyses. This involves incorporating (endogenizing) a company's material dependencies on natural, social, human and produced capital to quantitatively assess their influence on financial outcomes.
E&S categorization	The aggregation of topic ratings into overall sustainability performance categories.
O&R categorization	The aggregation of risks and opportunities into overall performance categories.
Double materiality assessment	An assessment that considers both impact materiality (how the company affects society and the environment – inside-out) and financial materiality (how sustainability matters affect the company's financial position – outside-in). The topic is material if it meets either criterion.

E&S performance card	A structured summary of a SPARc's sustainability ratings across themes and topics.
Financial pathway	The causal link between sustainability impacts and financial outcomes.
Impact on environment & society	The measurable positive or negative changes in environmental and social outcomes resulting from the development, production, use and disposal of products. Impacts can occur at various stages of a product's life cycle, covering all aspects of its value chain.
Indicator	A measurable variable used to assess, monitor or evaluate the performance within a specific area (e.g., the product's land use). They can be qualitative or quantitative and are used to inform strategic planning and decision-making processes.
Key raw material	A raw material with an economic or strategic importance, or both, for the company under assessment.
Life-cycle perspective	An assessment approach covering impacts from cradle-to-grave or cradle-to-cradle.
Likelihood	Probability that a sustainability-driven opportunity or risk will materialize.
Magnitude	The potential size of an environmental or social impact, assessed across three dimensions: scale (intensity or severity), extent (breadth of impact), and irremediability (ability to reverse or remediate). Magnitude is a core component of significance in assessment in Step 2.
Materiality	A determination of whether an impact or financial effect is relevant for decision-making.
Method	A document describing PPRIA, containing the framework, principles, rules, reference and standards, approaches and procedures, guidelines for implementation and best practices examples.
Metric	A quantifiable measure used to evaluate performance, e.g., carbon emissions, energy consumption, or health and safety incidents, diversity ratio. It enables consistent tracking against sustainability goals and benchmarks. Other than indicators, metrics are quantitative data points that measure specific aspects of performance without necessarily providing context or insight into trends or progress.
Opportunities & risks (O&R)	The measurable forward-looking positive or negative changes affecting the financial position, performance and cash flows of an organization in the long-, medium- or short-term. In PPRIA this specifically refers to opportunities and risks derived from environmental and social impacts.
O&R performance card	A structured summary of a SPARc's opportunities and risks evaluation.
PPRIA core pollutant list	The minimum list of pollutants the company systematically assesses under the PPRIA Method. When the company refers to PPRIA performance externally, it discloses the core list publicly

PPRIA pollutant list	The list of pollutants the company creates and uses internally under the PPRIA Method. It includes core pollutant list and the company <i>may</i> complement it with SPARc specific pollutants.
Point of reference	The basis against which a company evaluates a SPARc's performance, defined before assessment as either absolute (impact significance) or benchmark-based (relative to a reference benchmark). <i>See also: Reference benchmark.</i>
Portfolio assessment	The systematic evaluation of a company's product portfolio tailored to specific applications, such as regulatory compliance, strategic steering, or operational optimization. It serves as a foundational tool for aligning portfolio performance with organizational objectives and market demands.
Portfolio Segmentation	A process that describes the splitting of a product portfolio into a unit of analysis for PPRIA analysis, based on shared characteristics, the so-called SPARc.
Portfolio steering	The use of PPRIA assessment results to guide a company's product portfolio-related strategic and investment decisions.
Product (portfolio) sustainability performance management	The use of PPRIA results in bringing environmental and social performance into traditional product portfolio performance management. PPRIA complements conventional product management with comparable E&S impacts and financially material O&R assessment to drive better-integrated portfolio decisions. It includes portfolio steering.
Product	The result of a process delivering value to a user. It encompasses goods, services, ideas or a combination of thereof (inspired by ISO 9000:2005 and marketing literature).
Reference benchmark	The specific reference point selected during Step 2 Preparation against which the company evaluates a SPARc's sustainability performance. It may be external (e.g., based on market practice, regulatory standards, or science-based targets) or internal (e.g., based on a predecessor product). External benchmarks are preferred. The company <i>should</i> always select the most stringent applicable benchmark.
Result integration	Embedding assessment outputs into governance, decision-making, and communication.
Scenario space	A set of plausible future developments used to assess forward-looking exposure.
Rating	The translation of assessment results into standardized A–E performance ratings.
Significance	The combined assessment of the magnitude and likelihood of an environmental or social impact, used to determine whether a topic is material and to differentiate performance in scoring. The company assesses significance through three dimensions of magnitude – scale, extent and irremediability – and, where relevant, likelihood of occurrence. It is the core interpretive mechanism in Step 2.

SPARc	Abbreviation for supply – production – application and end-of-life – region combination, used for portfolio segmentation. It replaces the PSA 2.0 term PARC. By segmenting products based on SPARc, companies can systematically account for all life-cycle phases of a product – including upstream activities, the company’s own operations, and downstream impacts.
(E&S) Theme	A grouping of related sustainability topics assessed using the PPRIA Method. It covers five themes: climate, nature, circular economy, social, and product safety. Each theme contains one or more topics, each of which has indicators and metrics.
Threshold	The cut-off value that decides whether an effect, physical or financial, is big enough to matter and therefore to act on. This is used in step 2 (physical effect) and in Step 3 (financial effect).
Topic	A specific sustainability issue within a theme that the company assesses and rates.
Unit of analysis	The specific segment of the portfolio undergoing assessment, potentially in combination with other attributes such as application or region. In PPRIA, the unit of analysis is a SPARc.
Use cases	Uses of the framework to address a predefined problem statement and to set objectives in a decision area, guiding strategies, policies and actions, explaining why it is needed and the answers it provides.

Acknowledgements

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WBCSD would like to thank the following individuals for their contribution throughout the development of the PPRIA Method:

PPRIA advisors, for their valuable strategic and expert insights: Dominique Debecker, Ralf Kelle, Andy Liu (SS&I), Jeff Turner (Runkerry Consultancy).

The **PPRIA steering committee**, for their thoughtful strategic guidance and their support: Bettina Siggelkow (Clariant); Rouzbeh Amini, Martijn Antonisse (dsm-firmenich); Adrianne Pedrosa (Syensqo); Anastasia Behr (UL Solutions).

The **workgroup member co-leads**, for contributing their leadership and subject matter expertise : Daniela Malkowsky (BASF); Fabio Amorim (Clariant); Martijn Antonisse, Jan Konietzko (dsm-firmenich); Andrea Stubbusch, Aurélie Wojciechowski (Evonik); Daniel Doorduyn (Philips); Mechelle Engemann (Syensqo); Melissa Lamson (UL Solutions).

The **PPRIA project participants**, for their engagement, collaboration and feedback: Harshit Garg, Sonal Kaushik, Selvakumar Ramasamy, Deeksha Vats (Aditya Birla); Natasha Chorlton (Ahlstrom); Debbie Hitchen, Josh Hendry (Anthesis); Peter Koelsch, Daniella Lohe, Jens Christopher Otte, Peter Saling, Judith Trueper, (BASF); Anja Goblirsch, Devashish Kolte (Clariant); Chantal de Vaan, Lucie van de Steeg (dsm-firmenich), Hazal Ustundag George (formerly dsm-firmenich); Sven Lundie (ERM), Nicolas Sarmiento (formerly ERM); Mikko Meyder (Evonik); Tomoko Konishi-Nagano (Fujitsu); Sjoerd Dijkstra, Luisa Kuehn (Henkel); Kenkichi Fujii, Rika Homma, Takashi Kawata, Songhee Kim, Takehiro Tsutsumi (Kao); Yuta Ohtsuka (NTT Data); Ryohei Tokunaga (Panasonic); Roberto Barrantes Guerrero, Lena Hormann, Harald Tepper (Philips); Darren West (SAP); Alexandra Fabbro (SGS); Chloe Masselson, Lea Mendoza (Syensqo); Johan Alexander, Tomoichiro Hirano (Syngenta); Daniel Schwaab (TOMRA); Mark Bacchus, Mika Kunieda (Toyota); Gaëlle Lim, Philippe Desusanne, Teresa Ortigosa (Veolia).

Individual contributors for their expert insights, review and guidance: Luke Blower, Diane Buzea, Andres Casallas, Fabiana Contreras, Anaëlle di Meglio, Zoi Efthymiadou, Delphine Garin, Angela Graham-Brown, Marvin Henry, Joy Massholder, Irene Martinetti, Nadine McCormick, Iris van der Velden, Wouter van Monsjou, John Willis, Aneta Wierzynska (WBCSD).

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About PPRIA

The Product Portfolio Resilience & Innovation Accelerator (PPRIA) connects sustainability strategy and product performance to the portfolio level where capital is allocated, innovation is directed and commercial choices are made

Convened by WBCSD, it turns product impacts into business risks and opportunities that inform portfolio decisions — driving resilience, innovation and long-term value, and making sustainability profitable.

PPRIA is also a growing community of companies joining to learn from peers, test the method on their own portfolios and draw inspiration from one another as they tackle a shared challenge: building the practices seeking to make sustainability profitable and scale a shared, credible, global baseline that empowers companies to innovate and provide financial markets a reference to value sustainability.

For further information on PPRIA, contact ppria@wbcسد.org

About WBCSD

The World Business Council for Sustainable Development (WBCSD) is the leading community of around 230 global businesses making sustainability performance a key driver for competitiveness. Established in 1995, WBCSD is a non-profit member-led organization that connects business leaders through all sectors and major economies, and creates the tools and frameworks to scale collective impact, drive cross-sector innovation, and shape an ambitious, enabling policy agenda. We operate from seven offices worldwide — in Geneva, New York, Chicago, Amsterdam, London, Singapore and Wuhan — enabling collaboration across value chains and geographies. Together with our members, we are rewiring economic and financial systems to support the transition to a net-zero, nature-positive, and inclusive future that creates business value.

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Endnotes

- ¹ World Bank (2025). [Global carbon pricing mobilizes over \\$100 billion for public budgets](#).
- ² NYU Stern Center for Sustainable Business and Circana (2025, published April 2026), [Sustainable Market Share Index, 2025 edition](#), published April 2026. New York University Stern School of Business.

In US consumer packaged goods, products marketed as sustainable reached 25.4% of branded market share and delivered 44.9% of category growth between 2013 and 2025, with a five-year compound annual growth rate of 10.9% against 2.2% for conventionally marketed products. The index measures products marketed as sustainable and does not assess their underlying performance.
- ³ **Climate:** GHG Protocol, Science Based Targets initiative (SBTi), Intergovernmental Panel on Climate Change (IPCC), Task Force on Climate-related Financial Disclosures (TCFD), Glasgow Financial Alliance for Net Zero (GFANZ), Partnership for Carbon Accounting Financials (PCAF), International Organization for Standardization (ISO) GHG Standards

Nature and biodiversity: ISO, Taskforce on Nature-related Financial Disclosures (TNFD), European Sustainability Reporting Standards (ESRS)/Corporate Sustainability Reporting Directive (CSRD), EU Taxonomy

Circular economy: WBCSD Circular Transition Indicators, WBCSD Global Circularity Protocol (GCP) development, ISO circular economy standards

Social impact: United Nations Environment Programme (UNEP) Social LCA guidelines, UN Global Compact

Product safety: Various hazard and product safety regulations and classification systems
- ⁴ Consistent with the Taskforce on Nature-related Financial Disclosures (TNFD), this method defines nature as the natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment.

Taskforce on Nature-related Financial Disclosures (TNFD) (2023). [Recommendations of the Taskforce on Nature-related Financial Disclosures](#). TNFD.
- ⁵ The theme is intentionally open and evolutive: it may be necessary to integrate additional product-specific safety topics and their guidelines over time.
- ⁶ The significance framework applied in PPRIA has its basis in established international practice. Its primary normative source is the [UN Guiding Principles on Business and Human Rights](#), Principle 14, which defines severity by these three characteristics – scale, extent, irremediability.

The Organisation for Economic Co-operation and Development (OECD) [Guidelines for Multinational Enterprises](#) and the OECD [Due Diligence Guidance for Responsible Business Conduct](#) adopt the same characteristics. Sustainability reporting frameworks codify them, including Global Reporting Initiative (GRI) 3: Material Topics and European Sustainability Reporting Standards (ESRS) 1 / European Financial Reporting Advisory Group (EFRAG) double materiality guidance.
- ⁷ See definition of key raw materials in Appendix I Terminology and standards.
- ⁸ The Social impact theme follows a tailored materiality filter approach, which requires the identification of relevant stakeholder groups and potential social hotspots before applying the magnitude test. This is explained in the social impacts topic guide.
- ⁹ Raw material risk screening tools refer to tools used to assess environmental or social risks associated with sourcing of key materials, for example based on geography, supplier or material type.
- ¹⁰ Absence of a signal does not mean absence of impact. A topic can only be considered “not material” where the organization can provide evidence that it has actively looked for relevant impacts and found no signal of medium or high magnitude effects within the defined system boundary.
- ¹¹ See Appendix F.1 for more background on financial materiality and business performance.
- ¹² See Appendix F.2 for Step 3 for examples of O&R catalogue and financial pathways.
- ¹³ Where global decarbonization stalls but circularity is a substitute lever to reducing emission intensity.
- ¹⁴ Task Force on Climate-related Financial Disclosures (TCFD) (2020). [Guidance on Scenario Analysis for Non-Financial Companies](#) (see pages 1–5, 44–56, discussing scenario analysis under uncertainty, climate-related risks and opportunities, and strategy resilience). Financial Stability Board.

- 15 International Sustainability Standards Board (ISSB) (2023). *IFRS S2 Climate-related Disclosures* (see para. 22 and Appendix B, paras. B1–B18 on climate-related scenario analysis and uncertainty). IFRS Foundation.
- 16 For example, a 1.5°C pathway embeds one set of probabilities, a 3°C pathway another.
- 17 Also consistent with Step 3.3 Assessment, attributing the investment to the SPARc/SPARc cluster.
- 18 For instance: WBCSD's [PACT Methodology v3.0 for Calculating and Exchanging Cradle-to-Gate Product Carbon Footprints](#); International Organization for Standardization (ISO) [ISO 14067:2018](#); the EU [Publicly Available Specification – PAS 2050](#); the EU [Product Environmental Footprint \(PEF\)](#).
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- 22 European Commission (2021). [Commission Recommendation \(EU\) 2021/2279 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations](#).
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- 24 See definition of key raw materials in the Appendix I Terminology and standards.
- 25 World Resources Institute & WBCSD (2026). [The Greenhouse Gas Protocol Land Sector and Removals Standard](#) (version 1.1).
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