MATERIAL SUSTAINABILITY ISSUES IN THE BICYCLE INDUSTRY

ZIV GERMAN BICYCLE INDUSTRY

Foreword

Dear readers, dear ZIV members,

Sustainability has continued to grow in importance in recent years, both for the bicycle industry and for the work within our association. While we have certainly made progress as an industry, we still have a long way to go. The exchange with member companies plays a central role here. Indeed, it was also this exchange that gave rise to the idea of a materiality analysis specifically for the bicycle industry.

With this industry materiality analysis, we would like to offer our member companies a tool that assists them on their path to sustainability and helps them to meet the legal requirements and reporting obligations that are either already in force or forthcoming.

As the companies in the bicycle ecosystem are very heterogeneous due to their different products and services, the industry materiality analysis cannot be applied equally to them all. Extensive overlap does exist in a number of areas however. We have sought to create a good basis, to provide an overview of the material issues and to offer guidance on how to go about conducting a materiality analysis within your company.

Our sincere thanks to the companies involved in development of the industry materiality analysis and to the interviewees. We would also like to thank the team at sustainable natives eG, which demonstrated great commitment to immersing itself in the issues impacting the bicycle industry. This fantastic guide is the product of in-depth research and countless discussions.

As an industry association, we strongly believe that we can better tackle and solve issues and challenges as a community. This is particularly true when it comes to sustainability. We are convinced that it is worth going down this path alongside the many successful and innovative companies in our industry and we are already looking forward to taking the next steps together.

Burkhard Stork
CEO

Anke Schäffner
Chief Policy and Advocacy Officer

Contents

1. **Executive Summary** 4

2. **A brief guide to materiality analyses** 5

2.1. Materiality analyses – what are they all about? 5
2.1.1. Fundamental principle 5
2.1.2. How companies use materiality analyses 5
2.1.3. Why conduct an industry materiality analysis at all? 6
2.1.4. How to use this industry materiality analysis 7

2.2. The CSRD and materiality analyses 8
2.2.1. What is the CSRD and what effect will it have? 8
2.2.2. How is the CSRD changing materiality analyses? 8

2.3. How to prepare a company-specific materiality analysis 9
2.3.1. Methodological approach 9
2.3.2. Presentation of the analysis findings 12

2.4. Process documentation: preparing an industry materiality analysis 13

3. **Findings from the industry materiality analysis** 14

3.1. Explanations of the findings 14

3.2. The material sustainability issues in the bicycle industry 14
3.2.1. List of material sustainability issues 16

3.3. The sustainability issues relevant to the bicycle industry in brief 17

3.4. Materiality along the value chain 18

3.5. Opportunities and risks for the bicycle industry 19
3.5.1. Risks 19
3.5.2. Opportunities 19

3.6. Expert interviews: the most important takeaways 20

4. **Background briefing on the industry materiality analysis** 22

5. **Outlook** 22
5.6.1. Appendix: Overview of sustainability aspects (IROs) 23
5.6.2. Glossary 27
5.6.3. Resources 27

1. Executive Summary

Background

This industry materiality analysis was commissioned by the association for the German bicycle industry (ZIV) with the aim of identifying the material sustainability issues that exist for the bicycle industry as a whole.

Findings

The industry materiality analysis provides a tool and basis to help companies active in the bicycle industry prepare their own materiality analyses. A total of fifteen material sustainability issues were identified, which group various impacts, risks and opportunities (IROs) within these issues.

1. Biodiversity and ecosystems
2. Water resources and usage
3. Climate change
4. Workers in the value chain: human rights violations
5. Pollution
6. Own workforce: diversity
7. Human rights violations among the local population
8. Innovation, research and development
9. Workers in the value chain: working conditions
10. Workers in the value chain: training and skills development
11. Resource use and circular economy
12. Consumers and end users
13. Compliance and good business conduct
14. Own workforce: training and skills development
15. Own workforce: working conditions

See the detailed background briefing for a full list of all sustainability aspects.

Limitations

Many different business models exist in the bicycle industry that cannot be considered specifically in this industry materiality analysis. As such, it does not claim to be complete.

The industry materiality analysis cannot replace a company-specific materiality analysis as, depending on the specific business model, it may be that:

- → the assessment of materiality differs;
- → sustainability aspects are not material;
- → material sustainability aspects are not included in the industry materiality analysis.

To achieve a CSRD-compliant materiality analysis, coordination of the process with the financial auditors at an early stage is recommended.

2.

A brief guide to materiality analyses

2.1. Materiality analyses – what are they all about?

2.1.1. Fundamental principle

Sustainability aspects are diverse and range from climate change to affected local communities at the furthermost end of the value chain. They are generally subdivided into three dimensions, namely environmental, social and economic (or governance) aspects.

Applying the materiality principle involves focusing on the sustainability aspects and issues that are of particular relevance to a company and for which they bear responsibility. Alignment with this principle therefore means concentrating activities on selected material issues and prioritising these in a reasonable manner. It links closely to the principle of responsibility, whereby each company determines individually which sustainability aspects are relevant and should be addressed accordingly. This does not mean that other issues are not important, but rather just that they are less important for a particular company.

Applying the materiality principle and focusing on the sustainability issues relevant to a company allows what is known as "greenwashing" to be prevented. Thus reducing the emphasis on aspects that are less relevant to a company that it is easier or requires fewer resources to address. The focus on materiality forms the basis for good corporate sustainability management and a robust sustainability strategy.

2.1.2. How companies use materiality analyses

Materiality analyses are an **important strategic tool** within corporate sustainability management. Double materiality involves assessing the sustainability issues that are important to a company from two different perspectives:

Inside-out perspective:
Analysis of the actual and potential positive and negative impacts on sustainability issues arising from a company's business activities along the entire value chain (impact materiality).

Outside-in perspective:
Analysis of the risks and opportunities of the sustainability issues affecting a company's financial situation and future viability (financial materiality).

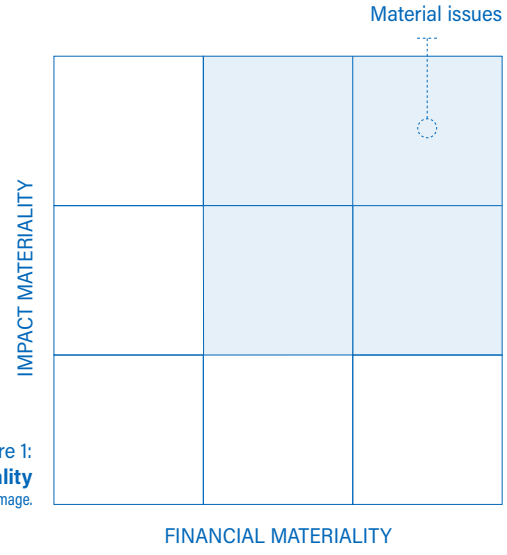


Figure 1:
Double materiality
Source: Own image.

According to the EU definition of double materiality, sustainability issues are material if at least one of the two perspectives (inside-out or outside-in) is fulfilled, i.e. if a company has an impact on a sustainability issue or risks and/or opportunities arise for it from a sustainability issue. The information available for a company's strategic decision-making is improved overall. The materiality analysis therefore forms the basis for a sustainability strategy, as the material issues can be grouped into clusters or fields of action, strategic goals can be determined, and measures, road maps and KPIs can be defined. Allowing resources to be used efficiently and with the greatest possible leverage effect on sustainability.

Materiality analyses are also an **established reporting principle** for determining the material report content that is relevant for a company's stakeholders and complies with the selected reporting standard. A continuous improvement process can be established in sustainability management by combining this with regular assessments and sustainability reporting. A materiality analysis is required for almost all reporting standards for sustainability reports and non-financial statements; for many companies, it is mandatory due to legal provisions such as the Corporate Sustainability Reporting Directive (CSRD).

CSRD:	Corporate Sustainability Reporting Directive
DNK:	German Sustainability Code
ESRS:	European Sustainability Reporting Standards
ESRS LSME:	Mandatory ESRS for listed SMEs
IROs:	Impacts, risks, opportunities
SMEs:	Small and medium-sized enterprises
VSME ESRS:	Voluntary ESRS for non-listed SMEs

2.1.3. Why conduct an industry materiality analysis at all?

A materiality analysis involves using a structured process to identify precisely the sustainability issues among the many that may exist, which are relevant (i.e. material) to a company. This often gives rise to complex, time-consuming projects and many companies explore these issues without tapping into the synergies that exist within their industry.

Industry materiality analyses offer countless advantages. They:

- → reduce the work/costs for a company, as such analyses represent an industry standard from which only the deviations in the company's own business model need to be analysed and evaluated. Meaning that it does not need to start from scratch, but rather can build on the solid foundations of the industry materiality analysis;
- → enhance the quality and significance of materiality analyses, as they are based on data and source-based industry information for which the research often exceeds the time and budget of individual companies;
- → follow the principle of co-creation: Industry materiality analyses provided by associations/initiatives enable efficient knowledge sharing and save resources.

Outlook: An industry materiality analysis cannot replace a company materiality analysis. However, it can provide a helpful and reliable basis and make company analyses less time-consuming and qualitatively more meaningful.

2.1.4.

How to use this industry materiality analysis

The materiality analysis for the bicycle industry is made up of three parts:

1. **Brief guide to the materiality analysis**

→ The guide provides background information on the materiality analysis, along with instructions on how to use the findings from the industry materiality analysis in your own company materiality analysis. See 2.3. for more information on conducting a materiality analysis.

2. **Findings from the industry materiality analysis**

→ The findings from the industry materiality analysis are detailed here: The material sustainability issues in the bicycle industry at a glance – for an accessible introduction to the topic.

→ The findings are based on the comprehensive background briefing.

3. **Background briefing**

→ This is your reference guide containing all of the details of the industry materiality analysis. It describes the sustainability aspects relevant to the bicycle industry, including the associated impacts on the environment and society, as well as the risks and opportunities that could potentially affect the sustainability and financial situation of companies active in the bicycle industry due to sustainability aspects.

→ It also provides explanations of the impacts, risks and opportunities (IROs) behind the sustainability aspects and the sources used to determine them.

The industry materiality analysis was commissioned by the ZIV. Hence it focuses on the value chains and business models of ZIV member companies. The list of material sustainability issues and the background briefing address the sustainability aspects that are material to the entire bicycle industry. Depending on your company's business model, value chain and orientation, this may mean during the work to prepare an individual company materiality analysis using the industry materiality analysis that certain sustainability aspects, impacts, risks and opportunities:

→ are **not material** and do not require further consideration;

→ are **particularly material** and require an in-depth review;

→ must **additionally be researched**, as they are specific to your business model rather than to the industry and therefore have not been considered in the industry materiality analysis.

Use of the industry materiality analysis beyond materiality analyses:

An industry materiality analysis can also be a helpful tool to orientate yourself when taking your **first steps in sustainability management** and to avoid getting bogged down from the outset when faced with countless potentially relevant sustainability issues. It provides guidance on materiality analyses, along with a list of material sustainability issues to help companies grow their knowledge on sustainability and familiarise employees and managers with a manageable pool of sustainability issues.

The material issues identified for the industry can also serve as a starting point for **structured sustainability strategy processes** without a materiality analysis.

Moreover, potential **risk hotspots in the supply chain** can be determined from the industry materiality analysis (particularly the background briefing and the list of material sustainability issues). It can therefore provide preliminary indications for mapping the risks within your own supply chain.

2.2. The CSRD and materiality analyses

2.2.1. What is the CSRD and what effect will it have?

The Corporate Sustainability Reporting Directive (CSRD) is an EU directive on non-financial reporting. It replaces the CSR Directive Implementation Act (CSR-RUG), which is based on the Non-Financial Reporting Directive (NFRD). The CSRD comprehensively extends the obligation of companies to report on sustainability. Starting in the 2024 financial year, more than 10,000 companies alone in Germany will gradually be required to submit a non-financial statement as part of their company management report.

Companies meeting at least two of the following three thresholds are obliged to submit such a report: > 250 employees, €50 million in sales, €25 million in total assets. Within the CSRD, the European Sustainability Reporting Standards (ESRS) are the first uniform and mandatory reporting standards for corporate sustainability reporting.

For small and medium-sized enterprises (SMEs), mandatory standards (ESRS LSME) are to be developed for listed SMEs by the end of 2024. There will also be voluntary standards (VSME ESRS) for SMEs in the supply chain, which are subject to reporting requirements indirectly, for example through the growing transparency requirements of their B2B customers. The various ESRS standards (and particularly the VSME ESRS) are to gradually be integrated into the German Sustainability Code (DNK) to ensure its compatibility with the CSRD.

Application of the CSRD

Gradual introduction of the CSRD requirement:

- From 1 January 2024 – publicly listed companies with more than 500 employees (first CSRD report due in 2025)
- From 1 January 2025 – all other large companies subject to accounting law (first CSRD report due in 2026)
- From 1 January 2026 – listed SMEs, unless option to defer until 2028 exercised (first CSRD report due in 2027 or later)

Micro-enterprises are exempt from the CSRD requirement.

ESRS LSME and VSME ESRS

The ESRS for SMEs have not yet been finalised (as at April 2024). There are to be two different standards for small and medium-sized enterprises. Which applies will depend on the company's capital market orientation:

- mandatory ESRS for listed SMEs → LSME
- voluntary ESRS for all other SMEs → VSME

Whether mandatory or voluntary, both standards will involve less work than the ESRS. The double materiality analysis will also form the basis of reporting for the ESRS LSME and VSME ESRS.

2.2.2. How is the CSRD changing materiality analyses?

The principle of double materiality with the dimensions of impact materiality and financial materiality (see 2.1.2. 'How companies use materiality analyses') is an innovation in materiality analyses. It was introduced as part of the CSRD and ESRS. The Global Reporting Initiative (GRI) standards, which are the international sustainability reporting standards used the most widely to date, recognise double materiality and its dimensions of impact and stakeholder relevance. The German Sustainability Code (DNK) also recognises double materiality and considers it from the inside out and outside in. Financial materiality is not yet considered as part of the outside-in perspective however.

The fact that many companies within the EU are subject to the CSRD reporting requirements means that the CSRD definition of double materiality will become established as the standard in Europe. The ESRS also contain comprehensive process requirements for conducting a materiality analysis, which will have a major influence on the type and scope of future materiality analyses. The methodology used for the present industry materiality analysis is aligned with the CSRD/ESRS and therefore also assists in the CSRD-compliant and auditable implementation of a company-specific materiality analysis. Even SMEs reporting in accordance with the ESRS LSME or VSME ESRS can use the industry materiality analysis to conduct their own materiality analysis. While the ESRS for SMEs are based on the materiality principle according to the ESRS, the process for conducting the materiality analysis is more streamlined (as at April 2024; ESRS LSME and VSME ESRS – draft version). Even if CSRD conformity is not required and also not always necessary, a (rough) orientation to the basic principles contained therein is recommended to ensure comparability.

The CSRD also stipulates a review obligation for the materiality analysis for the first time. This increases the work involved and the documentation requirements. If your company is subject to CSRD, we recommending consulting with your financial auditor at an early stage regarding the process design and using the industry materiality analysis to ensure that the company's own materiality analysis meets the audit requirements.

2.3.

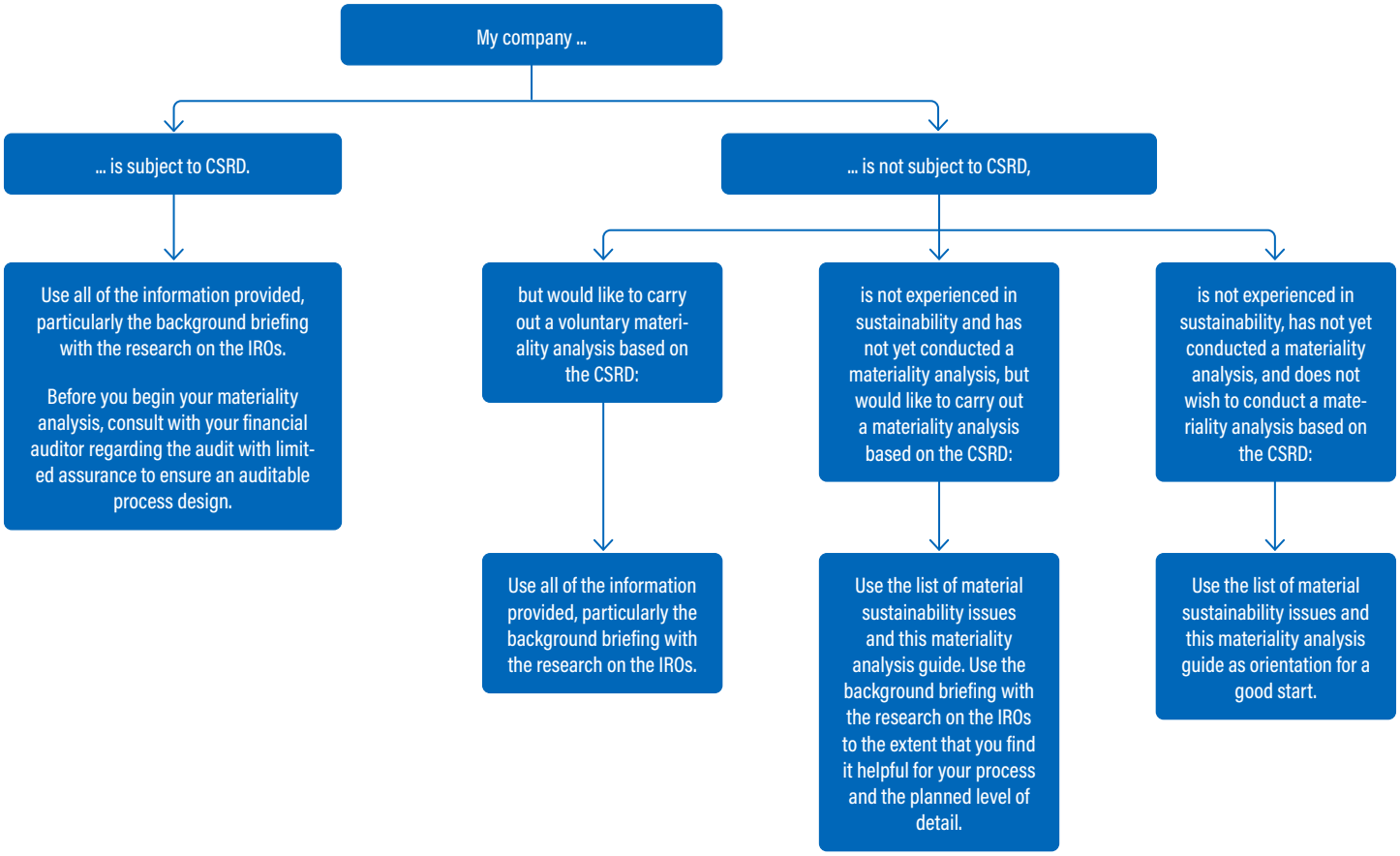
How to prepare a company-specific materiality analysis

2.3.1.

Methodological approach

Step 1: Determine the scope and depth of the materiality analysis

After determining the required scope and depth of your materiality analysis, plan its implementation carefully. Depending on the level of ambition, it will take several (~ 3–9) months to conduct the analysis, which is why ensuring appropriate project management is worthwhile. Conducting a materiality analysis takes up personnel resources and, depending on the level of ambition, a great many internal stakeholders are involved in the process. In addition to the company management, department managers and those responsible for sustainability, all different areas of the company should also be consulted in the process. The question of how many and which people are involved specifically must be answered individually.



Step 2: From industry materiality to defining your own materiality

The nature and scope of the following four standard steps for conducting a materiality analysis in accordance with the ESRS depend largely on whether your company is subject to CSRD or not (see Step 1). It is also relevant whether you are an SME subject to the ESRS LSME or ESRS VSME, as the materiality analysis requirements are more streamlined in these two standards (as at April 2024; ESRS LSME and VSME ESRS – draft version). The steps described here (especially Steps 2 and 3) are likely to be less extensive for SMEs accordingly. Companies not subject to CSRD enjoy greater procedural freedom.

1) Understand the context:

Value chain: Gain an overview of the value chain for your specific business model so that you know what to prioritise during each step and where you can leave out aspects included in the industry materiality. What would you consider most important? The upstream value creation with the supply chain, your own business activities and/or the usage phase of your products (incl. disposal/recycling)? This will provide you with some preliminary orientation to prioritise the findings from the industry materiality analysis.

Stakeholders: Define who should be involved in the materiality analysis internally and whether and to what extent you wish to involve external stakeholders (e.g. to validate your findings). You are not obliged to involve external stakeholders, but this is standard practice in materiality analyses.

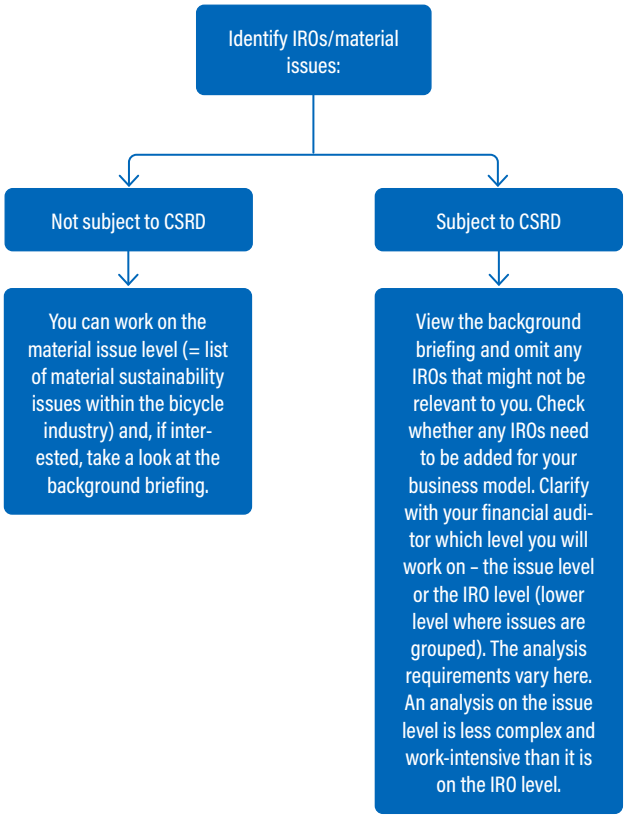
CSRD tip: Include your financial audit in your process design and industry materiality analysis work as early as possible and take into account the specific audit requirements, which may vary.

Please note:

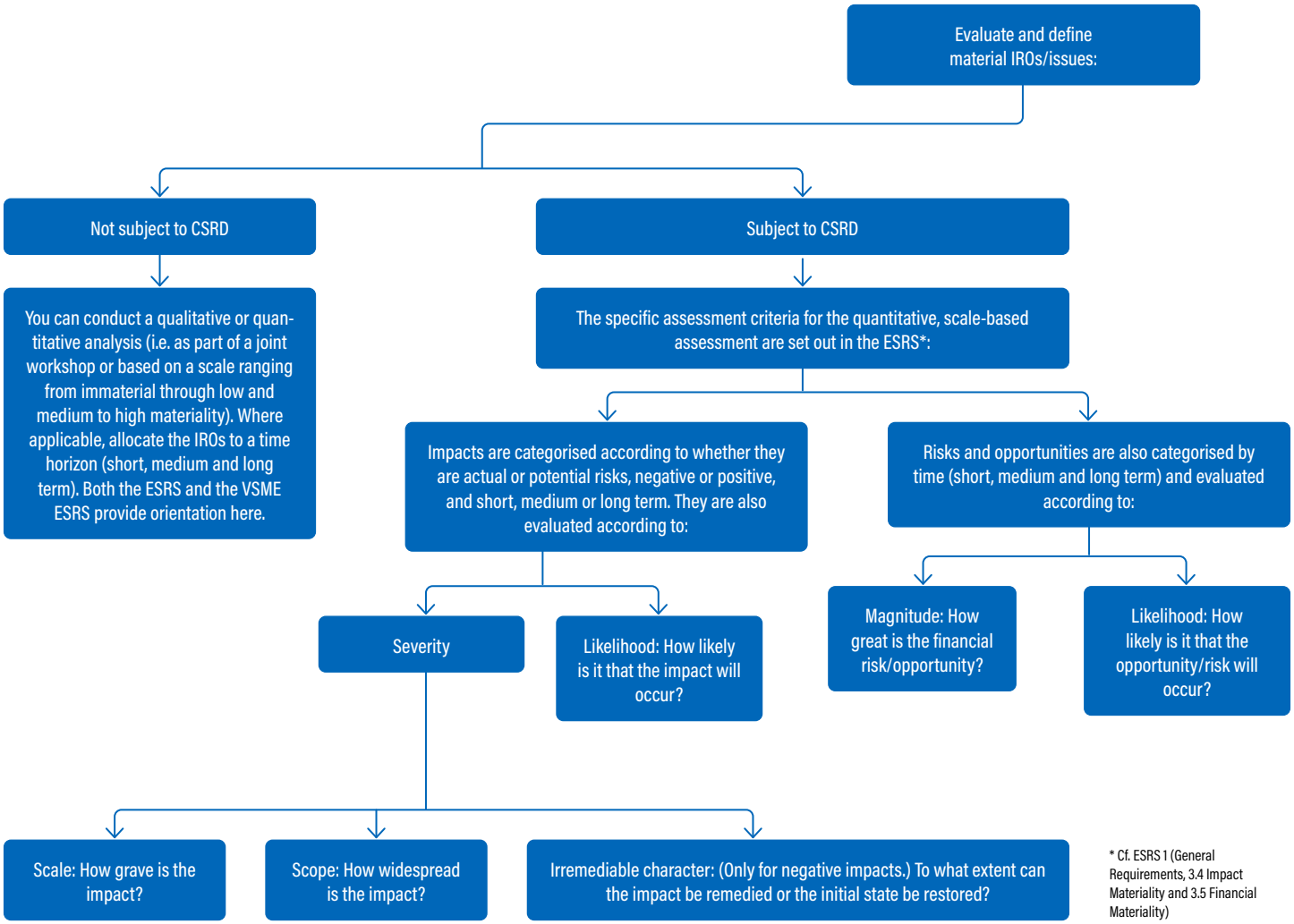
It is only possible to provide a general overview of the steps to preparing a company-specific materiality analysis in this industry materiality analysis. A company-specific materiality analysis is very individual and depends entirely on the context. A great many individual decisions will need to be made when preparing a company-specific materiality analysis. It will also involve consulting with your company's financial auditor(s).

2) Identify IROs/material issues:

Drawing on the findings of the industry materiality analysis during this step will significantly simplify your work. For all actual and potential ESG-relevant IROs have already been identified for the industry and summarised as material sustainability issues.



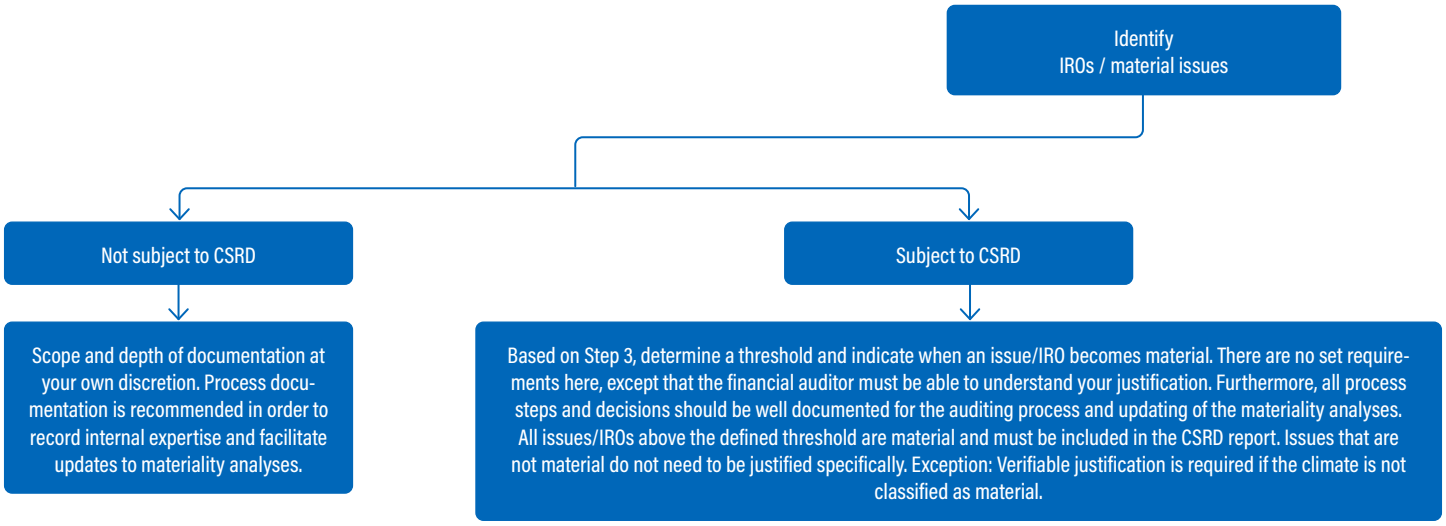
3) Analyse and define IROs/material issues:
Now evaluate the issues identified in the previous step.



* Cf. ESRS 1 (General Requirements, 3.4 Impact Materiality and 3.5 Financial Materiality)

---

4) Evaluate and document:
Now discuss and agree on the findings from Steps 2 and 3 internally.

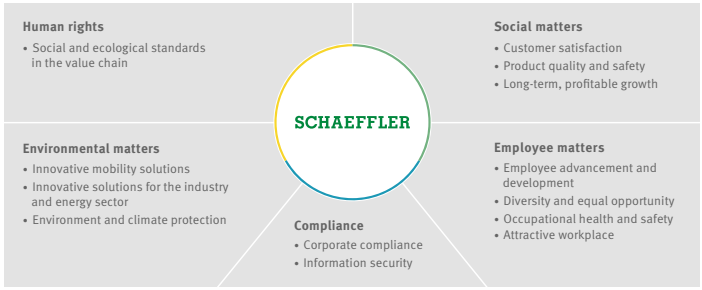


2.3.2.

Presentation of the analysis findings

The insights gained during a materiality analysis vary from company to company. It is important to document the methodological approach in the process and to detail the findings so that it is clear how your company identified its material issues and IROs. While there is no obligation to present these, it is common practice to present the findings of a materiality analysis in a matrix format. It is entirely up to a company whether and in which format it presents the findings of its materiality analysis. A simple list of the material issues with reasons why these are important for your company is entirely sufficient.

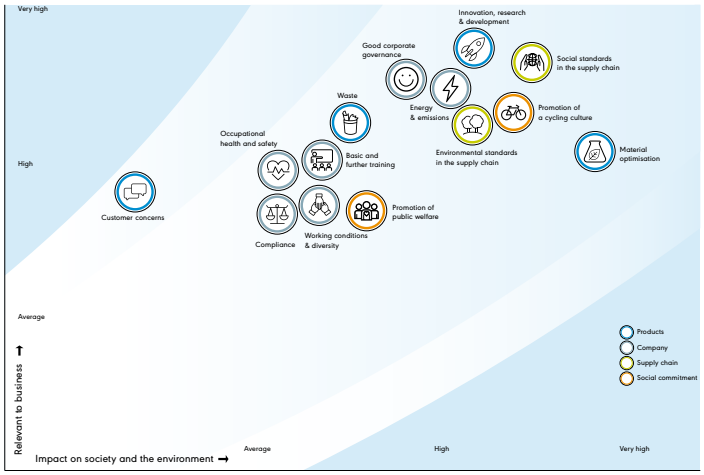
Figure 2:
Material issues at Schaeffler



Source: Schaeffler AG Sustainability Report 2022.

The **Schaeffler Group** chose a different presentation format than a materiality matrix in its 2022 sustainability report, for example. It conducts a materiality analysis every two years, which it has validated by internal stakeholders. The materiality analysis is based on a comprehensive stakeholder survey with more than 1,000 respondents. Schaeffler's Executive Board confirmed the findings from its own materiality analysis. The Schaeffler Group identified a total of 13 material issues in five areas.

Figure 3:
Material issues at Schwalbe



Source: Ralf Bohle GmbH CSRD Report 2022.

Schwalbe involved external experts in the materiality analysis that it conducted in 2022. A total of 14 material issues were identified in four areas. Unlike Schaeffler, Schwalbe based the presentation of its findings of the materiality analysis more on the matrix format.

2.4.

Process documentation: preparing an industry materiality analysis

The methods used to prepare the industry materiality analysis are described here to provide you with good documentation for the audit by your financial auditors. It is designed to conform with the CSRD. Companies that are not subject to the CSRD can also use the findings well and sensibly though.

The process involves three steps:

1. The background briefing is based on the long list of sustainability aspects and subordinate aspects provided in ESRS 1 (general requirements) and a comprehensive secondary analysis, supplemented by expert interviews, taking the entire (general) bicycle value chain into account. The sources identified in the secondary analysis are listed in the background briefing. Key sources here for example include specialist studies on global supply chains and specialist articles from the bicycle industry. A total of five guided expert interviews were conducted, each of which lasted approximately one hour in length. The aim of the interviews was to gain insights into the bicycle industry. The findings were then used to identify IROs, but also to determine issues for the in-depth secondary analysis. The experts were selected together with the ZIV.

2. Impacts, risks and opportunities were determined based on this. Positive and negative impacts were compiled and categorised according to whether they are actual or potential impacts. Risks and opportunities were also identified. A simple impact logic (A results from B) was moreover determined for all of the IROs identified. The IROs were categorised according to the sustainability issues identified in ESRS 1 and other industry-specific issues. The innovation capability and transformation capability with regard to sustainability were added as industry-specific issues. Finally, the materiality was assessed based on the ESRS. The severity*, scale, irremediable character and likelihood of each impact was considered. The materiality of risks and opportunities is determined by their magnitude and likelihood. The specific sources on which determination of the IROs was based were also indicated.

3. The materiality of the IROs was first determined and a list of the material sustainability issues then consolidated for the industry. A threshold was not set as part of the industry materiality analysis, as the sustainability issues were assessed across the board for all companies active in the bicycle industry and the assessment of materiality may well differ depending on the specific company. Setting a threshold could have led to sustainability issues being excluded that would be material for individual companies active in the bicycle industry.

* Due to the serious consequences of human rights violations, these were always rated with a value of 3 in the scale category.

3. Findings from the industry materiality analysis

3.1. Explanations of the findings

The following findings are based on an evaluation of the detailed background briefing, which categorises the individual sustainability aspects into impacts, risks and opportunities (IROs). The IROs are based on an extensive secondary analysis and interviews with experts. We evaluated the impacts of the bicycle industry on stakeholders along the entire value chain and the risks and opportunities that sustainability aspects could have on the financial situation of companies active in the bicycle industry in the future.

In the next step, we evaluated the materiality of the individual impacts based on their severity* and likelihood. The risks and opportunities were evaluated based on their magnitude and likelihood (see also 2.3. 'How to prepare a company-specific materiality analysis'). To assess the materiality, the criteria were rated on a scale from 1 (low) to 3 (high) and an average value calculated (= materiality). The individual sustainability aspects/IROs were then grouped into sustainability issues based on the categorisation of sustainability issues in the ESRS. The outcome is a list of 15 sustainability issues that are relevant to the bicycle industry. The findings also show that some issues are more relevant than others. It must be emphasised, however, that exactly how relevant a sustainability issue and the underlying sustainability aspects or IROs are will depend on the specific circumstances (incl. the value chain and business model) of each individual company. To avoid sustainability issues being categorised as irrelevant in the industry materiality analysis, a threshold was deliberately not set.

This step is essential in company materiality analyses, but might lead to exclusion from the industry materiality analysis of issues that are relevant to individual companies.

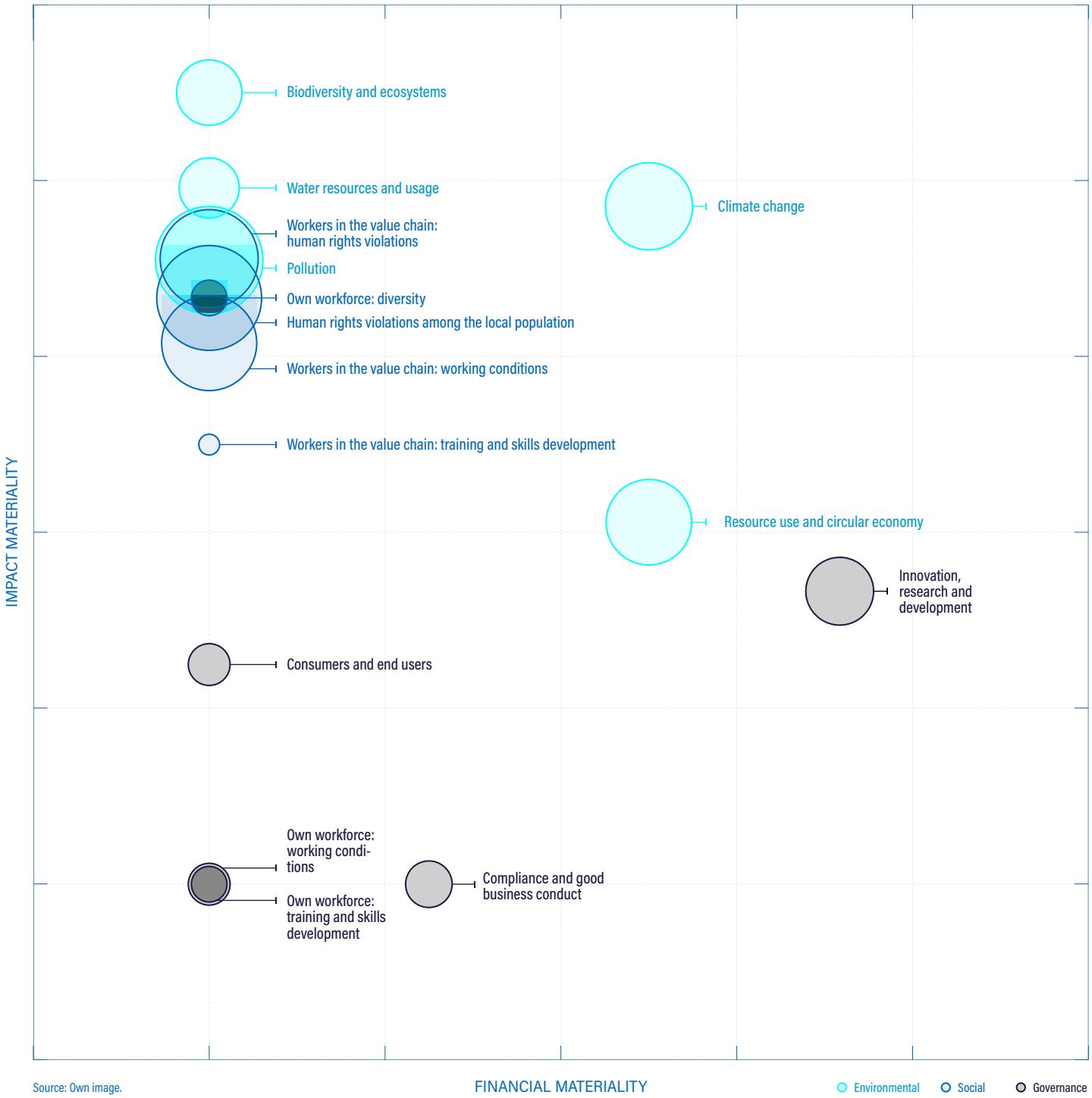
* The severity relates to the aspects of scale, scope and irremediable character (see also 2.3. 'How to prepare a company-specific materiality analysis').

3.2. The material sustainability issues in the bicycle industry

The materiality analysis for the bicycle industry shows that there is a great need for action when it comes to environmental sustainability issues and to human rights standards in the upstream stages of the value chain. This relates to the extraction of raw materials and the production of materials. The mining of cobalt, which is an essential material component of e-bike batteries, causes pollution in the Democratic Republic of the Congo, for example, due to illegal mines and the widespread use of small-scale artisanal mining methods. At the same time, the structure of the mining sector means that human rights are not adequately observed, resulting in serious violations of these standards, including forced labour and child labour. Material sustainability aspects also exist within a company's own operations. These relate to all three dimensions of sustainability. Particularly economic sustainability links closely to the risks and opportunities. These include changes to the regulations on sustainability as well as innovation and transformation projects within the company.

Figure 4:
Materiality and number of IROs per sustainability issue.

The assessment of materiality ranges from 1.00 to 3.00. In the present evaluation, 1.90 is the highest materiality value and 1.00 the lowest. The circle size indicates the number of IROs identified per sustainability issue.



Source: Own image.

Environmental sustainability issues

- High materiality of environmental sustainability issues driven by: deforestation and the use of pollutants to extract raw materials like aluminium, cobalt, iron ore, copper, nickel and rubber
- High water consumption during the extraction of raw materials
- High greenhouse gas emissions for transport due to global production networks and the energy-intensive extraction of resources and production of materials. Conversely, potentially positive impacts on the climate thanks to the products and services offered by the bicycle industry

Social sustainability issues

The materiality of social sustainability issues is characterised by at times serious impacts on local populations and workers in global supply networks, including violations of their human right to physical integrity, freedom of assembly and education.

Governance sustainability issues

According to the analysis, governance issues are less important. The most material issues here are diversity and non-discrimination, followed by compliance, which covers a large number of potential impacts in light of the growing regulatory requirements.

3.2.1.

List of material sustainability issues

Table 1: Sustainability issues (sorted by the number of associated impacts, risks and opportunities).

#		Sustainability issue	Materiality	No. of IROs
1	ESRS E2	Pollution	1.71	**35**
2	ESRS S3	Human rights violations among the local population	1.67	**33**
3	ESRS S2	Workers in the value chain: human rights violations	1.71	**28**
4	ESRS S2	Workers in the value chain: working conditions	1.62	**26**
5	ESRS E1	Climate change	1.76	**21**
6	ESRS E5	Resource use and circular economy	1.43	**20**
7	Added manually	Innovation, research and development	1.59	**11**
8	ESRS E4	Biodiversity and ecosystems	1.90	**10**
9	ESRS E3	Water resources and usage	1.67	**4**
10	ESRS G1	Compliance and good business conduct	1.25	**4**
11	ESRS S4	Consumers and end users	1.25	**3**
12	ESRS S1	Own workforce: working conditions	1.00	**3**
13	ESRS S1	Own workforce: diversity	1.67	**2**
14	ESRS S1	Own workforce: training and skills development	1.00	**2**
15	ESRS S2	Workers in the value chain: training and skills development	1.50	**1**

Source: Own image.

Please note: The materiality rating ranges from 1.00 to 3.00. In the present evaluation, 1.90 is the highest materiality value and 1.00 the lowest.

3.3.

The sustainability issues relevant to the bicycle industry in brief

Pollution: The impacts here relate to almost all stages in the value chain and various aspects of sustainability. These include contamination of the air, soil and water during the extraction of raw materials (e.g. iron ore, graphite, nickel) and the release of toxic chemicals (e.g. during the extraction of aluminium). Furthermore, abrasion and wear during product use (e.g. tyres) give rise to pollution on a smaller scale. There is also a lot of pollution at the end of the product life (e.g. plastic waste).

Human rights violations among the local population: The impacts in this area relate to sustainability aspects in the raw material extraction stage of the value chain. Human rights are violated through land grabbing, displacement and forced resettlement or safety risks. The consequences of raw material extraction (pollution, in part due to accidents) can lead to restricted access to water or food. This area also includes violation of the cultural rights of indigenous communities.

Workers in the value chain – human rights violations: The impacts indicated here relate to the upstream value chain (usually the raw material extraction stage). Critical aspects are forms of forced labour (incl. child labour), health and safety risks and disregard for the freedom of association and collective bargaining. Violence and discrimination are further negative impacts on workers in the supply chain.

Climate change: Positive and negative impacts relating to climate change exist along the entire value chain for the bicycle industry, i.e. aspects that either release a lot of climate-damaging gases (e.g. logistics) or lead to comparatively fewer CO_2 emissions (e.g. recycling of steel). Events triggered by climate change (e.g. extreme weather events) can moreover lead to financial risks.

Resource use and circular economy: Positive and negative impacts are supplemented by risks and opportunities in this area. Beside the negative impacts of waste, the (potential) positive impacts (in the form of resource conservation, e.g. by extending the product life or eco-friendly designs) outweigh the negative impacts. One opportunity relating to the circular economy is further development of the second-hand market for bicycles. Multiple use (e.g. of packaging) and the use of recycled materials also play a major role.

Innovation, research and development: The ability to innovate and transform to address sustainability harbours various impacts, risks and opportunities. Negative impacts for example include a reduction in the reparability of bicycles due to a lack of willingness to transform. Opportunities arise from new market niches (e.g. sustainable bicycles) or the growing market share of e-bikes. Risks exist due to the changing market structure (e.g. risk of a decline in stationary speciality retail).

Biodiversity and ecosystems: The impacts relate to losses of and changes to the biodiversity and ecosystems. Mostly caused by activities in the upstream value chain during the extraction of raw materials through deforestation (e.g. for rubber) or for the mining of raw materials. This also results in pollution that impacts local ecosystems.

Water resources and usage: The impacts relate to production processes that required a lot of water (e.g. to obtain CFRP and leather), but also to raw material extraction processes (e.g. dewatering in bauxite mining) that have an impact on the local water system. This also includes the effects of high water consumption in very dry regions, which can lead to water stress, as is the case with lithium and copper mining.

Compliance and good business conduct: The risks in this area include those that could have a negative impact on companies active in the bicycle industry. They usually arise from non-compliance with new regulations relating to sustainability (e.g. LkSG or CSRD). Financial risks arise from sanctions or a bad reputation.

Consumers and end users: The impacts relate to sustainability aspects such as service quality and information obligations vis-à-vis the customers as well as access to sustainable forms of mobility (bicycles) for all demographic groups. The impacts must be categorised at the sales value-added stage.

Own workforce – diversity: The impacts that relate to your own company concern diversity aspects. In addition to diversity, this includes the inclusion of people with disabilities, discrimination and activities to prevent it, as well as gender equality and equal pay for equal work.

Own workforce – working conditions: Here, the impacts relate to aspects of employee satisfaction and loyalty within the company (including work-life balance and flexible working time models), but also to classic issues relating to working conditions (including appropriate salaries, overtime regulations and protection against overwork).

Own workforce: training and skills development: In this area, the impacts relate to aspects of employee satisfaction and loyalty within the company (including offers for training and skills development). In the area of bicycle production, widespread outsourcing is leading to a loss of expertise.

Workers in the value chain – training and skills development: Here, the impacts relate to measures to expand expertise in the upstream supply chain (e.g. environmental protection precautions) through training and skills development. It applies to the raw material extraction and production stages of the value chain.

Workers in the value chain – working conditions: The impacts relate to the risk of poverty, risks to health and precarious living conditions for employees and their families in the supply chain. Sustainability aspects include health and safety at work, appropriate salaries (living wages) and safe working conditions.

3.4.

Materiality along the value chain

In the example provided below, the material sustainability issues relevant to the bicycle industry are presented along a generic value chain. Perhaps unsurprisingly, as it is already known from climate accounting (relevance of Scope 3 emissions), many of the material sustainability issues arise in the upstream value chain in particular (raw material extraction and production). Opportunities and potential positive impacts are primarily found at the business development, marketing and sales/R&D end of the value chain. This often involves innovation and transformation aspects relating to sustainability, which affect the company's business model, products and services. The disposal step includes sustainability aspects relating to resource use and the circular economy (e.g. recycling).

Example presentation:
Material issues along the value chain.

Raw material extraction	Production	Transport and storage	Business conduct	Business development, marketing, sales / R&D	Product usage	End of life
1, 2, 3, 4, 5, 7, 9	1, 2, 3, 4, 5, 8, 9, 10, 11, 14	3	2, 3, 6, 8, 11, 13, 14, 15	3, 8, 11, 12	3, 5, 8, 11	3, 5, 11

1. Biodiversity and ecosystems
2. Water resources and usage
3. Climate change
4. Workers in the value chain: human rights violations
5. Pollution
6. Own workforce: diversity
7. Human rights violations among the local population
8. Innovation, research and development
9. Workers in the value chain: working conditions
10. Workers in the value chain: training and skills development
11. Resource use and circular economy
12. Consumers and end users
13. Compliance and good business conduct
14. Own workforce: training and skills development
15. Own workforce: working conditions

3.5.

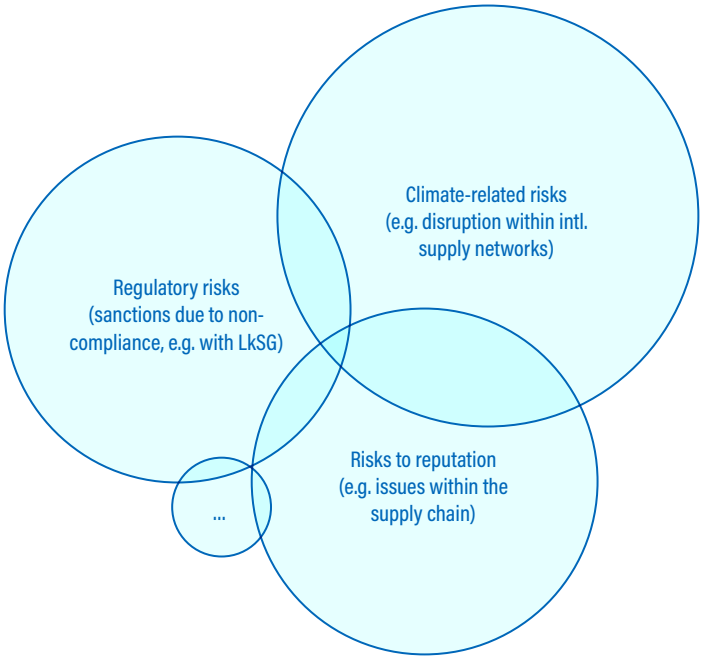
Opportunities and risks for the bicycle industry

Financial materiality relates to aspects of sustainability that lead to risks and opportunities with a financial impact on a company, so on its future viability. Due to the company-specific financial impact of risks and opportunities, the industry materiality analysis only covers a limited number of risks and opportunities that are relevant to the bicycle industry as a whole. One outcome of this analysis is that trends can nonetheless be recognised in the financial risks and opportunities for companies active in the bicycle industry. Financial materiality can only be presented in the industry materiality analysis to a limited extent and must be considered specifically in the company's own materiality analysis. The trends included here provide a solid basis for this.

3.5.1.

Risks

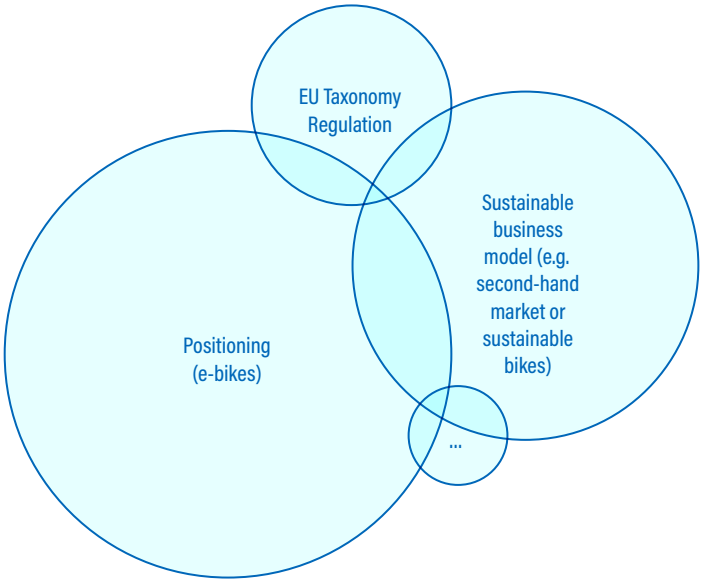
The financial materiality of the bicycle industry is largely shaped by the new laws relating to sustainability being introduced all across the EU, but also within Germany specifically. The financial risks are based on non-compliance with regulations such as the German supply chain due diligence act (Lieferkettensorgfaltspflichtengesetz, LkSG), which can lead to sanctions. Negative effects in the supply chain, particularly in the social sphere, result in risks to a company's reputation that can lead can in turn lead to financial losses.



3.5.2.

Opportunities

The financial materiality of the bicycle industry is also characterised by opportunities. Two areas dominate as a result of the industry materiality analysis: financial opportunities arising from the transformation of a company's business model toward even more sustainability (e.g. second-hand market, circular economy) and opportunities arising from regulation (e.g. EU Taxonomy Regulation).



3.6.

Expert interviews: the most important takeaways

As part of the materiality analysis, we conducted interviews with experts to identify potential or actual impacts, risks and opportunities (IROs) within the bicycle industry. See here for the full interview transcripts (in German only).

»Bicycles are no longer produced for eternity and that's exactly where a rethink is required: Principles such as eco-design, right to repair and design for long life must be taken into account in design processes.«

— **Erik Bronsvoort**, Founder, Circular Cycling

»For the bicycle industry to evolve toward a circular economy, new business models are needed: Profit must be generated through the use of pedelecs.«

— **Hannes Neupert**, First Chairman, ExtraEnergy e. V.

»Relocations to the Far East, for example of frame production, have led to a lot of expertise being lost in Germany. Global supply networks always involve very long transport routes – and this presents a challenge to sustainability.«

— **Albert Herresthal**, mobility consultant and publisher, Informationsdienst Fahrradwirtschaft (IFW)

»The raw materials used in batteries are not only associated with serious environmental impacts. A direct link also exists to human rights violations during the extraction and processing of raw materials.«

— **Johannes Peter**, Business & Human Rights Officer, WEED – World Economy, Ecology & Development e. V.

»Today, a bicycle is more for fashion and prestige than for utility. The trend is more toward individualisation than standardisation and this diminishes the reparability.«

— **Dirk Zedler**, Founder and Managing Director, Zedler-Group

4.

Background briefing on the industry materiality analysis

The background briefing contains the detailed findings from the industry materiality analysis. It list all impacts, risks and opportunities (IROs) identified for the bicycle industry. In addition to the categorisation according to the sustainability aspects covered in the ESRS and a brief description of the respective IROs, the material issues are also assigned to a stage in the value chain. The assessment of materiality is presented transparently and can therefore serve as a starting point for a company-specific assessment of materiality should this be deemed different. The sources for each individual sustainability aspect identified are also indicated. See the 'Read me' section of the background briefing for detailed information on using and working with the background briefing.

5.

Outlook

The bicycle industry is working to incorporate sustainability into the entire value chain. Laws and regulations in the EU and Germany are driving the sustainability transformation and many companies active in the bicycle industry are leading the way and orienting themselves to these new sustainability regulations. They often do so despite not being subject to these.

The concept of double materiality referred to in the CSRD changes sustainability management and reporting significantly. The industry materiality analysis provides companies active in the bicycle industry with comprehensive assistance for conducting their own materiality analysis in accordance with the CSRD or in line with these requirements (adapted to their individual situation) and addressing their particular material sustainability issues. The instructions for the materiality analysis, the findings from the industry materiality analysis and the background briefing provide those responsible with the information they need to conduct their own company materiality analyses and to do so in a resource-saving manner, drawing on industry data.

This enables management and those responsible for sustainability to successfully carry out materiality analyses within their company, meet CSRD requirements, develop their commitment to sustainability strategically and ultimately align their company to the required sustainability transformation.

5.6.1.

Appendix: Overview of sustainability aspects (IROs)

Step in value chain	Critical (raw) material	Impact, risk or opportunity (IRO)		Cause in the industry supply chain	Type	Materiality	+/-
Raw material extraction		Supply disruption with financial consequences	through	environmental risks impacting international supply networks	Risk	1.5	/
	Aluminium	Loss of biodiversity	through	pollution / deforestation / soil erosion due to bauxite mining and aluminium production	Impact	2.33	-
		Soil pollution	through	water contamination and use of chemicals in bauxite mining and aluminium production	Impact	2	-
		CO_2 savings through aluminium recycling	through	new recycling infrastructure and processes	Impact	1.5	+
		Release of hazardous/toxic chemicals	through	use of chemicals in bauxite mining and aluminium production	Impact	2	-
		High CO_2 emissions: aluminium	through	electrolysis of bauxite	Impact	2.33	-
		Seizure of land from local population	through	large open-cast bauxite mines in loose ground	Impact	1.5	-
		Local water shortages	through	high water consumption in open-cast bauxite mines (dewatering, etc.)	Impact	1.33	-
		Air pollution	through	inadequate environmental precautions, bauxite mining / aluminium production	Impact	1.67	-
		Human rights violations vis-à-vis the local population	through	pollution of the basis for life	Impact	2	-
		Human rights violations during production	through	non-transparent supply chains, lack of enforcement of standards in bauxite mining and aluminium production	Impact	2	-
		Loss of ecosystem	through	large open-cast bauxite mines in loose ground	Impact	2	-
		Water pollution	through	red mud from bauxite mining / aluminium production	Impact	2	-
	Cerium	Poverty risk for workers in the upstream value chain	through	inadequate standards in cerium extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards in cerium extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of cerium mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during cerium extraction, non-transparent supply chains, inadequate environmental protection standards	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards in cerium extraction, non-transparent supply chains	Impact	1.83	-
	Cobalt	Health and safety risks in the upstream value chain	through	non-transparent supply chains, illegal mining of cobalt, lack of implementation of safety standards	Impact	2.5	-
		Illegal child labour	through	illegal/artisanal cobalt mining methods, non-transparent supply chains	Impact	2.17	-
		Land usage conflicts with the local population	through	displacement due to industrial mining, non-transparent supply chains, insufficient state regulation	Impact	1.67	-
		Human rights risks for the local population	through	pollution due to artisanal cobalt mining	Impact	2.17	-
		Poor living conditions for workers and their families	through	low pay (power asymmetries in the supply chain, insufficient state regulation)	Impact	1.17	-
		Safety risks for the local population	through	illegal and artisanal cobalt mining, insufficient state control	Impact	2	-
		Poor structural working conditions	through	illegal/artisanal cobalt mining, non-transparent supply chains, insufficient state regulation	Impact	2	-
		Water pollution	through	(illegal) cobalt mining, lack of environmental precautions, formation of acid mine drainage	Impact	1.67	-
		Destruction of ecosystems	through	environmental destruction through the (illegal) operation of cobalt mines, lack of recultivation, contaminated sites in closed mines	Impact	1.67	-
		Forced labour	through	illegal/artisanal cobalt mining methods, non-transparent supply chains	Impact	2.17	-
	Dysprosium	Poverty risk for workers in the upstream value chain	through	inadequate standards for dysprosium extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards for dysprosium extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of dysprosium mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during dysprosium extraction, non-transparent supply chains, inadequate environmental protection measures	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards for dysprosium extraction, non-transparent supply chains	Impact	1.83	-
	Iron ore	Poverty risk for workers	through	unclear/lacking work contracts in the mining of iron ore in the upstream value chain	Impact	1	-
		Insufficient employee rights	through	prevention/lack of works councils, trade unions, etc.	Impact	2	-
		Health and safety risks for workers in the upstream value chain	through	lack of/disregard for health and safety standards in iron ore mining	Impact	1.67	-
		High water consumption	through	wet mining process for iron ore extraction, dewatering	Impact	1.67	-
		Illegal child labour in iron ore mines	through	lack of controls in the mining sector, non-transparent supply chains	Impact	1.33	-
		Air pollution	through	inadequate environmental protection precautions in iron ore mining	Impact	1.33	-
		Poor working conditions	through	lack of/disregard for working time laws and standards in iron ore mining	Impact	1.67	-
		Environmental degradation / damage to the ecosystem	through	deforestation through the expansion of iron ore mines	Impact	1.67	-
		Improvement of working conditions in the upstream value chain	through	use of soft laws / voluntary standards	Impact	1.75	+
		Improvement of work safety in the upstream value chain	through	use of soft laws / voluntary standards	Impact	1.25	+
		Improvement of the living conditions of workers in the upstream value chain	through	use of soft laws / voluntary standards	Impact	1.25	+
		Violation of human rights of the local population	through	iron ore mining (environmental degradation, accidents)	Impact	2.17	-
		Prevention of illegal child labour	through	use of soft laws / voluntary standards	Impact	1.5	+
		Reduction of soil fertility	through	pollution during iron ore mining	Impact	2	-
		Water pollution (mine water, sludge and chemicals)	through	use of chemicals in iron ore mining	Impact	2	-
		Destruction of housing and habitats / resettlement of the local population	through	opening and expansion of iron ore mines	Impact	1.5	-

Step in value chain	Critical (raw) material	Impact, risk or opportunity (IRO)		Cause in the industry supply chain	Type	Materiality	+/-
	Graphite	Poor (structural) working conditions	through	power asymmetries along the supply chain, insufficient state regulation	Impact	2	-
		Discrimination against workers in the workplace	through	power asymmetries along the supply chain, insufficient state regulation	Impact	1.33	-
		High health risk for workers and local population	through	dust development during graphite mining	Impact	1.67	-
		Land usage conflicts with the local population	through	(illegal) expansion of graphite mining areas, insufficient state regulation	Impact	1.67	-
		Air pollution	through	degradation of graphite, dust development	Impact	1.17	-
		Human rights risks due to environmental impacts	through	air pollution during graphite mining	Impact	1.5	-
		Water pollution	through	acid leaching during graphite mining, inadequate environmental protection measures	Impact	1.33	-
	Rubber	Poverty risk for small-scale farmers	through	price fluctuation, passing on of price pressure, power asymmetries along the supply chain	Impact	1.83	-
		Release of large quantities of greenhouse gases, direct impact on climate change	through	deforestation when rubber prices are high	Impact	1.5	-
		Child labour on industrial rubber plantations	through	non-transparent supply chains, insufficient state regulation, passing on of price pressure, power asymmetries along the supply chain	Impact	1.33	-
		Human rights violations, at times with degrading working conditions on industrial rubber plantations	through	non-transparent supply chains, insufficient state regulation, passing on of price pressure, power asymmetries along the supply chain	Impact	1.17	-
		Loss of biodiversity	through	cultivation in monocultures, use of pesticides, deforestation	Impact	2	-
		Loss of rainforests in Thailand, Indonesia, Vietnam and India	through	deforestation when rubber prices are high	Impact	1.5	-
		Deterioration of soil and water quality	through	use of pesticides, fertilisers	Impact	1.67	-
		Displacement of small-scale farmers	through	awarding of large-scale concessions for larger plantations	Impact	1.17	-
	Copper	Health risk for the local population	through	emissions from copper mining	Impact	2	-
		High CO_2 emissions	through	extraction of energy-intensive copper (often fossil fuels)	Impact	2	-
		High water consumption	through	copper mining in (very) dry areas	Impact	1.67	-
		Contamination risk (environment)	through	release of chemicals (heavy metals, metal oxides) and acid mist	Impact	2	-
		Land usage conflicts with the local population	through	intensity of copper mining, insufficient state regulation	Impact	1.67	-
		Air pollution	through	emissions (e.g. sulphur) from copper mining	Impact	1.33	-
		Human rights violations vis-à-vis the local population	through	pollution due to copper mining	Impact	1.33	-
		Environmental and ecosystem destruction	through	consequences of copper mining, inadequate environmental protection measures	Impact	1.67	-
		Water pollution	through	mine water during copper mining, inadequate environmental protection measures	Impact	2	-
	Lanthanum	Poverty risk for workers in the upstream value chain	through	inadequate standards in lanthanum extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards in lanthanum extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of lanthanum mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during lanthanum extraction, non-transparent supply chains, inadequate environmental protection measures	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards in lanthanum extraction, non-transparent supply chains	Impact	1.83	-
	Lithium	Health risk for workers	through	demand pressure, inadequate state regulation, non-transparent supply chains	Impact	1.67	-
		Land use conflicts with the local communities	through	lithium mining, demand pressure	Impact	2	-
		Human rights risks (access to water)	through	high water consumption / water extraction during lithium extraction	Impact	2.17	-
		Poor working conditions	through	demand pressure, inadequate state regulation, non-transparent supply chains	Impact	1.5	-
		Safety risks for the local population	through	land use conflicts (demand pressure, insufficient state regulation, non-transparent supply chains)	Impact	1.5	-
	Manganese	Land use conflicts with the local communities	through	insufficient government regulation, price pressure, non-transparent supply chains	Impact	1.5	-
		Health and safety risks in the upstream value chain	through	inadequate standards for manganese production, non-transparent supply chains	Impact	1.17	-
		Water pollution	through	inadequate environmental precautions / standards for manganese production	Impact	2	-
	Neodymium	Poverty risk for workers in the upstream value chain	through	inadequate standards for neodymium extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards for neodymium extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of neodymium mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during neodymium extraction, non-transparent supply chains, inadequate environmental protection measures	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards for neodymium extraction, non-transparent supply chains	Impact	1.83	-
	Nickel	Soil pollution	through	groundwater contamination during nickel mining, inadequate environmental protection measures	Impact	1.67	-
		Health risk for workers	through	insufficient health standards for nickel mining, non-transparent supply chains	Impact	1.83	-
		Precarious working conditions in the upstream value chain	through	lacking (compliance with) labour laws for nickel mining, non-transparent supply chains	Impact	2	-
		Precarious working conditions in the upstream value chain	through	non-transparent supply chains, insufficient state regulation, price pressure	Impact	1.5	-
		Poor living conditions for workers and their families	through	withholding of wages, precarious working conditions, insufficient state regulation	Impact	1.33	-
		Safety risk for demonstrators/people against nickel mining	through	violence/use of violent security services, corruption	Impact	1.33	-
		Environmental and ecosystem destruction	through	deforestation and topsoil removal for nickel ore mines	Impact	2	-
		Pollution from toxic substances	through	lacking (compliance with) environmental regulations for nickel mining	Impact	2	-
		Violation of the rights of indigenous communities	through	nickel extraction/mining, expansion of nickel mines	Impact	1.5	-

Step in value chain	Critical (raw) material	Impact, risk or opportunity (IRO)		Cause in the industry supply chain	Type	Materiality	+/-
		Violation of human rights of the local population	through	consequences of nickel mining	Impact	2.17	-
		Water pollution	through	leakage of mine water and sludge during nickel mining, inadequate environmental protection measures	Impact	2	-
		Destruction of food sources of the local population	through	environmental degradation/pollution due to nickel mining	Impact	1.83	-
		Forced relocations	through	nickel extraction/mining, expansion of mining areas	Impact	1.5	-
	Praseodymium	Poverty risk for workers in the upstream value chain	through	inadequate standards in praseodymium extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards in praseodymium extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of praseodymium mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during praseodymium extraction, non-transparent supply chains, inadequate environmental protection standards	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards in praseodymium extraction, non-transparent supply chains	Impact	1.83	-
	Scandium	Poverty risk for workers in the upstream value chain	through	inadequate standards for scandium extraction, non-transparent supply chains	Impact	1.83	-
		Child labour	through	inadequate standards for scandium extraction, non-transparent supply chains	Impact	1.5	-
		Land usage conflicts with the local population	through	(illegal) expansion of scandium mining areas	Impact	1.5	-
		Human rights risks for the local population	through	consequences of pollution during scandium extraction, non-transparent supply chains, inadequate environmental protection standards	Impact	1.67	-
		Precarious working conditions in the upstream value chain	through	inadequate standards for scandium extraction, non-transparent supply chains	Impact	1.83	-
	Steel	CO_2 savings through steel recycling	through	new recycling infrastructure and processes	Impact	1.25	+
Production		Poverty risk for production workers	through	practices of modern slavery	Impact	2	-
		Health risk for employees	through	use/handling of lubricants/chemicals without safety precautions	Impact	1.67	-
		Loss of production expertise (soldering and welding)	through	outsourcing of production	Impact	1	-
		Improved human rights and environmental aspects in the upstream value chain	through	dialogue with/training of suppliers	Impact	1.5	+
		Human rights violations	through	practices of modern slavery	Impact	2	-
		Conservation of resources	through	ecodesign of products	Impact	1.25	+
		Risk minimisation of human rights and environmental aspects in the value chain	through	insourcing within Europe	Impact	1.5	+
	Aluminium	High energy consumption	through	further processing of aluminium	Impact	2	-
	Carbon fibre reinforced plastic (CFRP)/carbon	High CO_2 emissions: CFRP	through	production process (extraction of crude oil, conversion)	Impact	2	-
		High water consumption	through	resource-intensive production process	Impact	2	-
	Graphite	High CO_2 emissions	through	synthetic graphite production process	Impact	2	-
	Synthetic materials	Soil pollution	through	inadequate environmental precautions the production of synthetic materials	Impact	1.33	-
		Use of hazardous chemicals/additives	through	synthetic material production process	Impact	1.67	-
		Use of highly hazardous chemicals/additives	through	synthetic material production process	Impact	2	-
		High CO_2 emissions	through	raw material extraction and synthetic material production	Impact	2.33	-
		High energy consumption/resource consumption	through	raw material extraction and synthetic material production	Impact	1.67	-
		Air pollution	through	raw material extraction and synthetic material production	Impact	2	-
		Water pollution	through	inadequate environmental precautions during synthetic material production	Impact	1.67	-
	Leather	Health risk due to toxic chromium compounds	through	inadequate safety standards / non-transparent supply chains / handling of chromium compounds without protection when tanning raw leather, e.g. in Morocco or India	Impact	1.33	-
		Illegal child labour	through	non-transparent supply chains, tanning of raw leather in the upstream value chain	Impact	1.33	-
		Reduced health and safety risks for workers in the upstream value chain	through	vegetable tanning of raw leather (e.g. as an alternative to tanning using chromium compounds)	Impact	1.25	+
		Reduced water pollution	through	adhering to standards (e.g. IVN) when tanning leather	Impact	1.75	+
		Reduced health and safety risks for workers in the upstream value chain	through	adhering to standards (e.g. IVN) when tanning leather	Impact	1.75	+
		Avoidance of water pollution	through	vegetable tanning of raw leather (e.g. as an alternative to tanning using chromium compounds)	Impact	1.25	+
		Water pollution	through	non-transparent supply chains / lack of environmental protection measures when using chromium to tan raw leather (e.g. in Morocco or India)	Impact	2	-
	Lithium	Risk minimisation of human rights and environmental aspects in the value chain	through	use of sodium chloride batteries	Impact	1.5	+
	Steel	Health risks for the local population / workers	through	air pollution during steel production	Impact	1.83	-
		High CO_2 emissions: steel	through	production process (metallurgy)	Impact	2.33	-
		Air pollution	through	emission of pollutants (e.g. coal dust) during steel production	Impact	2	-
	Thermoplastic	Use of recycled materials / circular economy	through	frames made from recycled polypropylene / thermoplastic	Impact	1	+
Transport		High CO_2 emissions	through	transport of raw materials and products, particularly to Europe from Asia	Impact	2.33	-
Innovation, research and development		Waste reduction	through	new 3D printing technology	Impact	1.25	+
		Extending the service life of bicycles and e-bikes and thus conserving resources	through	bike-as-a-service business models, assuming responsibility for the product life cycle	Impact	1.25	+

Step in value chain	Critical (raw) material	Impact, risk or opportunity (IRO)		Cause in the industry supply chain	Type	Materiality	+/-
Business development, marketing and sales		CO_2 savings	through	bicycles, e-bikes and cargo e-bikes replacing cars for the first 10–20 km	Impact	1.5	+
		Financial opportunities for sustainable business models	through	tapping into the second-hand bicycle market	Opportunity	1.5	
		Promotion of sustainable mobility	through	regional commitment (e.g. cycle paths)	Impact	1.25	+
		Lower demand for products (bicycles without an electric motor)	through	bicycles being replaced by e-bikes, etc	Risk	1.5	/
		Intensive resource usage/reuse	through	battery-as-a-service models (e-bike batteries)	Impact	1.5	+
		Occupying a market niche / positioning with sustainable bikes	through	bicycles made from reparable sustainable materials (cf. Fairphone)	Opportunity	2	
		Positioning on the e-bike market	through	positive trend: e-bikes are gradually replacing bicycles	Opportunity	2	/
		Damage to reputation/image, financial consequences	through	violations of the Green Claims Directive	Risk	1.5	/
		Decrease in sales and brand popularity	through	bad reputation due to problems in the value chain (e.g. cobalt)	Risk	1.5	
Sales		Exclusion from access to sustainable mobility	through	barriers to access due to high prices	Impact	1	-
		Increase in service quality	through	assumption of service tasks by specialist retailers	Impact	1.75	+
		Retail channel increasingly disappearing	through	lack of qualified personnel, decline in specialist retailers	Risk	1.5	
	Synthetic materials	Poor customer information	through	inadequate fulfilment of the information obligations / communication	Impact	1	-
Product usage		Decrease in reparability	through	specialised products, lack of spare parts, lack of knowledge among specialist retailers	Impact	1	-
		CO_2 emissions	through	use of bicycles as sports equipment (travelling by car, etc.)	Impact	1.17	-
		Reduction of waste and CO_2 emissions during production	through	extension of the product life cycle	Impact	1.25	+
		High resource consumption	through	high wear of the drive system (chain, sprocket)	Impact	1	-
		Pollution	through	tyre wear, lubricant, brake pad wear	Impact	1.33	-
		Extension of the product life cycle (e-bikes)	through	regular general updating	Impact	1.25	+
		Prevention of pollution	through	use of drum brakes (no abrasion)	Impact	1	+
		Water pollution	through	tyre wear, lubricant, brake pad wear	Impact	1.33	-
End of life		CO_2 savings of up to 80%	through	recycling of used tyres and manufacturing of new tyres from recycled material	Impact	1.75	+
		Large quantities of scrap metal	through	scrapping of old bicycles	Impact	1	-
		Air pollution	through	dust emissions from shredder systems (incl. heavy metal particles)	Impact	1	-
		Conserving of resources / reduction of waste	through	(systemic) reusable packaging solutions	Impact	1.5	+
		Conservation/reuse of resources	through	deposit system for rechargeable batteries through business models and voluntary commitment (beyond the legal requirements)	Impact	1.88	+
	Carbon fibre reinforced plastic (CFRP)/carbon	Large quantities of (hazardous) waste	through	use of CFRP/carbon with no recycling options	Impact	1.67	-
		Conservation/reuse of resources	through	recycling of CFRP/carbon through pyrolysis	Impact	1.25	+
		Penalties for the disposal of plastic components	through	non-recyclable/difficult to recycle carbon fibre compounds	Risk	1.5	
	Synthetic materials	Loss of biodiversity	through	release of hazardous/toxic chemicals from plastic compounds	Impact	2.33	-
		Air pollution from plastic waste	through	inadequate (use of) waste and recycling infrastructure	Impact	2	-
		Plastic pollution in organisms and the food chain	through	pollution from plastic waste	Impact	2.33	-
		Water pollution from plastic waste	through	inadequate (use of) waste and recycling infrastructure	Impact	2.33	-
	Plastic	Waste prevention	through	reusable packaging made from polypropylene	Impact	1.75	+
		Pollution	through	single-use plastic packaging	Impact	2.33	-
	Steel	Penalties for the disposal of steel components	through	difficult to recycle material	Risk	1.5	
Business conduct		Waste	through	office activities and potentially also production processes	Impact	1	-
		Fines, damage to reputation with financial consequences	through	non-compliance with LkSG	Risk	1.5	
		Direct CO_2 emissions	through	operation of delivery vehicles	Impact	1.67	-
		Financial benefits (credit institutions)	through	application of the EU Taxonomy Regulation	Opportunity	1.5	
		Employee loyalty and satisfaction	through	flexible working time models, overtime regulations, protection against overwork	Impact	1	+
		Negative financial impact, damage to reputation, decrease in orders	through	non-compliance with the EU regulation on deforestation-free supply chains	Risk	1	
		Conservation of resources / avoidance of emissions	through	intelligent use of waste heat	Impact	1.5	+
		Sanctions	through	EU battery regulation	Risk	2	
		Sanctions, damage to reputation with financial consequences	through	non-compliance with the CSDDD	Risk	1.5	
		Unequal pay, treatment, respect, approach, promotion and development of staff	through	structural non-consideration of demographic groups, lack of DEI management	Impact	1.67	-
		Unequal pay, treatment, respect, approach, promotion and development of staff with disabilities	through	structural exclusion of people with disabilities, lack of DEI management	Impact	1.67	-

5.6.2.
Glossary

Abbreviations	
CSDDD	Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
DEI	Diversity, equity and inclusion
DNK	German Sustainability Code
EFRAG	European Financial Reporting Advisory Group
ESG	Environmental, social and governance
ESRS	European Sustainability Reporting Standards
ESRS LSME	Mandatory ESRS for listed SMEs
IROs	Impacts, risks and opportunities
SMEs	Small and medium-sized enterprises
LkSG	German supply chain due diligence act (Lieferkettensorgfaltspflichtengesetz)
KPI	Key performance indicator
VSME ESRS	Voluntary ESRS for non-listed SMEs

5.6.3.
Resources

Background briefing

See here for the detailed background briefing (in German) with determination of the materiality of the individual impacts, risks and opportunities (IROs) and the respective sources. We recommend taking a look at the 'Read Me' section of this document first.

Expert interviews

See here for the full interview transcripts (in German).

Useful links

- EFRAG (European Financial Reporting Advisory Group): Implementation guidance for the materiality assessment
- European Commission: European Sustainability Reporting Standards, ESRS
- EFRAG: ESRS for listed small- and medium-sized enterprises (ESRS LSME) [Draft]
- EFRAG: Voluntary ESRS for non-listed small- and medium-sized enterprises (VSME ESRS) [Draft]
- DNK: Information on the CSRD [in German]

Legal notice

ZIV – German Bicycle Industry
Reinhardtstraße 7
10117 Berlin
Germany

+49 30 4 39 73 57 70
contact@ziv-zweirad.de
ziv-zweirad.de

Responsible for content according to press law:
Burkhard Stork

Coordination:
Anke Schäffner

Concept and editing: sustainable natives — Alka Celić, Marius Hasenheit, Meike Frese, Chie Marquardt-Tabel & Marcel Sydow

Layout:
Peter Gericke & Larissa Lachmann

English translations:
Denise Dewey-Muno

June 2024

ZIV GERMAN BICYCLE INDUSTRY