AEX Futureproof Index Report

The integrated value of the AEX-listed companies

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AEX Futureproof Index

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Executive Summary

When assessing the value of organisations, stock markets tend to focus on the financial bottom line: The focus lies with the company's ability to generate profit, revenue growth, balance sheet strength, cash flow, and debt levels. This picture, however, is incomplete: When taking a long-term view of corporate value, the current methods of assessment are inadequate. We must consider not only financial value but also social and environmental value to understand the scope of company impact well into the future. Further, the societal and ecological challenges ahead will have a tremendous effect on government, governance, and society at large, leading to new taxation, redefinition of responsibilities, and recalculating of impact, positive as well as negative. The effect companies have—both short- and long-term—will impact the way society and investors value companies. The future of financial value is integrated value.

The inaugural AEX Futureproof Index was born out of the need to find a new way to measure corporate value. Following years of research led by Prof. Dirk Schoenmaker and Prof. Willem Schramade, the formula came to be as such:

Integrated Value (IV) = Financial Value (FV) + Social Value (SV) + Ecological Value (EV)

We put the formula to the test and developed the AEX Futureproof Index Report, calculating the integrated value of 23 AEX-listed companies[1] as objectively as possible. The 2023 annual reporting of these companies was the starting point of each calculation. We supplemented this with reliable publicly available sources to arrive at a balanced and comprehensive analysis of financial, social, and environmental value. Using the same formula and methodology for all companies, we standardised to the best of our ability to realise a Futureproof Index that is as objective and transparent as possible. In this document, you will find the outcomes. Additional information on sources, calculations, and data sets can be found in the 'Methodology for Integrated Value' section and the Annex on Integrated Value Methodology Notes.

Futureproofing Ratio

At the core of the Index lies the Futureproofing[2] Ratio, a novel metric calculated as the ratio of a company's integrated value (the sum of financial, social, and environmental value) relative to its financial value. This score determines a company's position in the AEX Futureproof Index, providing a clear and actionable benchmark for integrated value.

Futureproofing Ratio = Integrated Value (IV) / Financial Value (FV)

The Futureproofing Ratio provides insight into the company's transition opportunities and risks. A Futureproofing Ratio larger than 1 means the company has net positive social and ecological value, indicating a net positive contribution to society. A Futureproofing Ratio between 0 and 1 means that the company has net negative social and ecological value, but the integrated value is still positive, indicating that part of the financial value of the company is at the expense of society. A Futureproofing Ratio below zero means the negative social and ecological value is larger than the company's financial value, indicating a highly unsustainable business model and the risk of a potential inability to withstand significant transitions. Not only does the Futureproofing Ratio provide a lens through which to compare the long-term value potential of companies; it can also be used to compare economies in terms of their long-term competitiveness.

As we reflect on the outcomes of this inaugural AEX Futureproof Index, it remains paramount to recognise that measuring impact is the first step to addressing it. We invested the equivalent of over ten years of work into this Index, and it's beyond any doubt that we need better, more transparent, and responsible reporting. While analysing the documents provided by the companies, the word 'greenwashing' appeared on multiple occasions. This not only undermines confidence in these companies, but also is not in the interest of society, shareholders, or companies themselves when taking a long-term perspective. It will be interesting to see the effect of the Corporate Sustainability Reporting Directive (CSRD) guidelines that apply to AEX companies per 1/1/2024. We hope this AEX Futureproof Index will provide a new way forward when it comes to long-term investment. From the boardroom to investors and policymakers, these stakeholders can use this report to help improve their decisions as they look toward the future.

1. The benchmarking exercise aims to assess the real-world impacts of companies on a consolidated basis. This assessment is more difficult (both in calculating and interpreting) for companies with a layered structure. Exor and Prosus are excluded from the list of AEX companies. Exor is an investment vehicle. Prosus is a combination of the company itself and of Tencent, the Chinese social media company in which Prosus has a 25% stake.
2. "Futureproofing" business means to equip a company for future developments (*Future-proofing*, Oxford English Dictionary, 2024).

Figure 1: The AEX Futureproof Index

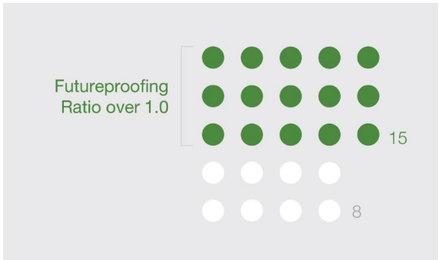
Company	Futureproofing Ratio (IV/FV)	Rank
Philips	4.68	1
Ahold Delhaize	2.61	2
Randstad	2.34	3
KPN	1.82	4
Universal Music Group	1.73	5
IMCD	1.58	6
RELX	1.51	7
Wolters Kluwer	1.38	8
Adyen	1.20	9
NN Group	1.11	10
ASR Nederland	1.08	11
Aegon	1.04	12
ING Groep	1.02	13
ABN AMRO Bank	1.01	14
ASML Holding	1.00	15
AkzoNobel	0.98	16
BE Semiconductor	0.95	17
ASM International	0.92	18
DSM Firmenich	0.88	19
Unilever	0.34	20
Heineken	-0.94	21
Shell	-2.07	22
ArcelorMittal	-12.01	23

Leader >2 | Upper Middle 1–2 | Lower Middle 0–1 | Laggard <0

Key Findings

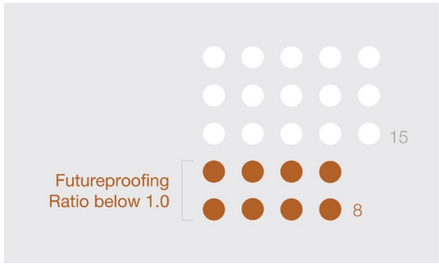
1: The overall Futureproofing Ratio is below 1

While companies are taking steps to improve their social and environmental outcomes, the overall Futureproofing Ratio is below 1. This means that financial value creation currently comes at the expense of society at large**.** Overall, the aggregate Futureproofing Ratio of the AEX companies is 0.70, meaning that 30% of the financial value of the AEX index comes at the expense of society.



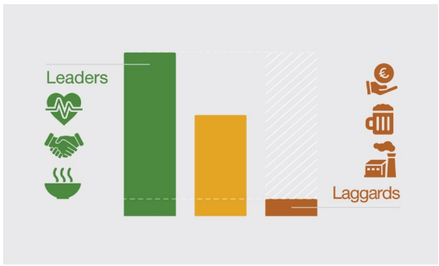
2: 15 of the 23 companies have a positive integrated value

Looking at the overall score, 15 of the 23 companies have a (very) positive integrated value (average score of the Futureproofing Ratio 1.0 or higher). That means that their integrated value equals or exceeds their current financial value. Philips, Ahold Delhaize, and Randstad have very positive ratios. The main reasons for these scores are their positive contributions to health, food (distribution) and employment.



3: 8 of the 23 companies have a Futureproofing Ratio below 1

8 of the 23 companies have a Futureproofing Ratio below 1, which indicates that around one third of the AEX-listed companies are unprepared for transitional risks. ArcelorMittal, Shell, and Heineken have a (very) negative score (Futureproofing Ratio below 0) when using our methodology. The main reasons for that are the high environmental costs of carbon emissions and air pollution, and the social costs of alcohol.



4: There is significant dispersion across sectors

There is significant dispersion across sectors: Leaders contribute to sustainable development goals (SDGs) like health, decent work, and food; laggards transgress planetary boundaries like carbon emissions and air pollution, the bulk of which is concentrated amongst a few bad actors.

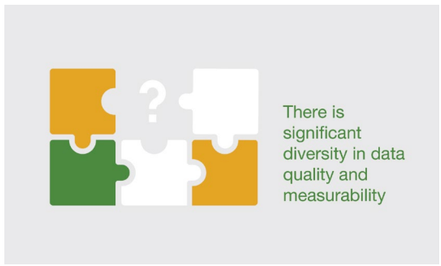
3. *Carbon Burden*, Pastor et al., 2024.
4. *The economics of biodiversity loss*, Giglio et al., 2024.
5. *How biodiversity loss could cause bankruptcy in some countries*, World Economic Forum, 2022.

5: The financial sector is the hardest sector to assess

When looking across the five sectors evaluated—including consumer goods, services, technology, and resources—the financial sector remained the most difficult to assess due to banks' and insurers' indirect exposures through their investments in real companies.

6: Carbon emissions are the largest negative contributor to integrated value

The single largest negative contributor to integrated value is carbon emissions. In our sample of Dutch AEX companies, the carbon burden amounts to 193% of companies' market capitalisation (compared to 131% in a study of US corporations[3]).



7: There is significant diversity in data quality and measurability across issues

There is high diversity in data quality and measurability across issues. For instance, although biodiversity loss is one of the most pressing issues that will have a tremendous negative impact[4,5] and is one of the biggest threats coming our way, reporting on biodiversity loss is still in its infancy.

8: Sustainability reporting lacks substance

Sustainability reporting lacks substance. Over 2023, most of the 23 analysed companies have robust and detailed financial reporting and little data on sustainability. Most annual sustainability and environmental, social, and governance (ESG) reports lack substance in hard numbers (e.g., human rights breaches or use of scarce materials). Instead, companies reported on their community initiatives or gave numbers that cannot be interpreted due to lack of specificity.

Introduction

Integrated Value: A New Way

Large corporations hold immense potential to address global challenges such as climate change and social inequality. By driving positive social and environmental impact, companies contribute to societal wellbeing and enhance both trust in the company and the continuity of its business model long-term. However, traditional performance benchmarks often fail to capture the full picture, focusing primarily on financial indicators such as market capitalisation, Return on Equity (RoE), or Price-to-Book ratio. Risks are typically assessed using backward-looking measures like stock return volatility.

To shift this paradigm, we asked ourselves a critical question: To what extent do large companies create and destroy value for society? The result is the AEX Futureproof Index, an integrated value analysis of AEX-listed companies. This Index evaluates companies not only on their financial performance but also on their ability to manage existential risks and generate positive societal and environmental impact. The aim of this integrated benchmarking case is to provide a comprehensive overview of a company's ranking or performance. Our methodology introduces two indicators to complement traditional financial valuation:

1. **Risk** is switched from a backward-looking perspective based on historical data to forward-looking existential risk, assessing the company's resilience to sustainability transitions.

2. **Impact** is measured as the monetized positive social and environmental externalities.

Together, these indicators provide an integrated overview of financial viability,

Table 1: Integrated Value

Dimension	Absolute	Relative
Financial: financial viability	Financial value = enterprise value = market capitalisation plus net debt	Price–to–Book (P/B) ratio
Risk: existential risk	Negative externalities (based on discounted negative value flows)	Negative externalities / financial value
Impact: contribution to society	Positive externalities (based on discounted value flows)	Positive externalities / financial value
Integrated value	Integrated value = financial + social + environmental value	Futureproofing Ratio: IV/FV

6. "Futureproofing" business means to equip a company for future developments (*Future-proofing*, Oxford English Dictionary, 2024).
7. Refer to footnote 1.

transition risk, and impact—offering an extensive lens for understanding a company's true or integrated value.

To make these insights actionable, we developed an integrated benchmarking approach. Companies are ranked on integrated value, which is the present value of future projections of cash and value flows. Table 1 shows how we calculate integrated value.

At the core of the Index lies the Futureproofing Ratio[6], a novel metric calculated as the ratio of a company's integrated value (the sum of financial, social, and environmental value) relative to its financial value. This score determines a company's position in the AEX Futureproof Index, providing a clear and actionable benchmark for integrated value.

We are excited to share this work, which highlights how companies perform today and how well-prepared they are for the challenges of tomorrow. We aim to foster a deeper understanding of integrated value and empower companies to drive positive financial, social, and ecological impact.

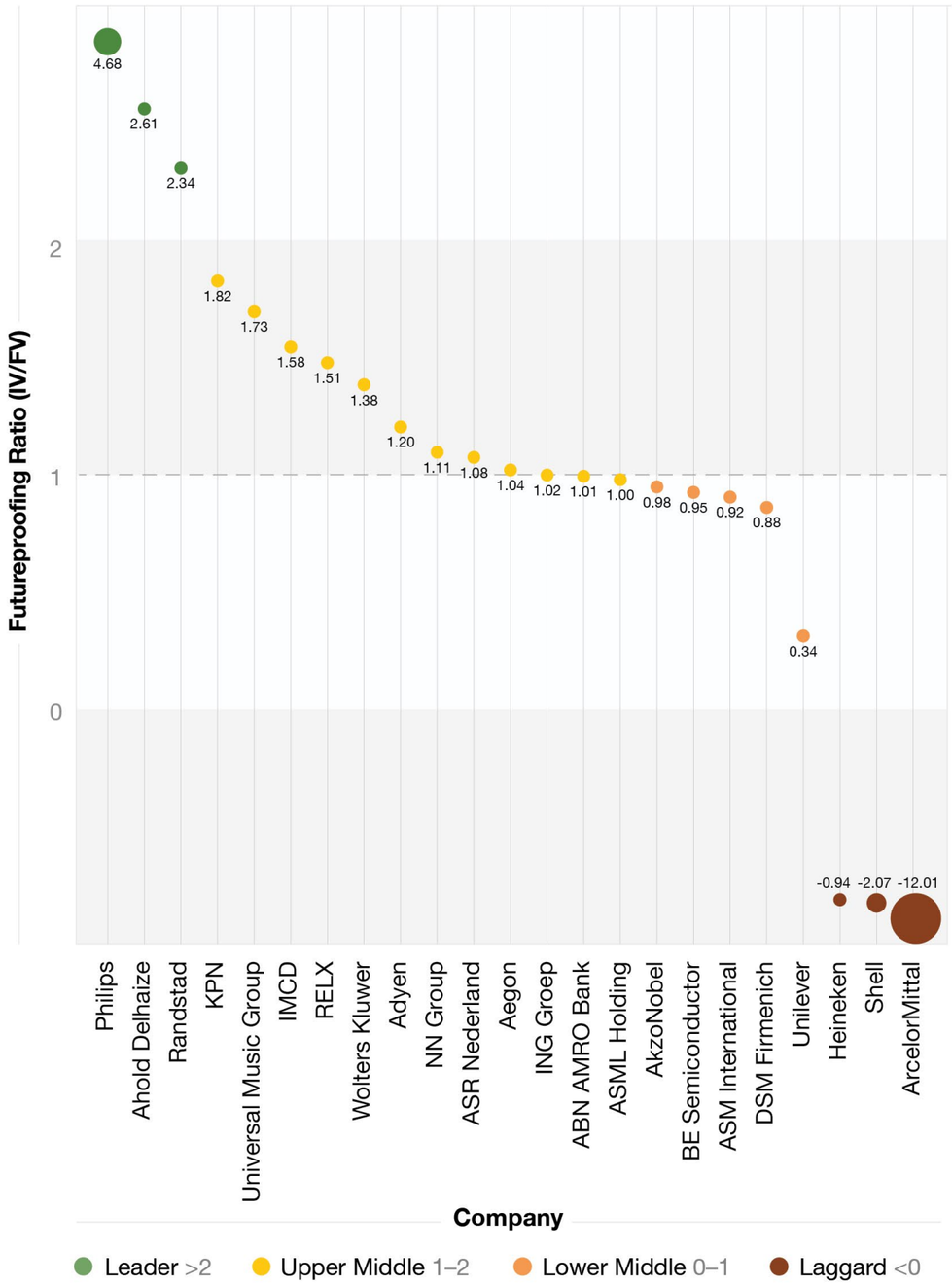
AEX Futureproof Index

The inaugural AEX Futureproof Index evaluates 23 companies[8] on the AEX index based on the integrated value methodology. This means looking at the financial, social, and ecological value that each company generates and reevaluating these companies through this formula. Our goal in doing so is to create a complete picture of value creation, one that accounts for impact that affects our future from a social and ecological lens. It is our hope that this Index will influence the way companies think about creating value for the long-term. From the board room to investors and policy makers, these groups can use this methodology to make better decisions with their investments.

Karin van Baardwijk, Chief Executive Officer at Robeco

We are proud to support the AEX Futureproof Index. This approach aligns with Robeco's commitment to integrating wealth and wellbeing into our investment strategies, for instance, by aligning portfolios with Sustainable Development Goals. The AEX Futureproof Index is a significant project that evaluates companies on their financial performance, their ability to manage existential risks and generate positive societal and environmental impact. This effort underscores a dedication to fostering a deeper understanding of integrated value, empowering companies to drive positive financial, social, and ecological impact. With over 25 years of experience in sustainable research and an abundance of Sustainable Investment data, Robeco has been a pioneer in launching sustainable strategies. For us, sustainable investing is about enhancing the risk-return profile of investments, and we believe that the winning companies of tomorrow will be those that embrace sustainability and the energy transition today.

Figure 2: The AEX Futureproof Index Ranking



Methodology for Integrated Value

Integrated value calculates the value for all company stakeholders. The integrated value IV of company i combines financial value FV, social value SV, and environmental value EV (Schoenmaker and Schramade, 2023):

$$IV_i = FV_i + SV_i + EV_i$$

Whereby FV_i refers to the financial value of company i's activities (also called enterprise value) financed by equity and debt. SV_i and EV_i are explained below.

The methodology for calculating integrated value is based on the Impact-Weighted Accounts Framework (IWAF), developed by the Impact Economy Foundation (IEF, 2024) and Harvard Business School (Serafeim et al., 2019). Impact valuation has been further elaborated in academia (Pastor et al., 2024; Schoenmaker and Schramade, 2024a, 2024b). Recent advances in impact valuation enable companies to measure social and environmental effects and monetise these via cost-based pricing techniques. Impact valuation starts by describing the social and environmental impacts j of the company i in its units $Q_{i,j}$. For example, carbon emissions can be expressed in tonnes of CO_2. The next step is to monetise each factor with its shadow price SP_j, which reflects the social cost (Pastor et al., 2024; Schoenmaker and Schramade, 2024b). As we deal with social and environmental externalities, market prices tend to underestimate the social and environmental value from a welfare perspective. The principle of remediation can be used to derive the remediation costs of social and environmental impacts. While the market price of carbon emissions fluctuated around €70 per ton of CO_2 in the EU Emissions Trading System in 2024 (European Commission, 2024), the shadow carbon price to restore the original situation is estimated at €214 per ton of CO_2 (IEF, 2024).

Using the Discounted Cash Flow (DCF) model, the social value SV_i and the environmental value EV_i of company i can be calculated as follows:

$$SV_{i,t} = \sum_{t=0}^{T} \frac{Q_{i,j,t} \cdot SP_{j,t}}{(1+r)^t}$$

$$EV_{i,t} = \sum_{t=0}^{T} \frac{Q_{i,j,t} \cdot SP_{j,t}}{(1+r)^t}$$

Whereby r reflects the social discount rate and t the number of periods over which the impacts are discounted. Social and environmental impacts are discounted at the social discount rate (Dasgupta, 2021; Pastor et al., 2024; Schoenmaker and Schramade, 2024a). The social discount rate is applied for impacts on society and is a single rate for all impact factors Q_j. Pastor et al. (2024) and Schoenmaker and Schramade (2024a) find a consensus among experts on a social discount rate of 2.2%. The time horizon for calculating impacts is infinite. The size of the environmental value depends critically on the pathway for reducing negative externalities (in particular carbon emissions). We apply a leading scenario of net zero by 2050.

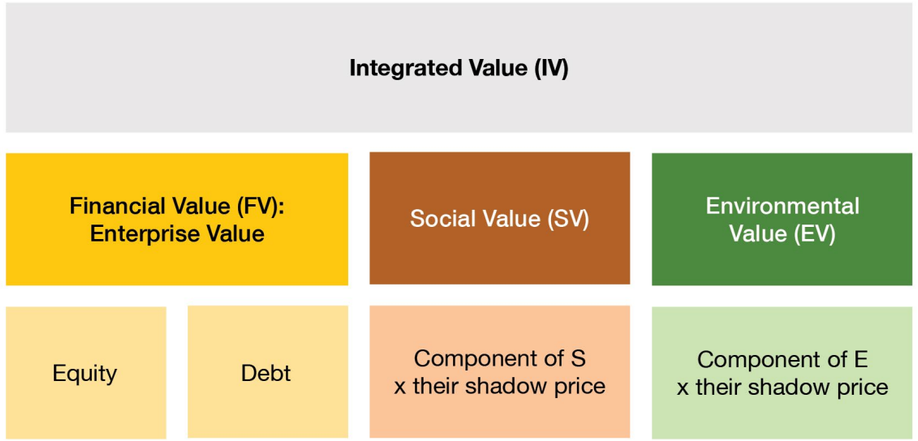
A detailed working methodology is explained in the Impact Accounts Framework (IEF, 2024) and in Chapter 5 and Chapter 11 of *Corporate Finance for Long-Term Value* (Schoenmaker and Schramade, 2023). Here, we provide the main steps; the annex contains notes on integrated value accounting policies.

Integrated Value Calculation

The individual components of integrated value $IV_i = FV_i + SV_i + EV_i$ are calculated and aggregated in the final step. Figure 3 provides an overview.

A) Financial value
The enterprise value measures the financial value FV_i of company i's activities, which are financed with equity and debt (see Figure 1). From a stakeholder perspective, the equity

Figure 3: Integrated Value and its Components[9]



8. *Corporate Finance for Long-Term Value*, Schoenmaker and Schramade, 2023.

and debt capital providers are a company's financial stakeholders. On the other hand, only shareholders' equity is typically considered in shareholder analyses.

Equity is based on the market capitalisation of ultimo 2023, and debt is calculated as net debt (debt – cash holdings). The amounts in all calculations refer to euros (unless stated otherwise). The ultimo 2023 euro-dollar rate of 1.105 and euro-pound rate of 0.869 are used to convert dollar and pound amounts into euros.

B) Materiality of social and environmental factors
The calculation of social and environmental value starts with the question: What are the most material social (S) and environmental (E) factors j? What issues are sufficiently crucial regarding relevance to the business model or size of impact?

Table 2 contains the standard S and E factors to be calculated with standard shadow prices (Schoenmaker and Schramade, 2023). Other relevant S and E issues for the company at hand are added (e.g., health effects on consumers) as explained in the Annex 'Integrated Value Methodology Notes.'

C) Quantification (historical fiscal year 2023)
The material factors j are expressed in their own units $Q_{i,j}$ (e.g., life satisfaction points, life years saved, CO_2 emissions in tons, waste in tons) for company i in Table 2. The quantities are estimated over the last reporting period (fiscal year 2023). Most company data is taken from annual and/or sustainability reports and can thus be derived objectively. More than 80% (in value terms) of social and environmental value is calculated in a standardised way.

If company data is unavailable, industry estimates or other sources are used for the remaining 20%. Assumptions used for making these approximations are specified. In notes 3 to 7 of the Annex Integrated Value Methodology, some guidelines for specifying assumptions and estimations are given.

D) Monetisation
The relevant shadow price SP_j is applied for each material issue j in Table 2. The Box on shadow prices explains how shadow prices work. The shadow prices from Impact Economy Foundation (IEF, 2024) and CE Delft (CE Delft, 2023) are used to monetise social and environmental impact.

Technical box - Shadow Prices Demystified
Shadow prices are very important concepts that are not well-known outside academic circles. The shadow prices reflect the 'true scarcity' of resources to stay within planetary boundaries, or the 'true price' of human rights breaches to stay within social boundaries. Using shadow prices is thus a tool for companies to stay within social and planetary boundaries. The term shadow prices illustrates that these prices don't reflect current market prices but 'shadow' true prices (Galgani et al., 2021). Shadow prices are derived from scientific studies. The Impact Economy Foundation (2024) and CE Delft (2023) provide a regularly updated list of impacts and shadow prices for a whole range of social and environmental impacts.

The theoretical underpinning of shadow or true prices for social and environmental impact is based on welfare theory (e.g., Bosselmann, 2016), whereby welfare is defined as the current and future value enjoyed by a company's stakeholders. Shadow prices are based on two welfare categories: respect of rights and wellbeing. The first category of rights includes (Galgani et al., 2021):

- **Human rights:** these refer to the rights of any individual as stated in the International Bill of Human Rights of the United Nations, such as the rights to life, liberty, and personal security, to freedom from slavery or degrading treatment;
- **Labor rights:** these are the rights in the Fundamental Conventions of the International Labour Organisation, such as the rights to freely chosen work, to fair wages, to a safe and healthy workplace, to unionize and to freedom of discrimination;
- **Environmental rights:** these refer to the right to a healthy environment and to natural resources, as enshrined in international agreements of the United Nations, such as the Paris Climate Agreement.

In the latter case, for example, air, land, and water pollution and depletion of natural resources can be seen as breaches of environmental rights. The shadow price reflects the cost to restore the original situation or the cost to compensate for the damage by the unsustainable impacts.

The second category is based on the wellbeing of stakeholders. Wellbeing, also known as quality of life, refers to what is intrinsically valuable for someone. This includes the wellbeing of employees, customers, and communities (social cohesion). Employment wellbeing refers to additional wellbeing experienced by employees resulting from their employment and education at the company; this wellbeing is in addition to the salary received. Employment wellbeing is measured by life satisfaction points on a scale of 0 to 100. The shadow price of one life satisfaction point is estimated at EUR 2395 (IEF, 2024). Consumer wellbeing is calculated as the consumer surplus, which is the difference between the price of a product and what consumers want to pay for it. Consumer surplus is a measure of consumer welfare.

Shadow prices SP_j are constant over time, except for the carbon shadow price. The 2024 shadow carbon price is \$236/1.105=€214 per ton CO_2 (IEF, 2024); it grows by 3.5% per year to reflect the rising cost of abating carbon emissions.

An intermediate step of attribution is needed to arrive at final value flows. The impact can be directly or indirectly attributed to companies. Internal effects (that is, effects happening in or at the company) are directly attributed 100% to the company. External effects happen elsewhere in the supply chain: upstream at suppliers or downstream at consumers (and local communities). These external effects are attributed pro rata over the value chain (see note 1 of the Annex).

The value flow $VF_{i,j}$ is calculated by multiplying the Quantity, the Shadow Price, and the Attribution Factor $AF_{i,j}$: $VF_{i,j}=Q_{i,j}*SP_j*AF_{i,j}$.

The value flows $VF_{i,j}$ are summed over all factors j to obtain total positive and negative social and environmental flows for 2023.

E) Valuation and aggregation
The final step is to transform the 2023 value flows from Table 2 into social and environmental values: SV_i and EV_i with the DCF model. The social discount rate r is used to discount social and environmental value flows $VF_{i,j}$. The individual SV_i and EV_i components are calculated for each AEX company i, showing positive and negative values separately.

To calculate the present value of value flows, we need to make assumptions for future growth of value flows. To avoid overstating externalities, we are cautious in our assumptions about the development of externalities. These assumptions can be replaced with actual developments in future impacts when companies report their material impacts (performance and targets) under the Corporate Sustainability Reporting Directive (CSRD).

A neutral position is taken on the social side by assuming that social externalities remain constant. On the environmental side, it is assumed that companies want to

Table 2: Integrated Value Calculation Scheme (2023 Fiscal Year)

Material Issue	**Quantity** $Q_{i,j}$ (2023)	**Shadow Price** SP_j (2023)	**Attribution Factor** $AF_{i,j}$ (2023)	**Value Flow** $VF_{i,j}$ (2023)
Social Factors				
Consumer wellbeing				
Employment wellbeing				
Training				
Health & safety				
Corporate taxes				
Other social issues				
Environmental Factors				
GHG emissions				
Waste				
Water usage				
Pollution (air, soil, water)				
Biodiversity loss				
Other environmental issues				
Aggregating Social and Environmental Externalities				
Total positive social				
Total negative social				
Total positive environmental				
Total negative environmental				

reduce their negative environmental values. The most important environmental factor is carbon emissions. Companies are assumed to follow a net zero strategy, whereby carbon emissions are reduced in equal steps towards 2050. Companies are assumed to reduce the other negative environmental externalities by 2% per year. The technical box shows how these assumptions work out for the valuation of SV and EV.

We are now ready to fill in Table 3 to obtain the Integrated Value. FV is taken from Step A; positive and negative SV and EV are taken from step E.

Interpretation of Integrated Value
The Price-to-Book (P/B) ratio is used to compare a company's market value to its book value, to assess whether a company stock is undervalued or overvalued relative to the company's assets. Risks are typically assessed using backward-looking measures like stock return volatility.

With the integrated value, we introduce new metrics and ratios to interpret a company's value and risk. The Futureproofing Ratio (IV/FV) can be used to assess a company's integrated value in relation to its financial value. The Futureproofing Ratio is made up out of an existential opportunity ratio (positive externalities by financial value) and an existential risk ratio (negative externalities divided by financial value):

Futureproofing Ratio = Existential Opportunity Ratio - Existential Risk Ratio + 1

Table 3: Integrated Value

Integrated Value Calculation (equal weights)	**Value** (bn)	**2023 Value Flows** (bn)
FV (enterprise value)		
Positive SV		
Negative SV		
Positive EV		
Negative EV		
IV		

FV = Financial Value SV = Social Value
EV = Ecological Value IV = Integrated Value

Table 4: Interpretation of Integrated Value

Dimension	**Ratio**	**Value**
Financial: financial viability	Price–to–Book (P/B) ratio	
Impact: existential opportunity	Positive externalities / FV	
Risk: existential risk	Negative externalities / FV	
Integrated Value	Futureproofing Ratio (IV/FV)	

FV = Financial Value IV = Integrated Value

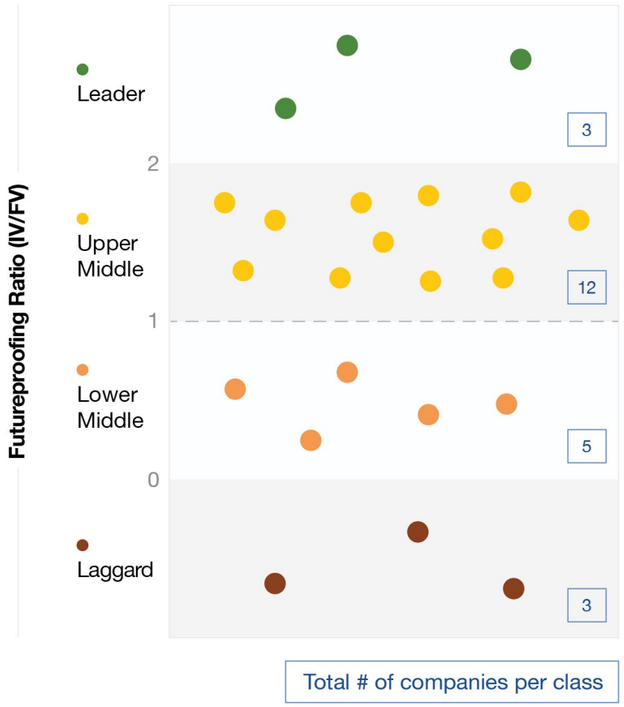
Assessment Process

The AEX Futureproof Index assessment consists of two research phases. During the initial phase, which began November 27th, 2024, the research team, including six analysts, reviewed publicly available information such as company annual reports, sustainability reports, fact sheets, website(s), financial information, non-financial qualitative data such as Glassdoor reviews, and other public documents for each of the 23 companies. This phase ended on January 2nd, 2025, with a draft assessment per company, including an initial integrated value for each company assessed.

The second research phase focused on refinement. The research team once more reviewed the analyses performed by the analysts and calculated the individual Futureproofing Ratios, ranking each company from 1 to 23. The companies were then sorted into four buckets based on their rank: Leader, Upper Middle, Lower Middle, and Laggard, based on their Futureproofing Ratios (see Figure 4).

The final publication in February 2025 includes a ranking, methodology, individual company scorecards, and this report that illustrates the insights from creating the inaugural AEX Futureproof Index.

Figure 4: Company Classification by Futureproofing Ratio



Technical Box - Calculating SV and EV

Starting with social value SV, the formula is $SV_{i,t} = \sum_{t=0}^{T} \frac{Q_{i,j,t} \cdot SP_{j,t}}{(1+r)^t} = \sum_{t=0}^{T} \frac{VF_{i,j,t}}{(1+r)^t}$. It is assumed that social externalities remain constant. Using the perpetuity formula, the value becomes:

$SV_{i,2023} = \sum_{j} \frac{VF_{i,j,2024}}{r}$, whereby $r = 2.2\%$.

For environmental value EV, the formula is similar $EV_{i,t} = \sum_{t=0}^{T} \frac{Q_{i,j,t} \cdot SP_{j,t}}{(1+r)^t} = \sum_{t=0}^{T} \frac{VF_{i,j,t}}{(1+r)^t}$ .By contrast, it is now assumed that companies want to reduce their negative environmental values. On carbon, companies are assumed to follow a net zero strategy, whereby carbon emissions are reduced in 27 equal steps towards 2050 (*reduction= $\frac{100}{27}$ =3.7 percentage points per year*) in the main scenario. This means that emissions are reduced evenly compared to the base year of 2023. $Q_{2024} = (100\%\text{-}3.7\%) \cdot Q_{2023}$; $Q_{2025} = (100\% - 2 \cdot 3.7\%) \cdot Q_{2023}$; etc.; $Q_{2025} = (100\%\text{-}27 \cdot 3.7\%) \cdot Q_{2023} = 0$. Please note that the shadow price for carbon is increasing (see step D).

For the other negative environmental values, companies are assumed to reduce their negative impacts by 2% per year $g = -2\%$. The value becomes:

$EV_{i,2023} = \sum_{j} \frac{VF_{i,j,2024}}{r\text{-}g}$, whereby $r = 2.2\%$ and $g = -2\%$. This gives $(r\text{-}g) = 4.2\%$.

Arnoud Boot, Professor of Corporate Finance at the University of Amsterdam

Is measuring knowing? Dirk Schoenmaker and Willem Schramade hold up a mirror to AEX companies—and to the Dutch economy as a whole. Measuring is not knowing if we only examine market value, which is a convenient and precise number, visible every day, and therefore dominant. Schoenmaker and Schramade offer an alternative, and more importantly, a foundation for a new standard: integrated value, where social and ecological values complement financial ones. The AEX Futureproof Index serves as a sanity check for today's stock market. Undoubtedly not perfect; measuring and quantifying are not easy. But does it help us move forward? Absolutely.

Integrated Value: The Complete Picture

Evaluating companies based on financials alone does not capture their full impact. By looking at both social and ecological material issues and assessing the cost of those factors, the aggregated integrated value of all 23[9] companies is estimated at 70% of the financial value. This shortfall compared to financial value means that 30% of financial value is created at the expense of society.

Looking at the individual components, positive social issues (SV+) amount to 67% of financial value and include consumer value, employment satisfaction, and positive health effects on consumers. The negative social issues (SV-) amount to -19% of financial value, covering negative health effects on consumers, cybersecurity breaches, and business ethics. The positive environmental value at 1% of financial value refers to land restoration. Negative environmental issues at -79% of financial value include carbon emissions, air and water pollution, waste, water usage, and biodiversity loss. The individual social and environmental components of 67%, -19%, 1,% and -79% add up to the net societal loss of 30%.

9. See footnote 1.

Figure 5: Aggregate Integrated Value and Its Components

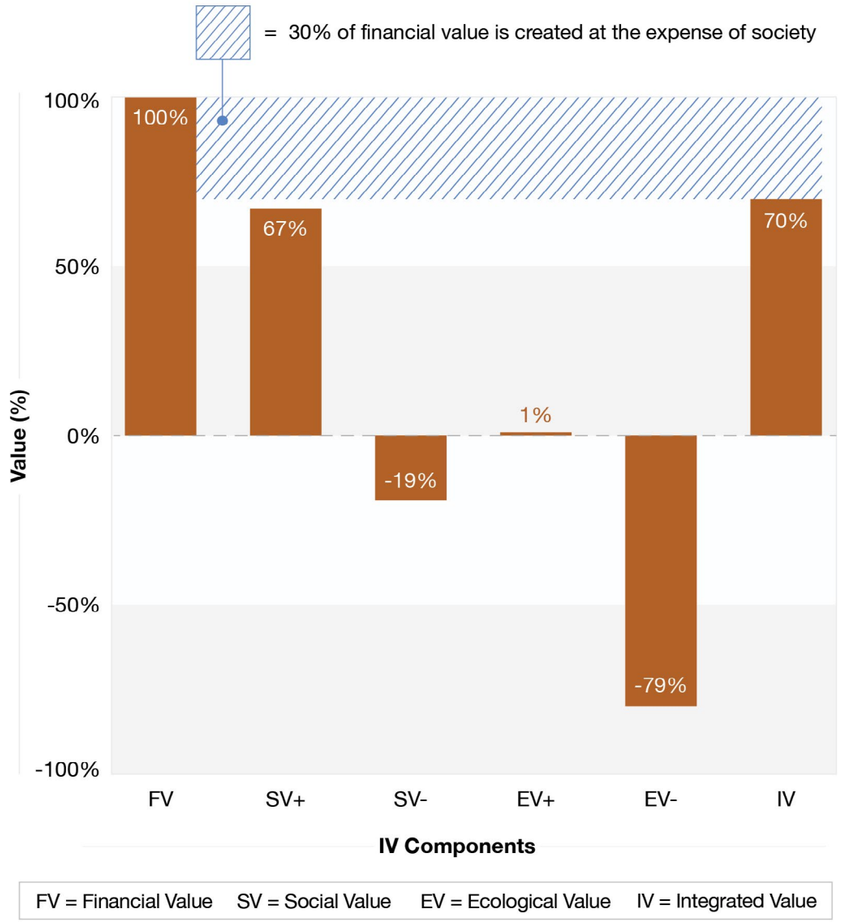


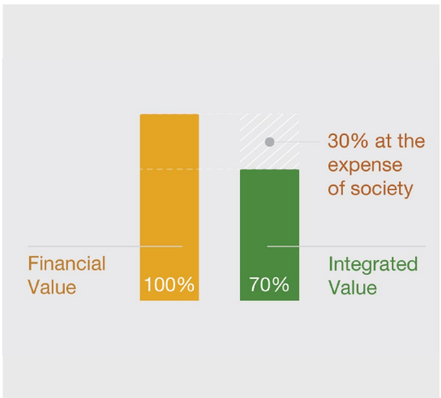
Figure 6: The AEX Futureproof Index

Company	Futureproofing Ratio (IV/FV)	Rank
Philips	4.68	1
Ahold Delhaize	2.61	2
Randstad	2.34	3
KPN	1.82	4
Universal Music Group	1.73	5
IMCD	1.58	6
RELX	1.51	7
Wolters Kluwer	1.38	8
Adyen	1.20	9
NN Group	1.11	10
ASR Nederland	1.08	11
Aegon	1.04	12
ING Groep	1.02	13
ABN AMRO Bank	1.01	14
ASML Holding	1.00	15
AkzoNobel	0.98	16
BE Semiconductor	0.95	17
ASM International	0.92	18
DSM Firmenich	0.88	19
Unilever	0.34	20
Heineken	-0.94	21
Shell	-2.07	22
ArcelorMittal	-12.01	23

Leader >2 | Upper Middle 1–2 | Lower Middle 0–1 | Laggard <0

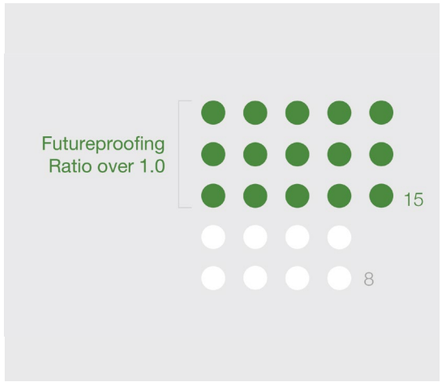
Key Findings

The inaugural iteration of the AEX Futureproof Index offers insight into the current state of corporate value generation and its social and environmental impact. While some companies are working towards making themselves futureproof, others continue to create financial value that erodes long-term value creation. Overall, there remains considerable room to improve the impact on material issues and take a more sustainable approach to value creation that helps both companies and those who interact with them prepare for the future.



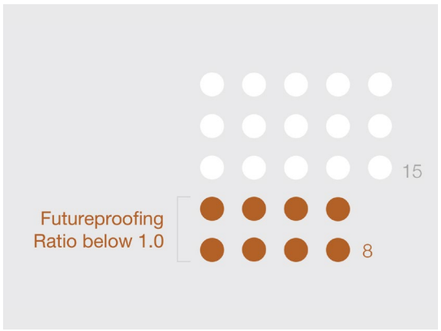
1: The overall Futureproofing Ratio is below 1

The augural iteration of the AEX Futureproof Index was incredibly eye-opening regarding the impact of financial value creation: While companies are taking steps to improve their social and environmental outcomes, the overall Futureproofing Ratio is below 1. Since many companies have a large financial value, this drags down the Futureproofing Ratio. Overall, the aggregate Futureproofing Ratio of the AEX companies is 0.70, meaning that 30% of the financial value of the AEX index comes at the expense of society.



2: 15 of the 23 companies have a positive integrated value

Looking at the overall score, 15 of the 23 companies have a (very) positive integrated value (average score of the Futureproofing Ratio 1.0 or higher). That means that their integrated value equals or exceeds their current financial value. In particular, Philips, Ahold Delhaize, and Randstad have very positive ratios (4.68, 2.61, and 2.34, respectively). The main reasons for these scores are their positive contributions to key SDGs like health, food, and decent work.

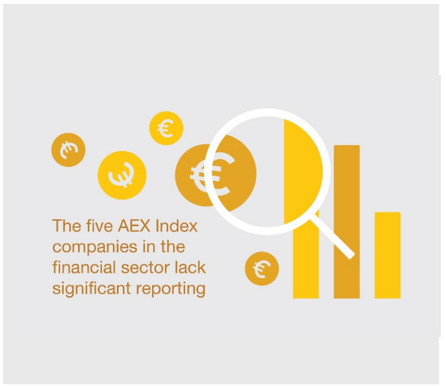


3: 8 of the 23 companies have a Futureproofing Ratio below 1

The remaining 8 companies have a Futureproofing Ratio below 1. ArcelorMittal, Shell, and Heineken have very negative scores, defined as a Futureproofing Ratio below 0. Their company scores are -12.01, -2.07, and -0.94, respectively. This extreme negativity is due to the high environmental costs of carbon emissions and air pollution. The social cost of alcohol and its effect on health outcomes is also a major contributing factor.

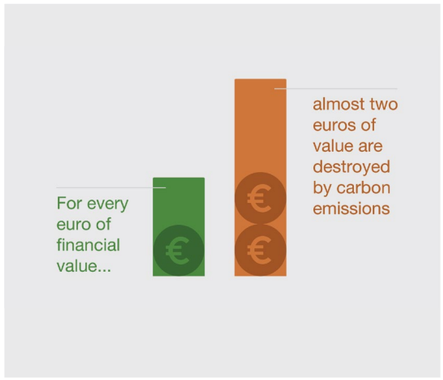
4: There is significant dispersion across sectors

Regarding the distribution of Futureproofing Ratios, there is significant dispersion across sectors based on material issues. Companies in the “leader” category contribute to SDGs such as health outcomes, decent work, and food distribution. Meanwhile, companies in the “laggard” category contribute to social and ecological demise through alcohol consumption, carbon emissions, and air pollution, the bulk of which is concentrated amongst a few bad actors [see Key Finding 6 and the Sector Results].



5: The financial sector is the hardest sector to assess

When looking across the five sectors evaluated—including consumer goods, services, technology, resources, and financial—the latter remained the most difficult to assess due to their indirect exposures through their investments in real companies. The financial sector had the least significant findings among the five sectors. This is due to a few reasons. First, data challenges are compounded since banks and insurers are essentially portfolios of investments in other sectors. Therefore, knowing what the financial sector is responsible for outcome-wise amongst the material issues is difficult. Second, the five companies in the financial sector lack significant reporting, especially regarding ecological issues. Outside GHG emissions and occasionally land use/biodiversity loss, there was little to no reporting on the other 11 ecological issues examined in this report. Third and last, the enterprise value metric does not work well for financials given their highly levered capital structure, i.e., high debt-equity ratio.



6: Carbon emissions are the largest negative contributor to integrated value

Continuing with the theme of negative ecological impact, carbon emissions are the single largest negative contributor to integrated value. In our sample of Dutch AEX companies, the carbon burden (the present value of the social costs of their future carbon emissions) amounts to 193% of companies' market capitalisation (compared to 131% in a study of US corporations)[10]. So, for every euro of financial value, almost 2 euros of value are destroyed by carbon emissions. Hence, the AEX is still far removed from net zero. However, the emissions are very skewed, with a few companies being responsible for the bulk of the emissions, and hence most challenged by transitions.

10. *Carbon Burden*, Pastor et al., 2024.

7: There is significant diversity in data quality and measurability across issues

The research phase of this report discovered significant diversity in data quality and measurability across material issues. Therefore, this iteration could not address specific material issues due to a lack of available data. Take biodiversity loss for example: Although biodiversity loss is and will remain one of the most pressing issues of our time, one that will have a tremendous negative ecological impact and portends significant threats looming ahead, reporting on biodiversity loss is still in its infancy, making the issue even more challenging to tackle. One of our analysts observed: "Cybersecurity is a material issue that is often not reported to its full extent, even though its impact is quite high for financial companies."

8: Sustainability reporting lacks substance

To begin to tackle a problem, one must first measure it. For 2023, most of the 23 companies analysed in this report have robust and detailed financial information, but sustainability information is quite underwhelming. This might come as a surprise: After all, there is a lot of sustainability coverage in terms of stories, and there are even quite some numbers reported. However, many of these numbers are not very meaningful, not very interesting, and/or hard to compare. Moreover, there were high levels of variability not only in terms of the issues that a company chose to assess but also in the content of the data. This led to a large gap in both data quality and measurability, especially for issues such as water pollution, biodiversity and human rights.

Furthermore, sustainability efforts appeared to lack the most substance regarding data-driven facts. Most reports lack hard numbers on topics such as the number of human rights breaches or the use of scarce materials (see Key Finding 5). Instead, companies chose to report on their community initiatives or provided vague numbers that could not be interpreted due to lack of specificity. In sum, sustainability reporting tends to lack concrete results, both positive and negative. As one of our analysts put it: "For the three main social issues (employee wellbeing, corporate taxes, and consumer surplus) it was generally easy to find the necessary information. For cybersecurity breaches and data privacy, gathering detailed and consistent data was a bit more challenging. Then, when it comes to human rights breaches, there's very little information available."

Our analysts emphasised the role of framing. One offered this insight: "My biggest takeaway is how much the wording in company reports can shape perceptions. Companies are often skilled at downplaying negative impacts, making them seem less severe than the facts actually suggest. On negative materiality factors, companies tend to use a lot of words to describe their impacts, often disclosing little information about actual numbers. The research phase made me realise the challenge of working with inconsistent data and the need to critically evaluate the information provided."

Sector Results

Overall Results

There is significant dispersion in Futureproofing Ratios across sectors (Key Finding 4): Two of them are net value creators for society (Futureproofing Ratio well above 1); one sector creates slightly more value than it destroys (Futureproofing Ratio just above 1); while two sectors are net value destructors—but by different margins and with large intra-industry variation.

The best-performing sectors are the Services and Technology sectors (see Table 5). They have Futureproofing Ratios well above 1, indicating strong net value creation for society: Both sectors create a lot of social value with relatively limited environmental value destruction. While they do have their issues (in for example, taxation, cybersecurity), these tend to be small versus other sectors. An exception would be the environmental footprint of the semiconductor companies.

The aggregate Futureproofing Ratio for the financial sector is at 1.04 (hence, a small net value creation for society beyond financial value) and is the least meaningful result of the five sectors we analysed. Given the (highly levered & layered) nature of the industry, a number close to 1 was to be expected: See the discussion on the financial sector in the next sections.

More clearly problematic is the Food/Drinks/Consumer sector with a Futureproofing Ratio of 0.41 (i.e., close to the overall index), suggesting that about 59% of financial value creation comes at the expense of society. However, there is significant within-sector variance. Further, given that we haven't been able to include the social costs of obesity yet, next year's number will likely be lower still.

The worst sector, however, is the resources sector, which has a negative Futureproofing Ratio of -2.65 This means that for every €1 of financial value creation, this sector destroys €3.65 for society. In this sector, too, variance is high, with decent performance from chemical companies, negative scores for oil & gas, and even worse for steel.

Another way to put this into perspective is to show the composition of the integrated value of the AEX index companies evaluated split by sector (see Figure 7). The bridge graph from financial value to integrated value shows positive contributions from the Technology and Services sectors; a negligent contribution from the Financial sector; a negative contribution from the Food/Drinks/Consumer sector; and a very negative contribution from the Resources sector—driven by almost 2 trillion in negative environmental value.

The next sections discuss the findings, drivers, and challenges per sector.

Barbara Baarsma, Professor at the University of Amsterdam and author of *Green Growth and Sustainable Financing*

Following the publication of their book *Corporate Finance for Long-Term Value*, Dirk Schoenmaker and Willem Schramade are putting theory into practice. Together with 400 finance master's students, they mapped out the extent to which publicly traded companies achieve long-term value creation and adopt responsible business practices. The result of their calculations on financial, social, and ecological value creation is the AEX Futureproof Index. This Index is expected to become an important tool for investors to make their stock market activities futureproof. As such, the AEX Futureproof Index will serve as a key foundation for sustainable financing.

Table 5: Overall Sector Results

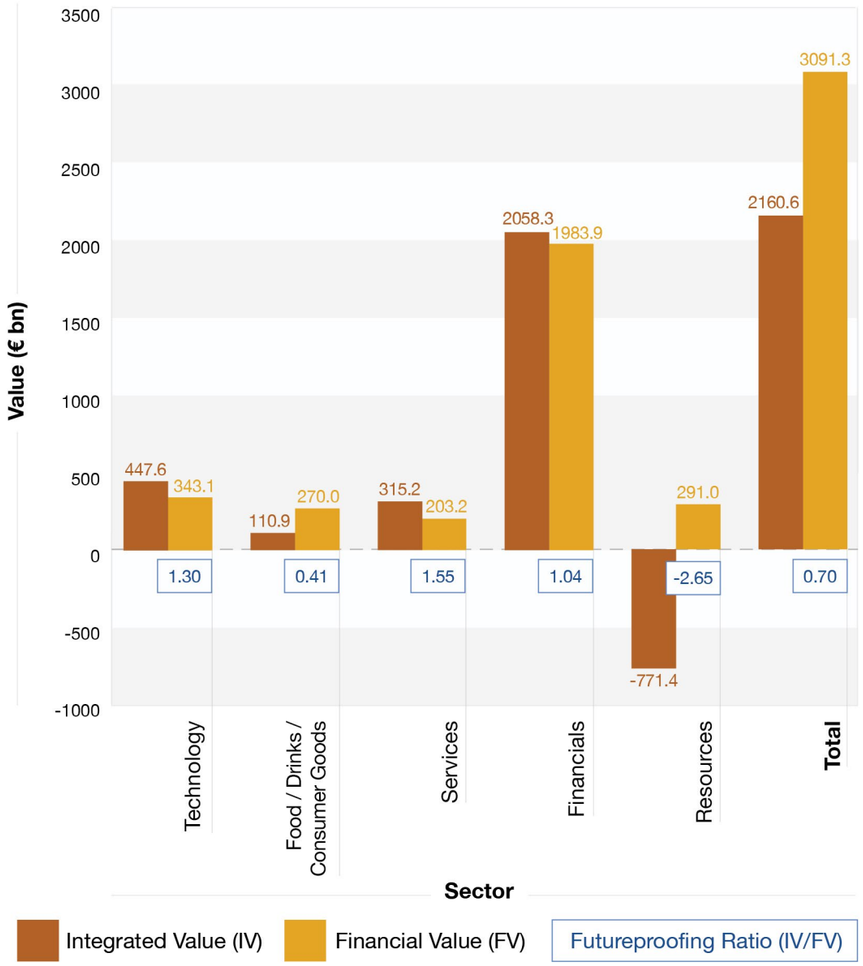
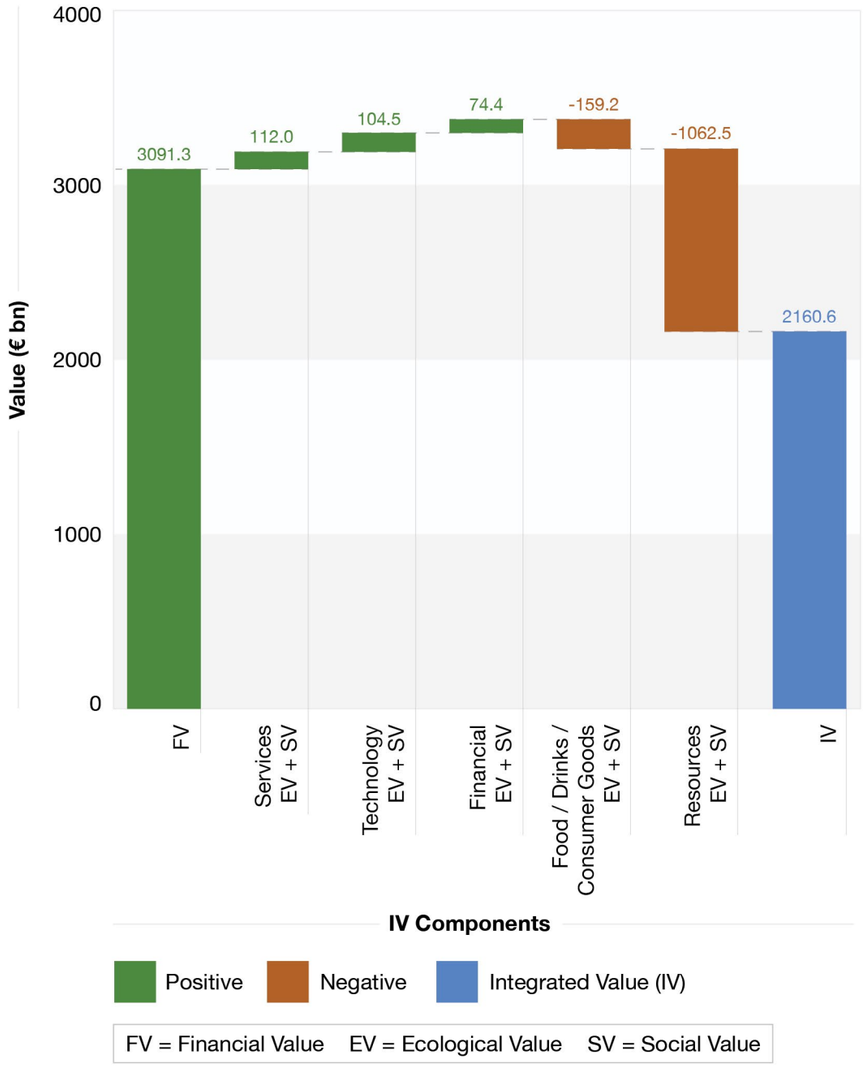


Figure 7: From Financial Value (FV) to Integrated Value (IV): Sector Contribution



Janneke Hermes, Chief Financial Officer at Gasunie

Counting what counts in a consistent and transparent way! Mapping out the positive and negative impact a company has on society is very important when it comes to making well-informed decisions. This way, we as a company can determine whether we are truly adding value to society or if it is only financial value that negatively affects our living environment. As consumers, we can compare whether we are really getting value for our money with the products we purchase or if our purchase causes much greater value destruction elsewhere. Understanding what we create, that's where futureproofing the AEX begins!

Food/Drinks/ Consumer Goods

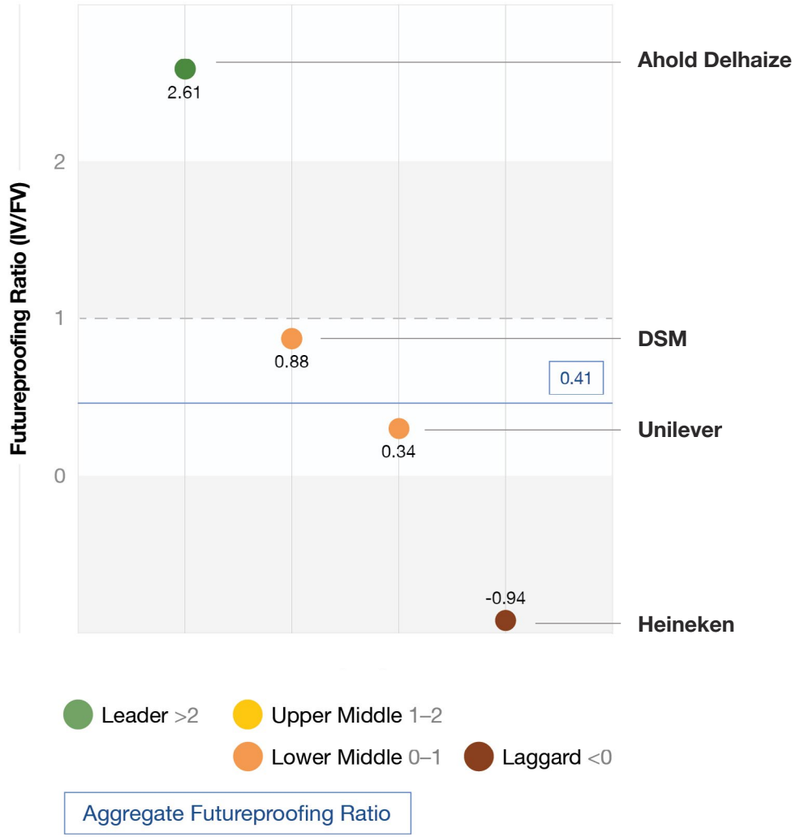
The food/drinks/consumer goods sector is at the intersection of many societal discussions and challenges: rising health costs and unhealthy food; deforestation and exploitation in the Global South; the nitrogen crisis in European agriculture. The food system and its complicated value chains face serious transition challenges, which are partly captured by its Futureproofing Ratio of well below 1.

Sector at a Glance

The food/drinks/consumer goods sector of the AEX Index consists of four companies: Ahold Delhaize, DSM, Heineken, and Unilever. Ahold Delhaize consists of different brands of grocery stores, altogether serving more than 63 million customers every week.[11] Heineken is a Dutch brewing company serving both alcoholic and non-alcoholic beverages. DSM works in the fields of health, nutrition, and materials. Unilever is one of the largest consumer goods companies in the world, offering a range of household products. The consumer goods sector has a total financial value of €270.0 bn. The total integrated value for the sector is €110.9 bn.

11. *About Ahold Delhaize*, Ahold Delhaize.
12. *Reporting Guidance for Signatories*, Finance for Biodiversity Foundation, 2024.
13. *Costs overweight and obesity over €79 billion a year*, Maastricht University, 2022.

Figure 8: Sector Results: Food / Drinks / Consumer Goods



Overall, the weighted average Futureproofing Ratio for the consumer goods sector is 0.41, which means that the sector creates financial value at the expense of society. On the bright side, consumer goods companies perform well in terms of consumer surplus and employee wellbeing, demonstrating extremely high lifetime value for the former. Heineken has a projected lifetime value for consumer surplus of €80.4 billion; Ahold Delhaize and Unilever are projected to have a lifetime value of €120.0 billion and €122.5 billion, respectively. Our calculations show that Ahold Delhaize positively impacts consumers' health, with a lifetime value of €15.4 billion. There are beneficial internal outcomes for those who work at these companies, and externally, there is a sense that the products they provide have a positive impact on consumers.

Yet the ecological and social footprint of these companies is, for some material issues, quite negative. Pollution is a pressing issue, with the lifetime value of greenhouse gas emissions reaching a negative €66.7 billion for Ahold Delhaize, €25.0 billion for Heineken, and a whopping €152.4 billion for Unilever. Greenhouse gas emissions are merely one facet of ecological impact: This is to say nothing of the continued air pollution, water pollution, and waste that the companies produce. As a result, the sector is responsible for large biodiversity losses. In fact, the Finance for Biodiversity Pledge identifies the food products and beverages industries as being among the six industries most harmful to biodiversity (along with mining, energy, electric utilities, and automobiles)[12]. Further, on the social front, Heineken presents a particularly negative impact on the health of its consumers from alcohol, with an estimated negative lifetime value of €228.1 billion.

Our research, though thorough given the available data, still does not fully capture the full scope of these consumer goods companies' social and ecological impact. The rampant use of plastic and the continued findings on microplastics showing up in human bodies are yet to be robustly reported; initial estimates suggest a lifetime value of €19.7 billion and €75.7 billion for Ahold Delhaize and Unilever. Further, the formidable social costs of obesity (€79 billion per year in the Netherlands, according to a study by Maastricht University[13]) are not yet captured in our numbers. Given that these companies are very much exposed to processed foods, the inclusion of obesity would add yet another expensive adverse health outcome to this report.

The Bottom Line

Consumer goods companies have an outsized impact on the health of people and the planet. With the amount of customers they serve and products they create, it is key that we look at their social and ecological impact to best assess their value. Focusing on reducing greenhouse gas emissions and waste produced would help improve company value for this sector. Regarding health outcomes, these companies face a serious transition challenge in the shift to a healthier food system. This brings both risks and opportunities, especially for DSM-Firmenich, which seems well-positioned to bring innovative nutrition solutions to the market. This is also reflected in DSM-Firmenich's high Existential Opportunities Ratio. The most extreme case is Heineken, which remains at an impasse given that its main product is alcohol. However, by raising the share of non-alcoholic beverages in its portfolio, it slowly improves its Futureproofing Ratio. The other companies too can analyse their portfolios of activities through the lens of their Futureproofing Ratios.

Services Sector

The services sector is a large and still growing part of the Dutch economy, which accounts for a large percentage of employment. A key point of societal debate is the role of flexible contracts, which have replaced many fixed employment contracts, resulting in more social insecurity. Hence, social value is key in services, but it has traditionally been hard to quantify. Moreover, this group of companies is very diverse in terms of their business models.

Sector at a Glance

The services sector of the AEX Index consists of five companies: Adyen, UMG, Randstad, RELX, and Wolters Kluwer. Adyen offers end-to-end payment, data, and financial management services. Universal Music Group (UMG) is a Dutch-American music corporation that signs artists and distributes their work. Randstad is a staffing and temp agency that helps companies and employees get connected. RELX offers data analytics and decision tools for business professionals. Wolters Kluwer offers

Figure 9: Sector Results: Services

information and software solutions for those in the healthcare space. The services sector has a total financial value of €203.2 billion. The total integrated value is €315.2 billion. This results in an aggregate Futureproofing Ratio of 1.55, the highest among all sectors in the AEX Futureproof Index.

Overall, the weighted average Futureproofing Ratio for the services sector is 1.55, well above 1, which means that the sector creates net societal value on top of its financial value. These companies tend to perform well in terms of consumer surplus and employment wellbeing. For example, UMG has a lifetime value of €23.4 billion for consumer surplus. Furthermore, listening to music is helpful for consumers' wellbeing, and this lifetime value is estimated at €16.2 billion. Therefore, this service has beneficial outcomes. Randstad has the highest Futureproofing Ratio in the services sector, driven by strong social value creation. The company destroys social value due to the wage gap in temporary placement, but this is more than offset by employment wellbeing, training, and consumer surplus.

The services sector tends to not perform well in terms of cybersecurity and data breaches. Both RELX and Wolters Kluwer have high lifetime value costs, coming in at €23.3 billion and €14.6 billion, respectively. This is due to working with personally identifiable information related to finances and health outcomes, which are desirable for hackers to get ahold of. UMG also faces a significant negative impact on underpayment in their value chain, with a lifetime value cost of €8.4 billion. Paying music artists fairly has been an issue for some time: In the age of streaming and saturation in the music market, just a few artists are making a lot of money. Most other artists are unable to make a decent living while the label pockets a significant amount of profit. This material issue represents the funds that were not allocated to artists.

The Bottom Line

The services sector offers many integral technologies and exchanges that consumers are willing to pay for, and many of these services are beneficial. Yet the sensitive nature of both financial and medical information makes these companies vulnerable to hacking, and these breaches prove costly over time. To make themselves more future-proof, these companies must strengthen their technological infrastructures to make themselves less susceptible to cybersecurity breaches.

Pauline van der Meer Mohr, Former Chair of Monitoring Committee Corporate Governance

I very much welcome this new index: a critical and timely way of assessing sustainable long-term value creation, which will help boards to gain insight into companies' progress towards their net-zero ambitions.

Technology Sector

The technology sector is an important driver of local industrial activity and innovation in the Netherlands. This is most visible in Brainport Eindhoven, which claims to be Europe's most innovative technology region and where ASML leads a vibrant ecosystem. ASML is Europe's most valuable technology company and captures significant political attention. With its unique position in the global technology value chain, ASML is subject to geopolitical tensions between the European Union, China, and the United States. The technology sector is typically seen as an enabler of many other economic and social activities, for better and for worse.

Sector at a Glance

The technology sector of the AEX Index consists of five companies: KPN, ASML, ASMI, BE Semiconductor, and Philips. ASML, ASM, and BE are all part of the semiconductor industry, creating chips and integrated circuits for everything from hardware to software. KPN is a Dutch telecommunications company that is a key enabler of digital connectivity (not yet measured in our model). Philips is a Dutch health technology company with

Figure 10: Sector Results: Technology

14. *Philips Annual Report 2023.*
15. See Note 2 of the Annex: Valuation - updated guidelines for calculating positive social value.
16. *ASML Annual Report 2023*.

a global reach. Both Philips and KPN are fairly close to the consumer, whereas the semiconductor industry is further removed from end-users. The technology sector has a total financial value of €343.1 billion. The sector scores well on societal value creation, with a total integrated value of €447.6 billion, well over its financial value, resulting in an aggregate Futureproofing Ratio of 1.30, the second highest of all sectors.

The sector's key strengths are on the social side. Technology companies perform well in terms of consumer surplus, employment wellbeing, and training. Society views technology companies as both enablers and innovators. Philips' medical technology advancements have helped boost the quality, accessibility, and cost efficiency of healthcare services. KPN's telecommunications technology creates better connectivity, though this aspect of value add is not yet measurable. In addition to being a major driving force of innovation in the Brainport Eindhoven region and its value chain, ASML also makes a social contribution by investing in local infrastructure and startup ecosystems (not yet captured in our data). Keeping ASML in the Netherlands is a prominent political concern. Philips—the top performer of the AEX Futureproof Index—has a significant positive impact internally and externally: The lifetime value of its employee wellbeing and training metrics exceeds €29.6 billion and €3.7 billion, respectively. Externally, Philips's products and services have a large positive impact: The lifetime value of positive health effects on consumers is estimated at €32.7 billion. Philips also makes a point to provide its health and home technology to low-income households: The company reported positively impacting 221 million people in underserved communities in 2023[14].

Where the technology sector struggles to contend with its negative impact is corporate taxes and environmental consequences. The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit.[15] ASML, operating as a global leader in the semiconductor industry, has an effective tax rate of 15.4% in 2023,[16] which falls below the fair share range of 20 to 25%. This indicates a potential gap in its fiscal contributions and an estimated negative lifetime value of €20.6 billion. On the ecological front, the semiconductor industry has plenty of hidden issues that are further removed from the end-user: People do not necessarily see the environmental damage when using these chips. Water pollution, a significant part of semiconductor production, is one of the more costly aspects of this technology. Even leaderboard topper Philips has its issues, such as the cost of product responsibility and safety, which costs hundreds of millions of euros.

The Bottom Line

The technology sector offers innovations like medical technology and connectivity that have become crucial for modern society. At the same time, the end-user is often far removed from the ecological implications of what it takes to produce and run these products. The costliness of water pollution and greenhouse gas emissions must be considered when evaluating these companies for their sustainability efforts to evolve with their technology.

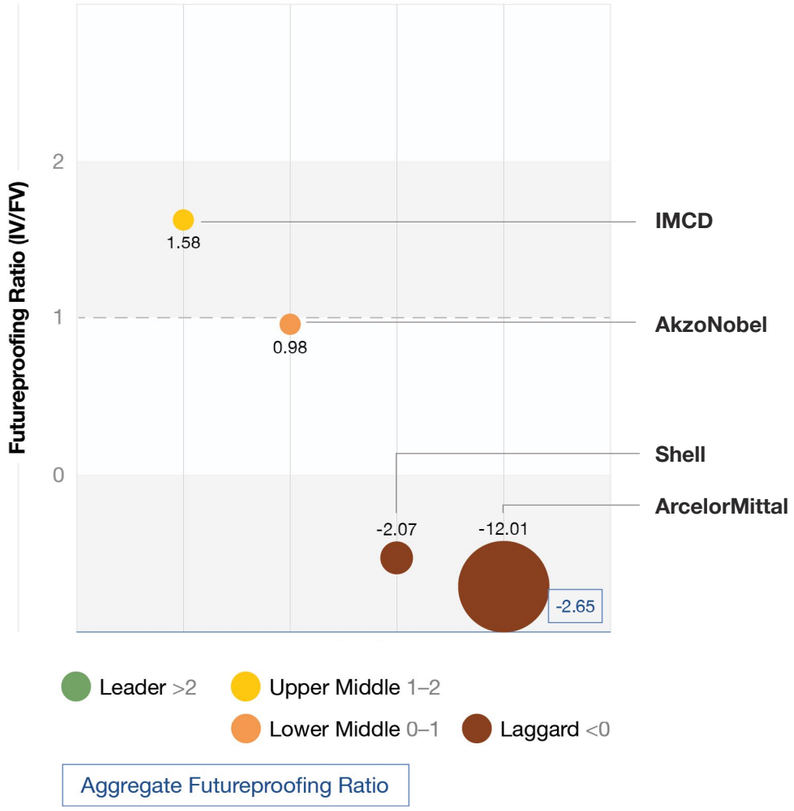
Resources Sector

The resources sector is the usual suspect when it comes to environmental destruction. Companies like Tata Steel, Chemours (not in the index, but in the same sector) and Shell are often in the news because of the environmental damage they cause. This is clearly visible in the data: This sector has by far the worst Futureproofing Ratio. However, the dispersion in the sector is high as well: Chemical distributor IMCD scores well above 1, and paints manufacturer AkzoNobel somewhat just below 1, whereas Shell has a negative score, and ArcelorMittal scores even lower by a wide margin.

Sector at a Glance

The resources sector of the AEX Index consists of four companies: AkzoNobel, ArcelorMittal, IMCD, and Shell. AkzoNobel is a chemicals company that specialises in manufacturing paints and coatings. IMCD is also a chemicals company, but it focuses on distribution and formulation of chemicals rather than producing them. ArcelorMittal is one of the largest steel producing companies in the world. Shell is a global producer and distributor of oil, gas, alternative energy, and petrochemicals. The resources sector has a total financial value of €291.0 billion. The total integrated value is -€771.4 billion.

Figure 11: Sector Results: Resources



17. *Shell Annual Report 2023*.

Calculating the Futureproofing Ratios reinforced the notion that creating products such as chemicals, steel, oil, and gas tend to have a negative impact on social and ecological value. Where the resources sector performs well is in terms of consumer surplus and corporate taxation. Consumer surplus is the difference between the price charged by a company and the price the customers are willing to pay. In the case of Shell, a leading company in the energy sector, its offerings remain in demand with customers. Furthermore, Shell reported an effective corporate tax rate of 35% in 2023[17], well above the fair share range. Thus, Shell contributed positively to society via taxes. ArcelorMittal also boasts a strong outcome for employment wellbeing.

Across the board, the four companies in the resources sector have a negative impact on a variety of environmental factors. Shell's carbon emissions represent an estimated negative lifetime value of €1.3 trillion. ArcelorMittal (the least futureproof company with a Futureproofing Ratio of -12.01) creates a toxic combination of carbon emissions and air pollution from furnaces used in steel manufacturing. Its greenhouse gas emissions represent an estimated negative lifetime value of €359.1 billion, almost 14 times its financial value. IMCD's direct impact is more difficult to measure: As a chemical distributor, it is further from production, and therefore, it is more difficult to measure its own negative impact.

The Bottom Line

The resources sector offers products that are currently integral to how day-to-day society runs. Despite this necessity, their license to operate is under pressure, and a transition to sustainable production methods is badly needed. In its current state, producing products like steel, oil, gas, and (most) chemicals negatively impacts ecological material issues such as greenhouse gas emissions, air pollution, and water pollution. The resources sector will have to offer more clean energy solutions and address the byproducts of its supply chain to address its undue burden on the environment. Ideally, they incorporate transition risks and opportunities in their assessment of investment decisions and strategy. For example, in their M&A decisions they might want to downward adjust the risk of (and hence the demanded return on) businesses that have high Futureproofing Ratios.

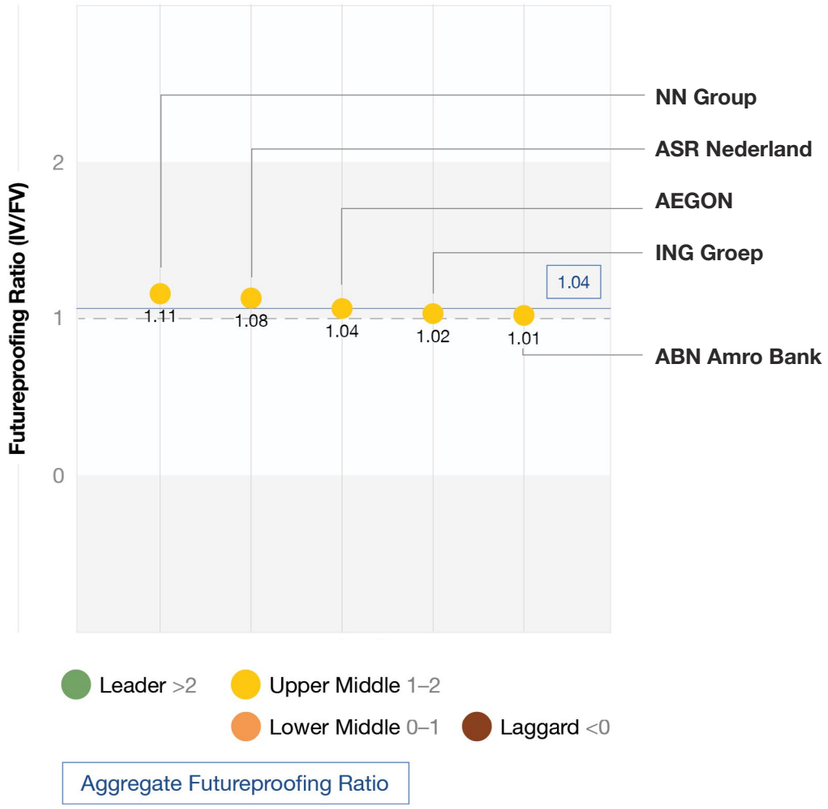
Financial Sector

Societal value creation by the financial sector has been in the spotlight since the financial crisis in 2008, when banks had to be saved by the government with taxpayers' money. Since then, regulations have increased, and financial institutions have been forced to put in much effort to reduce money laundering. We're also seeing a shift towards more sustainable investments and a struggle to deal with transitions. The sector is involved in the nitrogen crisis due to its funding of industrial farming, and ING has been indicted by Milieudefensie for its role in funding fossil fuel projects. The future of state-owned Volksbank is widely debated, with the parliament asking for a solution that safeguards the bank's societal role (for example, through a steward-owned structure). Meanwhile, pension funds have taken a leadership role, while insurers have been operating pretty much below the radar in terms of public attention. However, they face rising costs from natural disasters and other challenges to their business model.

Sector at a Glance

The financial sector of the AEX Index consists of five companies: ABN AMRO Bank, AEGON, ASR, ING Groep, and NN (Nationale-Nederlanden). ABN AMRO Bank and ING are banks that mainly focus on financial services such as lending, corporate finances, and sustainable financing. The other three, AEGON, ASR, and NN, are insurance companies that offer property and casualty insurance, life insurance, pensions, and asset management. These services have a social value in themselves. In addition, these companies also offer financial literacy programs and financial coaching to help people escape poverty and grow their wealth. The financial sector has a total financial value of €1,983.9 billion, by far the largest of the five sectors. The total integrated value of the financial sectors amounts to €2,058.3 billion.

Figure 12: Sector Results: Financial



This leads to an aggregate Futureproofing Ratio for the financial sector is 1.04, which hardly differs from 1 and is the least meaningful result of the five sectors we analysed. For both banks and insurers, it is hard to estimate their integrated value because of the indirect, layered nature of their exposure, namely through the activities they fund. Essentially, they represent portfolios of business activities, and data availability for the underlying assets is poor. Not all financed greenhouse gas emissions are reported, and data availability on other issues is worse.

Moreover, due to their high leverage (i.e., high levels of debt and hence low proportion of equity in enterprise value), their Futureproofing Ratio is less meaningful than for 'real' companies. Still, financial institutions play a crucial role in societal value creation and in navigating transitions. After all, they have leverage in another sense: Since they fund the other sectors, they have an allocation role throughout the economy. They decide what gets funded under what conditions. Hence, they can support their clients by funding investments for transitions.

These companies perform well on the social side: All scored high when it came to consumer surplus, employment wellbeing, and training for their employees, which is tracked with a general understanding of the banking and insurance career path. ING also scored well in corporate taxes due to paying their fare share, which is defined as 20% to 25% of taxable profit.[18] In addition, ING Groep pays a 'top-up tax' to operations in countries where the effective tax rate is below 15%.[19]

Outside these material issues, companies within the financial sector tend to perform poorly in the areas of cybersecurity breaches & data privacy, harmful business ethics, GHG emissions, and land use and biodiversity loss. For ABN Amro, harmful business ethics represented a negative value of €35.0 billion due to the effects of money laundering. Further, only GHG emissions were well documented for ecological impact across the companies. The other ecological material issues, including land use/biodiversity loss, had scant reporting and would require a more robust documentation approach to properly assess and address the issue.

The Bottom Line

As stated in Key Finding 1, creating financial value often comes at the expense of society. The data demonstrates that while a few companies are paying their fair share of corporate taxes, not enough is being done about their ecological footprint, both from a data and action standpoint. These companies need to address both cybersecurity threats and their reporting on ecological impact to work toward becoming more futureproof. Crucially, financial institutions should get (and show) a much clearer picture of what their transition exposures are and how they are being managed. Ideally, they incorporate transition risks and opportunities in both their risk management and decision making.

18. See Note 2 of the Annex: Valuation - updated guidelines for calculating positive social value.
19. *ING Group Annual Report 2023.*

What’s Next

The results of the inaugural AEX Futureproof Index clearly show that transformative change can happen to make companies better equipped for long-term value creation. More than half (65%) of companies have a Futureproofing Ratio of more than 1, with three having a very positive Futureproofing Ratio (greater than 2). These 15 companies show that long-term value creation is possible—and could be the key to better investment.

Companies need to implement better reporting protocols with high data standards to better assess and address the social and ecological material issues relevant to value creation. Creating more robust reports—especially regarding sustainability—is paramount to better understanding each company's integrated value and its trajectory for long-term value creation moving forward.

Furthermore, carbon emissions remain the single biggest issue negatively impacting the integrated values of these companies. Addressing carbon emissions, as well as increasing both social and ecological value across the board, will create better impact outcomes for companies and society as a whole.

If anything, the first iteration of the AEX Futureproof Index has indicated that solely focusing on financial value creation not only provides an incomplete picture but also works against the benefit of society. To gain that complete understanding and better impact, companies need to assess social and ecological issues, design robust reporting mechanisms, and balance out financial value creation. In this same vein, a more standardised approach to reporting social and ecological impact is the key to most effectively assessing the impact of each company against one another.

It is our hope that this Index will influence the way companies think about creating value for the long-term. From the boardroom to investors and policymakers, these groups can use this methodology to make better investment decisions. Company management teams can analyse their own company (and their competitors!) similarly, but with much better information than we have. For example, they can determine the Futureproofing Ratios of individual business units and even individual products. This can help them make better-informed investment and M&A decisions.

It should also be noted that even companies with a narrow shareholder value maximisation mandate can do this analysis. Their governance may not allow them to give up financial value for societal value, but they can at least estimate societal value and Futureproofing Ratios to get a better understanding of their value creation profile and build more resilient business models accordingly.

We also see a promising field of application among institutional investors, notably pension funds, to assess the Futureproofing Ratios of their investment portfolios. Much more than ESG ratings, this gives them an evidence-based overview of the societal value created and destroyed, which can inform their investment decisions and corporate engagement.

The Futureproofing Ratios also provide an interesting starting point for analysis and dialogue for other stakeholders, such as regulators, policymakers, NGOs, researchers, and journalists. Futureproofing Ratios, among other things, could inform industry policy or M&A approval processes.

Marcel Andringa, Executive Director of Balance Sheet and Asset Management at PME Pension Fund

We invest for the long term. For this, the integrated value approach, which considers not only financial value creation in the long term but also social and ecological value creation, is a good approach that can help us achieve our goal: a good pension in a liveable world. It is my firm conviction that companies with good environmental and social performance in the long term also perform better financially.

About this Initiative

The AEX Futureproof Index is an initiative of Dirk Schoenmaker, Willem Schramade, Pieter Hemels, and Wander Marijnissen. Dirk and Willem published 'Principles of Sustainable Finance[20]' in 2019 and 'Corporate Finance for Long-Term Value[21]' in 2023, a guide to corporate finance for modern companies that want to create long-term value. While talking about this with Pieter Hemels and Wander Marijnissen of change consultant ftrprf (ftrprf.com), the four of them came to the conclusion 'that the proof of the pudding is in the eating,' and they decided to put the integrated value formula to the test.

That was the start of a year-long journey, with the goal of calculating the integrated value of 23 of the AEX-listed companies over 2023. The goal of this highly intensive project is not to blame and shame but to fuel the debate about integrated and long-term value. We did our utmost to be impartial and transparent, using publicly available information.

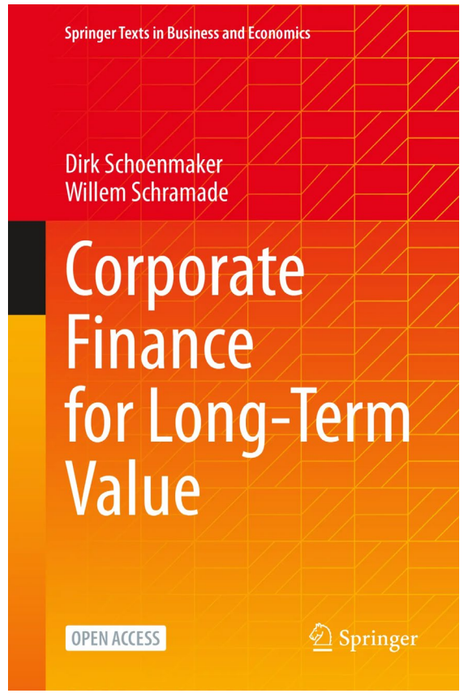
A dozen MBA students of Nyenrode Business University worked on making the formula executable. Almost four hundred corporate finance master's students of Rotterdam School of Management at Erasmus University analysed and calculated each company at least four times. A core team brought all data together, checked, double-checked, and triple-checked everything.

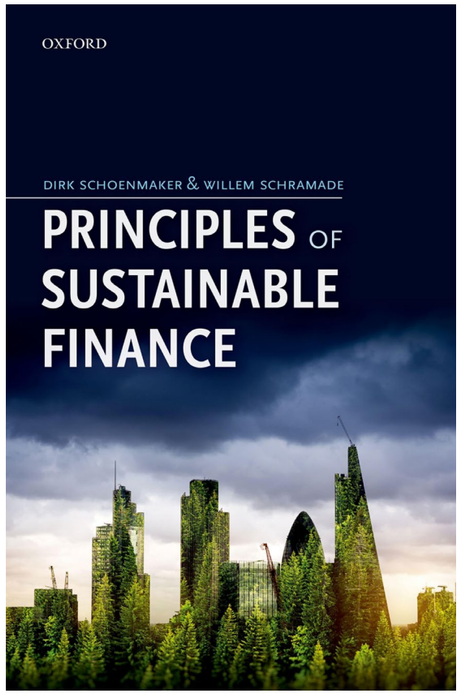
Although we spent over ten years of work to make these calculations, we are sure people will disagree with some of the outcomes. That's very welcome: Our goal is not to present a definitive list; our goal is to present a list that's as accurate as possible and start the debate. In that vein, all comments, suggestions, and possible improvements are more than welcome (you can mail them to index@ftrprf.com; we make sure your mail reaches the right person).

20. *Principles of Sustainable Finance*, Schoenmaker and Schramade, 2019.
21. *Corporate Finance for Long-Term Value*, Schoenmaker and Schramade, 2023.

Abe de Jong, Professor of Corporate Finance at Rijksuniversiteit Groningen

The 2023 book by Willem Schramade and Dirk Schoenmaker '*Corporate Finance for Long-term Value*' presents a toolbox for corporate decision-makers, investors, and analysts to analyse financial, social, and environmental value. In this new initiative, the authors apply the model to large firms in the Netherlands. With the help of almost 400 students, they demonstrate the complementarity and refreshing insights from the new method. Like any valuation approach, subjective choices are made, and the calibration of multiple student teams for each firm tests the influence of this subjectivity inherent in valuation modeling. Highly recommended.





Annex: Individual Company Results

ABN AMRO

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ABN AMRO
INTEGRATED VALUE	€369.3 bn
FUTUREPROOFING RATIO	1.01
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€13.59
SHARES OUTSTANDING (ultimo 2023)	865.34 mn
NET DEBT	€353.7 bn
FV (stock price * shares outstanding + net debt)	€365.5 bn

To calculate the Integrated Value of ABN AMRO, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

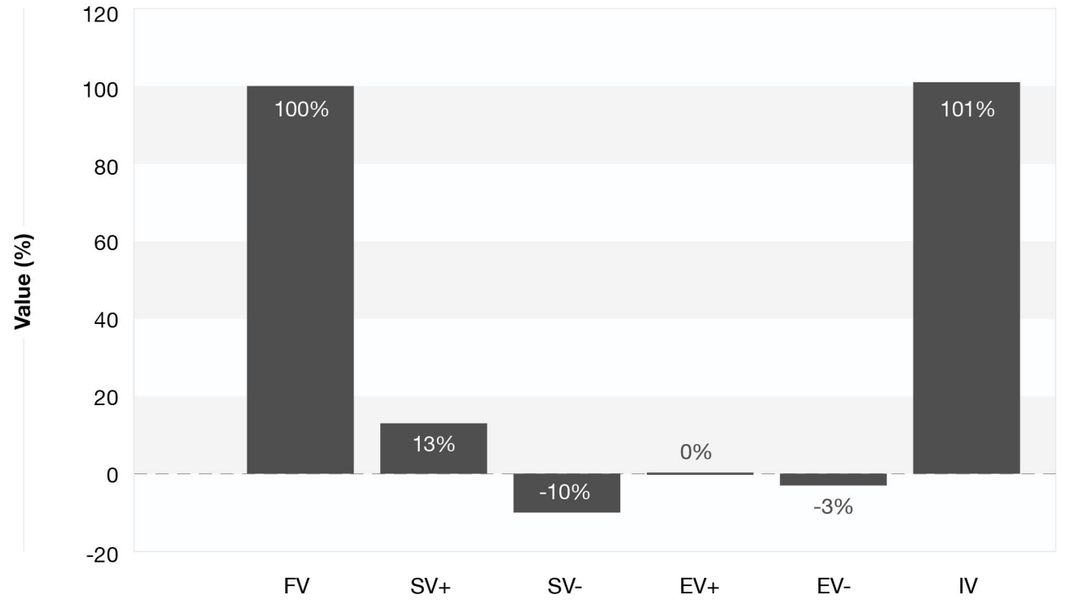
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			1,844.47	43.8%	807.58	**37,442.2**
Input factors: Sales: 18,500[1] mn, price elasticity: 0.03.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1 + [(10-0.03)*0.5]/0.03 = 167.17. Corrected consumer surplus = *sales* / (*price elasticity * correction factor*) * 0.5 = 18,500/(0.03*167.17)*0.5 = 1,844.47 mn				*Explanation*: Consumer wellbeing is central to ABN AMRO's operations as a financial institution. The bank offers tailored financial products and services aimed at meeting diverse client needs while fostering financial literacy. Initiatives such as financial coaches for clients facing challenges with digital banking highlight a commitment to accessibility and support. These efforts contribute positively by enhancing consumer financial stability and satisfaction. The attribution factor of 43.8% is based on the added value of ABN AMRO: (Interest and fee income - Interest and fee expenses) / (Interest and fee income).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	86,620 Life Satisfaction Points	2,395 / Life Satisfaction Point[3]	207.49	100%	207.49	**9,620.1**
Input factors: Number of employees (000): 20.9[4], Glassdoor rating: 4.1.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.1-3.4) * 1.5 = 4.15 Total increase in life satisfaction points: 4.15 * 20,900 = 86,620				*Explanation*: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. ABN AMRO focuses on creating a supportive work environment through initiatives like flexible working arrangements, employee development programs, and diversity and inclusion policies. These measures enhance employee satisfaction and productivity, generating a positive impact on employment wellbeing.		
Corporate taxes			0	100%	0	**0**
Input factors: Corporate taxes 0.85 bn, net income: 2.7 bn, effective corporate tax rate: 23.90%[1] Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0				*Explanation*: Corporate taxes are an important part of ABN AMRO's societal contributions. The bank ensures compliance with its tax obligations, supporting public services and infrastructure. ABN AMRO also maintains transparency in tax reporting and adheres to international tax regulations, reflecting its commitment to compliance and accountability.		
Training			40.00	100%	40.00	**1,845.5**
Input factors: To arrive at the value flow for training, we use the total amount spent on training (€40.0 mn[6]).				*Explanation*: Investing in employee training is a priority for ABN AMRO, ensuring that staff are equipped with the necessary skills to meet evolving market demands. Training programs focus on areas such as digital innovation, risk management, and customer service excellence These initiatives not only improve operational efficiency but also contribute to the professional growth of employees.		
Cyber security breaches and data privacy	3.4 cyber incidents	5,339,367[7] / cyber incident	-18.21	100%	-18.21	**-844.4**
Input factors: - Number of cyber incidents in global financial industry: 3,348[8] - Assets held by ABN AMRO: €377,909 million[9] - Assets held by the global financial sector: €371 trillion[10] *Calculation:* ABN AMRO estimated cybersecurity breaches: 377.909/371,000 * 3,348 = 3.4 Value loss for ABN AMRO: 3.34 * 5.34 mn = €17.83 mn				*Explanation*: Cyber security is a significant challenge for the financial sector, with increasing risks of data breaches and cyberattacks driven by reliance on digital infrastructure. Despite implementing measures such as encryption, real-time monitoring, and incident response systems, ABN AMRO continues to face vulnerabilities and risks in safeguarding sensitive client data. These issues result in a negative contribution to cyber security.		
Harmful business ethics			-1,723.21	43.8%	-754.75	**-34,992.8**
Input factors: - Total amount of money laundering in the Netherlands: €16 billion annually, of which 49% is attributed to banks[11] - Market share ABN AMRO: 20.0%[12] - Correction foreign business ABN AMRO: 90.9%[13] *Calculation:* Annual value loss linked to ABN AMRO: (16,000 * 49.0% * 20.0%) / 90.9% = €1,723.21 mn				*Explanation*: Business ethics are a critical area for ABN AMRO, reflecting the challenges of maintaining regulatory compliance and addressing issues such as fraud and money laundering. While the bank has governance frameworks and internal controls in place, past incidents and ongoing concerns impact its reputation and stakeholder trust. As a result, the contribution to business ethics is negative. The amount of money laundering that is calculated based on market share, is lowered by an attribution factor of 43.8% as the bank is used by criminals outside of ABN AMRO for money laundering.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 5.0 Kilo tons, Scope 3 (own operations): 38.0 Kilo tons, Scope 3 (financed emissions): 48,203.0 Kilo tons CO2eq.[14]	206 / ton CO2eq[15]	-9,949.77	Scope 1 + 2: 100% Scope 3 (own operations): 43.8% Scope 3 (financed emissions): 6%	-601.27	**-8,823.1**
Input factors: Scope 1 + 2: 5.0 Financial Scope 3 (own operations): 38.0 Financial Scope 3 (financed emissions): 48,203.0 *Calculation*: Value flow attributable to the company: [(scope 1+2) + 43.8%*scope 3 (own operations) + 6%*scope 3 (financed emissions)] * shadow price = (5.0 + 43.8%*38.0 + 6%*48,203.0)*0.206 = €601.27 mn				*Explanation*: Explanation: ABN AMRO is taking steps to reduce GHG emissions as part of its broader climate strategy. This includes financing projects focused on renewable energy and energy efficiency through its Sustainable Impact Investments. The bank has also implemented measures to minimise emissions in its operations, such as transitioning to more sustainable buildings. Despite these efforts, ABN AMRO has a negative contribution to GHG emissions.		
Land use / biodiversity loss	30,000 ha	3,294.12 / ha[16]	-39.53	43.8%	-17.31	**-412.1**
Input factors: - MSA: 0.4[17] - ABN AMRO hectares deteriorated: 30,000[18] *Calculation:* Value loss due to biodiversity: 0.4 * 3,294.12 * 43.8% * 30,000 = €17.31 mn				*Explanation*: ABN AMRO recognizes the environmental impact of its lending and investment activities, particularly on land use and biodiversity. The bank incorporates sustainability considerations into its decision-making processes, prioritising projects that promote sustainable land management and conservation. However, the scale and complexity of these issues require further action to mitigate the negative impacts of deforestation and habitat degradation. As a result, the contribution to land use and biodiversity is negative.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	365.5	
Positive SV	48.9	1.06
Negative SV	-35.8	-0.77
Positive EV	0.0	0.00
Negative EV	-9.2	-0.62
IV (integrated value)	369.3	



FV = Financial Value | SV = Social Value | EV = Ecological Value | IV = Integrated Value

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.13
Existential Risk ratio	Negative externalities/FV	0.12
Futureproofing Ratio	IV/FV	1.01

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low income people	Products and services that enable low income people should be included as a material factor as ABN AMRO prioritises financial resilience for low-income individuals through its Financial Health department, resulting in a positive effect on society. However, this issue could not be added as there is no research on a shadow price for these initiatives, nor does ABN AMRO report how much it spends on products and services that enable low income people.
Discrimination & inclusion (including gender)	Diversity and inclusion are significant considerations for ABN AMRO, as the bank strives to mirror the diverse society it serves. In 2023, women constituted 42.4% of the Extended Leadership Team (ELT), progressing toward the ambitious target of 48% female representation by 2025.[19] Additionally, ABN AMRO has set clear goals to increase bicultural representation, aiming for 8% of senior management to have a bicultural background by 2025.[20] Despite these initiatives, challenges remain in fully integrating diversity and inclusion into the company's valuation, as comprehensive methods to measure the impact of these efforts are still under development.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	Air pollution is a material concern for ABN AMRO, given its role in financing activities that can impact the environment. The bank has committed to aligning its portfolio with the Paris Agreement, focusing on reducing emissions through responsible lending and investment practices. However, indirect contributions to air pollution through financed industries remain a challenge, as the bank's exposure to sectors like real estate and transportation still carries air pollution. At this moment, we have not arrived at a way of measuring this impact.

1. *Integrated Annual Report 2023*, ABN AMRO, 2024.
2. *Interest Rate Elasticity of Bank Loans: The Case for Sector-Specific Capital Requirements*, Hense, 2015.
3. *Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation*, 2024. (Exchange rate of 1.105)
4. *Integrated Annual Report 2023*, ABN AMRO, 2024.
5. *ABN AMRO Reviews*, Glassdoor, 2024.
6. *Integrated Annual Report 2023*, ABN AMRO, 2024.
7. *Cost of a Data Breach Report 2024*, IBM, 2024. (Exchange rate 1.105)
8. *Number of cyber incidents in the financial industry worldwide from 2013 to 2023*, Petrosyan, 2024.
9. *Integrated Annual Report 2023*, ABN AMRO, 2024. (Exchange rate of 1.105)
10. *Global Banking Annual Review 2024*: Attaining escape velocity, McKinsey, 2024.
11. *From recovery to balance*, De Nederlandsche Bank, 2022.
12. *Major banks in the Netherlands*, TheBanks.eu, n.d.
13. *Integrated Annual Report 2023*, ABN AMRO, 2024.
14. *Integrated Annual Report 2023*, ABN AMRO, 2024.
15. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
16. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
17. The Mean Species Abundance (MSA) is assumed to be 0.4.
18. *Impact Report 2023*, ABN AMRO, 2024.
19. *Diversity & Inclusion Policy*, ABN AMRO, 2022.
20. *Many cultures, one goal*, ABN AMRO, n.d.

Adyen

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Adyen
INTEGRATED VALUE	€ 33.8 bn
FUTUREPROOFING RATIO	1.20
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€ 1166.6
SHARES OUTSTANDING (ultimo 2023)	31.0 mn
NET DEBT	- € 18.1 bn
FV (stock price * shares outstanding + net debt)	€ 28.1 bn

To calculate the Integrated Value of Adyen, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

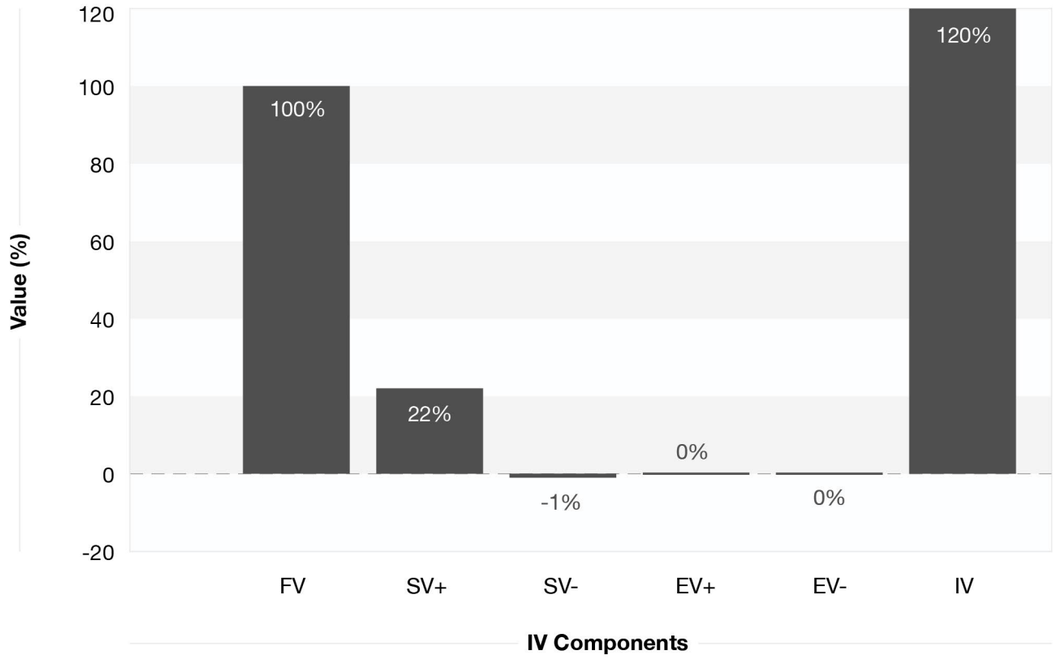
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			169.09	50.0%	84.55	**3919.8**
Input factors: Sales: 1863.41[1] mn, price elasticity: 1.00.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1 + [((10-1)*0.5]/1 = 5.5.[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 1863.41/(1 * 5.5)*0.5 = 169.09 mn				*Explanation:* Consumer surplus is the difference between the price charged by Adyen and the price the customers are willing to pay. The company is currently one of the biggest payment processors in the world, supporting several essential industries. Despite its market leadership, on aggregate Adyen charges less for its services than customers would pay, leading to a positive consumer surplus. The standard attribution factor of 50.0% is applied, as Adyen has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	15.54	2395[4,5]	37.23	100%	37.23	**1725.9**
Input factors: Number of employees (000): 4.196[1], Glassdoor rating: 3.8.[6] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.8-3.4) * 1.5 = 3.7 Total increase in life satisfaction points: 3.7 * 4,196 = 15.54 mn				*Explanation:* Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. Operating in over 20 countries and employing 4,196 people globally[7], the company supports economic stability and local community growth.		
Corporate taxes			0	100%	0	**0**
Input factors: Corporate taxes 240 mn, effective corporate tax rate: 23.8%[8] *Calculation:* The effective corporate tax rate is 23.8%, which lies between the 20% - 25% fair tax rate. For this reason the value flow on corporate taxes is 0.				*Explanation:* To assess whether Adyen contributes to tax fairness and delivers a positive or negative social value, we examine whether the effective tax rate of Adyen falls below the fair share tax rate range of 20% to 25%.[9]		
Training	7,500	215[10]	1.61	100%	1.61	**74.8**
Input factors: Adyen academy has provided over 1000 trainings in 2023[11] Average training sessions: 3 hours Average number of people attending training: 20 *Calculation:* 1000 * 3 * 20 = 60,000 hours 60,000 / 8 = 7,00 days of training 7,500 * 215 = 1.61 mn				*Explanation:* Adyen is committed to keep developing its workforce, by offering both internal and external training through for example the Adyen Academy. Adyen's "not one-size-fits-all approach" leads to a positive assessment of its training offerings as it allows its employees to reach their maximum potential.[12]		
Impact on local communities (local cohesion, health effects, other effects)			16.26 mn	50%	8.13	**376.9**
Input factors: Adyen's pledge to contribute 1% of revenue to SDG's[13] Revenue: €1,626 mn *Calculation*: 1,626 * 1% = 16.26 mn				*Explanation:* Adyen has pledged to contribute 1% of its revenue to help develop the UN's SDG's. It is aiming to continue doing this in the future, through which Adyen has a positive impact on communities. Therefore the impact on local communities of Adyen is assessed to be positive. An attribution of 50% is embraced as the positive effects are mainly established by external organisations, and therefore the full monetary value cannot be assigned to Adyen.		
Cyber security breaches and data privacy	1	5,339,367[14]	-5.34 mn	100%	-5,34 mn	**-247.6**
Input factors: For Adyen, this figure is contextualised by considering the average number of data breaches they experienced in the fiscal year 2023: 1 major data breach[15] reported to authorities. As Adyen's operations are with financial transactions, the average cost of a data breach (€5,339,367) for the financial sector is estimated from the 2024 data breach report from IBM.[16] This price is taken as the shadow price per major data breach. *Calculation:* 1 * 5,339,367 = 5.34 mn				*Explanation:* Adyen is processing payments for many different parties, and therefore forms a target for data breach attempts. Due to the sensitive nature of payment details, data breaches can have a substantial impact on its operations and are therefore assessed to have a negative impact on Adyen's integrated value. An attribution factor of 100% is assigned for this material issue.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1+2 emissions: 10.2 kilo tonnes Scope 3 emissions: 69.2 kilo tonnes	206[17]	-16.36	Scope 1 + 2 : 100% , Scope 3 (own operations): 50.0%	-9.24	**-135.6**
Input factors: Scope 1+2 emissions: 10.2 kilo tonnes Scope 3 emissions: 69.2 kilo tonnes *Calculation:* Not considering the attribution of scope 3: (10.2 + 69.2) * 206 = 16.36 mn Considering the 50% attribution of scope 3: (10.2 + 50% * 69.2) * 206 = 9.24 mn				*Explanation:* Although Adyen, as a service provider, does not operate in a carbon-intensive sector, it still contributes to greenhouse gas emissions. Adyen has made it one of their goals to reduce their GHG emissions by investing in companies that develop carbon-minimising technologies.[18] Even though Adyen is engaging in these sorts of projects, it is still emitting GHG through its business, leading to an overall negative performance on GHG emissions.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	28.1	
Positive SV	6.1	0.13
Negative SV	-0.2	-0.01
Positive EV	0.0	0.00
Negative EV	-0.1	-0.01
IV (integrated value)	**33.8**	



FV = Financial Value	SV = Social Value	EV = Ecological Value	IV = Integrated Value

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.22
Existential Risk ratio	Negative externalities/FV	0.01
Futureproofing Ratio	IV/FV	1.20

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low income people	Even though Adyen is a leading payment processor that is able to serve many segments, it is mainly focussed on business-to-business services. Due to the focus on business-to-business services, the impact of the payment services related to low income people is hard to estimate in absence of detailed data.
Product responsibility and safety	Adyen's main product is processing online payments, which is most sensitive to digital breaches. As the cost of data breaches is already taken into account, this material issue is not further quantified. This is due to the absence of data regarding the risk of overall service breaches or other safety risks of Adyen.
Business Ethics	There was not enough data found to quantify the business ethics of Adyen, other than codes of conduct and goals regarding business ethics. Therefore, this material issue was not further quantified.

1. Adyen Annual Report 2023
2. Long-Term Value Site
3. Long-Term Value Site
4. True Price Foundation, 2023
5. 0.905 = USD TO EUR Exchange Rate
6. Glassdoor, "Adyen Reviews", 2024
7. Adyen Annual Report 2023
8. Adyen Annual Report 2023
9. *"Integrated Value"*, Schoenmaker & Schramade, 2024
10. Annex: Integrated Value Methodology Notes - Note 8
11. Adyen Annual Report 2023
12. Idem
13. Adyen Annual Report 2023
14. *"Cost of a data breach"*, IBM, 2024
15. Adyen Annual Report 2023
16. *"Cost of a data breach"*, IBM, 2024
17. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (USD to EUR Exchange rate of 1.105)
18. Adyen Annual Report 2023

AEGON

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Aegon
INTEGRATED VALUE	€315.0 bn
FUTUREPROOFING RATIO	1.04
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€5.25
SHARES OUTSTANDING (ultimo 2023)	1,814.7 mn
NET DEBT	€292.2 bn
FV (stock price * shares outstanding + net debt)	€301.7 bn

To calculate the Integrated Value of Aegon, we analyzed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

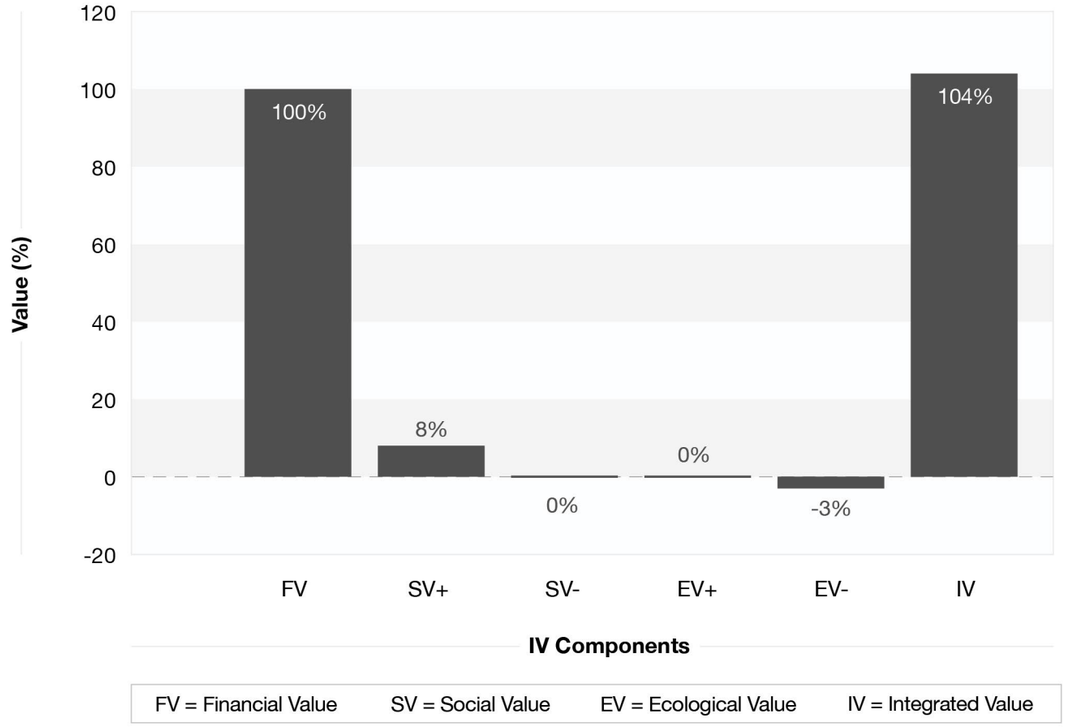
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			1,160.22	32.5%	377.53	**17,503.8**
Input factors: Sales: 12,600[1] mn, price elasticity: 0.86.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1 + [(10-0.86)*0.5]/ 0.86 = 6.31 Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 12,600/(0.86 * 6.31)*0.5 = 1,160.22 mn				*Explanation:* Consumer surplus reflects customers' value from a company's products or services, emphasising the benefits they gain beyond the price paid. For Aegon, it demonstrates how insurance practices provide stability and smooth consumption. The overall positive social impact of consumer surplus highlights its importance in assessing a company's contribution to societal well-being. The attribution factor of 32.5% is based on the added value of Aegon: (Insurance and fee income - Insurance and fee expenses) / (Insurance and fee income).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	55,590 Life Satisfaction Points	2,395[3] / Life Satisfaction Point	133.15	100%	133.15	**6,173.5**
Input factors: - Number of employees (000): 15.7[4] - Glassdoor rating: 3.7[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.7 - 3.4) * 1.5 = 3.55 Total increase in life satisfaction points: 3.55 * 15,700 = 55,590				*Explanation:* Employment wellbeing reflects the quality of work and life provided by a company, encompassing factors like non-discrimination, gender equality, fair compensation, and workplace flexibility. Aegon demonstrates a commitment to these principles, implementing programs to ensure safety, equitable remuneration, and overall wellbeing. However, the company acknowledges areas for improvement, such as competitive compensation and flexibility. By fostering a supportive environment and aligning with global labour standards, Aegon creates a positive impact on employee satisfaction, contributing to broader social value flows.		
Corporate taxes			0	100%	0	**0**
Input factors: - Effective corporate tax rate: 24.1%[6] Since the effective corporate tax rate falls within the fair share of 20-25%, the value flow of corporate taxes is 0.				*Explanation:* Corporate taxes are a significant material issue for Aegon. Not only has the company benefited from lower tax payments in recent years, it is expected to pay a 15% tax rate based on forward-looking projections, which is below the 20-25% range considered reasonable for tax expenses. Aegon will shift some tax obligations to Bermuda, reducing contributions to the Dutch society. As taxes are a key source of government revenue that finances public services and infrastructure, Aegon's tax practices have a direct impact on its societal responsibility, making this a critical issue for assessing its social value flows.		
Training			5.50	100%	5.50	**255.0**
Input factors: - Cost of training and development programs: €5.50 mn[7] The whole cost, as reported by Aegon, is treated as a positive value flow.				*Explanation:* Employee training delivers substantial societal advantages by improving workforce skills, increasing productivity, and contributing to economic growth. Aegon shows its commitment to employee development through a budget dedicated to training programs and learning opportunities.		
Cyber security breaches and data privacy	2.7 cyber incidents	5,339,367[8] / cyber incident	-14.53	100%	-14.53	**-673.9**
Input factors: - Number of cyber incidents in global financial industry: 3,348[9] - Assets held by AEGON: €301,700 million[10] - Assets held by the global financial sector: €371 trillion[11] *Calculation:* AEGON estimated cybersecurity breaches: 301.700/371,000 * 3,348 = 2.7 Value loss for AEGON: 2.7 * 5.34 mn = €14.53 mn				*Explanation:* Cybersecurity and data privacy are fundamental to preserving client trust and safeguarding sensitive information. As a prominent financial services provider handling large volumes of client data, Aegon is vulnerable to risks posed by cyberattacks and data breaches. Strengthening cybersecurity measures and ensuring compliance with data protection regulations are critical to managing these risks effectively.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 13.2 kilo tonnes CO2eq Scope 3 (own operations): 10.3 kilo tonnes CO2eq Scope 3 (financed emissions): 53,096.2 kilo tonnes CO2eq	206[12] / ton CO2eq	-10,942.66	Scope 1 + 2: 100% Scope 3 (own operations): 32.5% Scope 3 (financed emissions): 6%	-660.82	**-9,696.8**
Inputs:[13] - Scope 1 + 2: 13.2 kt CO2eq - Scope 3 (own operations): 10.3 kt CO2eq - Scope 3 (financed emissions): 53,096.2 kt CO2eq *Calculation:* Value loss due to emissions: [(scope 1+2) + 32.5% * scope 3 (operations) + 6% * scope 3 (financed emissions)] * shadow price = (13,200 + 32.5% * 10,300 + 53,096,200 * 6%) * 206 = 660.82 mn				*Explanation:* Greenhouse gas (GHG) emissions represent a critical material issue for Aegon due to the significant environmental impact associated with both their direct operational activities, which are typically low for financial institutions, and the considerably higher emissions generated through the investments and financial activities they support. Addressing these financed emissions is particularly important for aligning with global sustainability goals. AEGON is not yet measuring its insured emissions through its insurance portfolio.		
Land use / biodiversity loss	24,763 ha	3,294.12[14] / ha	-32.63	32.5%	-10.62	**-252.8**
Inputs: - MSA: 0.4[15] - ABN AMRO hectares deteriorated: 30,000[16] - Aegon EV (FV): 301.7 bn - ABN AMRO EV (FV): 365.5 bn *Pro rata estimation of Aegon based on ABN AMRO.* Calculation: Value loss due to biodiversity: 0.4 * 3,294 * 32.5% * 30,000 * 301.7 / 365.5 = 10.62				*Explanation:* Biodiversity is influenced by land use and environmental practices of firms within Aegon's investment portfolios. While Aegon does not directly operate activities with significant land occupation, the land management decisions of companies in their portfolio can have notable implications for biodiversity. According to Aegon's 2024 Integrated Annual Report, biodiversity is recognized as a material issue, although its specific impacts are not fully detailed or monetised in the report. Despite this, the cumulative effect of portfolio companies' land use and resource management could contribute significantly to biodiversity outcomes, underscoring the importance of integrating biodiversity considerations into Aegon's investment strategies.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	301.7	
Positive SV	23.9	0.52
Negative SV	-0.7	-0.01
Positive EV	0.0	0.00
Negative EV	-9.9	-0.67
IV (integrated value)	**315.0**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.08
Existential Risk ratio	Negative externalities/FV	0.04
Futureproofing Ratio	IV/FV	1.04

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & inclusion (including gender)	Diversity and inclusion could be a material issue for a company like Aegon. In 2023, women made up 38% of its workforce, up from 32% in 2020, with a goal of 40% in senior management by 2024. While progress has been steady, Aegon continues to address challenges, including reported discrimination cases, as it works to foster a respectful and inclusive culture that benefits employees and society alike. At this moment, we have not arrived at a way of measuring this impact.
Products and services that enable low-income people	Products and services designed to support low-income individuals could be included as a material factor, as Aegon prioritises financial resilience within the insurance sector. Aegon addresses the unique needs of financially vulnerable clients by offering tailored insurance products that provide essential coverage at accessible rates. At this moment, we have not arrived at a way of measuring this impact.
Harmful business ethics	Business ethics could be a material issue for insurers like Aegon, as it underpins stakeholder trust and adherence to regulatory standards, particularly in combating financial crimes such as money laundering. For insurers, robust ethical practices are vital to ensuring compliance systems effectively mitigate risks associated with fraudulent activities.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	Air pollution could be a material issue for a company like Aegon. Through its investments and operations, Aegon has the potential to influence environmental outcomes. The data on air pollution of financed companies or investments was not available at this time.

1. *Integrated Annual Report 2023,* Aegon, 2024.
2. *The Price Elasticity of Demand for Whole Life Insurance,* Babbel, 1985.
3. *Impact-Weighted Accounts Framework (IWAF),* Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Integrated Annual Report 2023, Aegon, 2024.*
5. *Aegon Reviews,* Glassdoor, n.d.
6. *Integrated Annual Report 2023,* Aegon, 2024.
7. *Integrated Annual Report 2023,* Aegon, 2024.
8. *Cost of a Data Breach Report 2024*, IBM, 2024. (Exchange rate 1.105)
9. *Number of cyber incidents in the financial industry worldwide from 2013 to 2023*, Petrosyan, 2024.
10. *Integrated Annual Report 2023,* Aegon, 2024.
11. *Global Banking Annual Review 2024: Attaining escape velocity*, McKinsey, 2024.
12. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
13. *Integrated Annual Report 2023,* Aegon, 2024.
14. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
15. The Mean Species Abundance (MSA) is assumed to be 0.4.
16. *Impact Report 2023*, ABN AMRO, 2024.

Ahold Delhaize

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Ahold Delhaize
INTEGRATED VALUE	€105.6 bn
FUTUREPROOFING RATIO	2.61
AEX FUTUREPROOF INDEX CLASSIFICATION	Leader

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€26.02
SHARES OUTSTANDING (ultimo 2023)	946.1 mn
NET DEBT	€15.8 bn
FV (stock price * shares outstanding + net debt)	€40.4 bn

To calculate the Integrated Value of Ahold Delhaize, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			8,355.33	31%	2,587.18	**119,951.2**
Input factors: Sales: 88,700[1] mn, price elasticity: 0.61[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1 + [(10-0.61)*0.5]/ 0.61 = 8.70 Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 88,700 / (0.61 * 8.70) * 0.5 = 8,355.33 mn.				*Explanation:* Consumer surplus is the difference between Ahold Delhaize's price and the customers' willingness to pay. Ahold Delhaize focuses on delivering value to consumers through affordable pricing and high-quality products. In 2023, the company expanded its own-brand assortments and optimised loyalty programs, offering more competitive choices to enhance consumer value. Key strategies included introducing entry-level products, expanding the range of consistently well-priced items, and leveraging digital tools and loyalty initiatives. The attribution factor of 31.0% is based on the added value of Ahold Delhaize: (Revenue - COGS) / Revenue.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	858,400 Life Satisfaction Points	2,395 euros[3] / 1 Life Satisfaction Point	2,056.28	100%	2,056.28	**95,336.4**
Input factors: Number of employees (000): 232[4], Glassdoor rating: 3.8[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.8 - 3.4) * 1.5 = 3.7 Total increase in life satisfaction points: 3.7 * 232,000 = 858,400				*Explanation:* Employment wellbeing reflects the change in life satisfaction, including the financial impact of salaries, for those with jobs compared to unemployed individuals. It is measured as an average for all full-time employees in a company. In 2023, the company faced challenges from increased workplace violence and crime, with employees reporting heightened verbal aggression, intimidation, and threats. To address these issues, the company prioritised responsible labour practices and workplace safety.		
Corporate taxes			0	100%	0	**0**
Input factors: - Effective corporate tax rate: 22%[6] Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0.				*Explanation:* Ahold Delhaize's corporate tax performance is assessed as neutral due to its tax rate, which falls within the fair share range of 20% to 25%.[7] The company remains committed to responsible tax practices. Additionally, Ahold Delhaize supports social goals by leveraging wage tax credits to hire individuals from underrepresented groups.		
Health & Safety (workers)	Fatal incidents: 209.4 Non-fatal incidents: 7,679.4	Fatal: 3,348,416 Non-fatal: 3,946[8]	-731.31	100%	-731.31	**-33,906.4**
Input factors:[9] number of own employees: 232,000 LTIFR fatal: 0.47, LTIFR non-fatal: 17.24, Million hours worked by employees (assuming 48 weeks of 40 hours): 445.4, *Calculation:* The number of fatal and non-fatal accidents is calculated by (LTIFR x Total hours worked)/1,000,000. Fatal: 0.47 * 445.4 = 209.4 Non-fatal: 17.24 * 445.4 = 7,679.4 Value flow = 209.4 * 3,348,416 + 7,679.4 * 3,946 = 731.31 mn				*Explanation:* Workplace safety remains a critical material issue for Ahold Delhaize, as the company continues to face a significant number of fatal and non-fatal incidents. While efforts have been made to foster a safety culture and implement processes aimed at preventing accidents and injuries, the persistence of severe incidents highlights notable shortcomings in achieving accident-free workplaces. These challenges underscore the urgent need for more effective measures to address safety risks and protect employees, emphasising that current efforts are insufficient to fully ensure a healthy and secure working environment.		
Health effects on consumers (positive)			1,070.19	31%	331.76	**15,381.4**
Input factors:[10] - Own brand sales: 34 bn - Healthy food sold: 54.8% - Unhealthy food sold: 42.2% - Health effect of food: 25%[11] *Calculation:* - Net healthy food sales: (54.8% - 42.2%) * 34 bn = 4.3 bn - Health effect of net food sales: 4.3 * 25% = 1.08 bn - Value flow attributable to Ahold Delaize: 31% * 1.08 bn = 331.76 mn				*Explanation:* Ahold Delhaize plays a critical role in promoting healthy and nutritious food to address societal issues like obesity and diet-related diseases. In 2023, 54.8% of its own-brand sales were classified as healthy foods, demonstrating a positive impact on public health. The company supports healthier eating by offering affordable, nutritious food options and providing clear product information to educate customers. These efforts align with its commitment to strengthening communities through improved diets and reduced chronic diseases.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health effects on consumers (negative)	US Ahold liters of alcohol: 0.64 bn European Ahold liters of alcohol: 0.40 bn	US shadow price: 4.75[12] / liter Europe shadow price: 1.69[13] / liter	-936.38	31%	-289.95	**-9,242.0**
Input factors: - US liters of alcoholic drinks (~5%) sold in total: 47.5[14] bn - Correction binge drinking: 25% - Grocery channel: 43.8%[15] - Market share Ahold in US: 3.1%[16] - Conversion to Europe: US sales 54.5 bn; European sales 34.1 bn *Calculation:* - US Ahold liters of alcohol sold: market share US * grocery channel * US liters of alcohol = 3.1% * 43.8% * 47.5 = 0.64 bn - Europe Ahold liters of alcohol: US Ahold litres / US sales * European sales = 0.64 / 54.5 * 34.1 = 0.40 bn - Value flow = 25% (correction for binge drinking) * [0.64 * 4.75 + 0.40 * 1.69] = 936.38 mn				*Explanation:* Ahold Delhaize's sale of alcohol raises concerns, as it makes alcohol more accessible and contributes to its negative societal effects, including health risks and social harm. While Ahold Delhaize offers alcohol-free alternatives, its role in facilitating alcohol availability conflicts with its broader commitment to public health.		

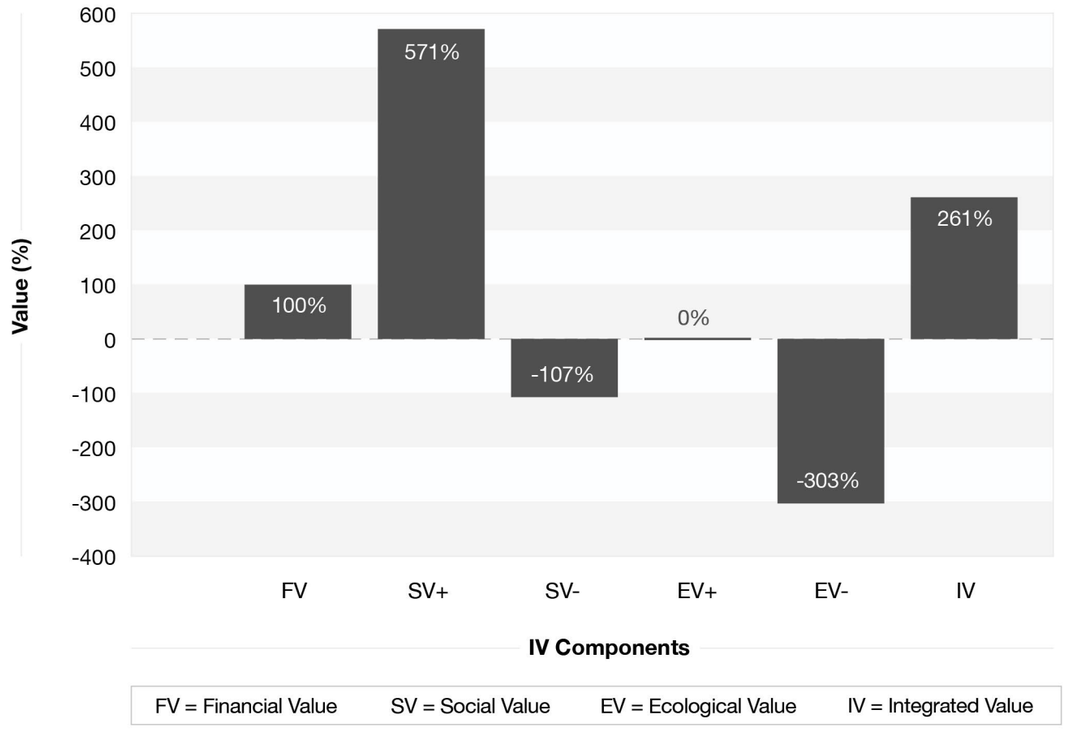
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 3,491 kt CO2eq Scope 3: 59,885 kt CO2eq[17]	206[18] / ton CO2eq	-13,040.60	Scope 1 + 2: 100% Scope 3: 31%	-4,546.78	**-66,719.3**
Inputs: Scope 1 + 2: 3,491 kt CO2eq Scope 3: 59,885 kt CO2eq *Calculation:* Value loss attributable to the company: [(scope 1+2) + 31% * scope 3] * shadow price = (3,491 + 31% * 59,885) * 206 / 1000 = 4,546.78 mn				*Explanation:* Ahold Delhaize has made progress in reducing Scope 1 and 2 greenhouse gas (GHG) emissions, achieving a 35% reduction since 2018 and setting ambitious targets, including net-zero emissions by 2040 for Scope 1 and 2 and by 2050 across its value chain. Initiatives include renewable energy agreements and investments in zero-emission buildings and electric vehicles. However, 95% of the company's emissions are from Scope 3, primarily driven by its supply chain, particularly animal products. Efforts to address these emissions, such as a 30.3% reduction target for Forest, Land, and Agriculture emissions by 2030, are criticised as insufficient to meet global climate benchmarks. Ahold Delhaize also faced criticism for misleading sustainability claims and lagging in renewable energy use compared to competitors.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Waste	Non-recyclable waste: - Food: 51.8 kt - Own-brand plastic: 105.1 kt - Supplier's plastic: 168.5 kt	Food: 944.5[19] / ton Plastic: 4,950.7[20] / ton	-1,403.34	100% Food 100% Own-brand plastic 31% Supplier's plastic	-828.01	**-19,714.5**
Inputs:[21] - Food: 225.4 kt - Own-brand plastic: 146 kt - Supplier's plastic: 234 kt - Percentage of non-recycled food: 23% - Percentage of non-recycled plastic: 72% *Calculation:* - Food: shadow price * food waste * non-recycled = 944.5 * 225.4 kt * 23% / 1000 (units) = 48.9 mn - Own-brand plastic: shadow price * own brand * non-recycled = 4,950.7 * 146 kt * 72% / 1000 (units) = 520.3 mn - Supplier's plastic: shadow price * supplier * non-recycled = 4,950.7 * 234 kt * 72% / 1000 (units) = 834.1 mn Value flow: 48.9 + 520.3 + 834.1 = 1,403.3 mn				*Explanation:* Despite efforts, Ahold Delhaize still generated 225,000 tonnes of food waste in 2023, highlighting significant room for improvement. On packaging, Ahold Delhaize focuses on reducing virgin plastic use, achieving a 10% reduction in own-brand virgin plastic packaging since 2021. The company targets 100% recyclability of own-brand packaging by 2025 and aims for 25% recycled content. However, challenges such as varying recycling infrastructure across markets persist, and packaging waste contributes significantly to the company's environmental footprint.		
Land use / biodiversity loss	3.7 mn hectares	3,294 /ha[22]	-4,819.42	31%	-1,494.02	**-35,572.0**
Inputs: - US full-time consumers: 10.7 mn[23] - European full-time consumers: 6.7 mn[24] - Global cropland area: 0.21 hectare per capita in 2016 (assumed to be the same in 2023)[25] - MSA: 0.4[26] *Calculation:* total full-time consumers: 10.7 + 6.7 = 17.4 mn Hectares used: total full-time consumers * 0.21 hectare = 17.4 * 0.21 = 3.7 mn Value flow: hectares * MSA * shadow price = 3.7 * 0.4 * 3.294 = 4,819.42 mn				*Explanation:* Ahold Delhaize recognises the impact of food value chains on nature and biodiversity, which can be affected by practices like land conversion, soil degradation, overfishing, and excessive water use. These issues often arise in the early stages of production, such as cultivation and harvesting. Unsustainable practices not only damage ecosystems but also threaten food affordability, land availability, and local communities reliant on biodiversity. Ahold Delhaize has implemented initiatives to improve farming practices. For instance, Ahold Delhaize USA developed a regenerative agriculture strategy, in collaboration with The Nature Conservancy, which targets four key areas: regenerative land management, supporting local landscapes and networks, enhancing farmer livelihoods, and ensuring transparent reporting.		
Water usage	8,956,000 cubic meters	1.41[27] / cubic meter	-12.65	100%	-12.65	**-301.2**
Input factors: Water consumption in the company's operations: - 8,956,000 cubic meters[28] *Calculation:* Value loss: water use * shadow price = 8,956,000 * 1.41 = 12.65 mn				*Explanation:* Water usage is a critical environmental concern for Ahold Delhaize, as agriculture accounts for about 70% of global freshwater consumption. With the growing population and climate change, the availability of freshwater is declining, increasing the risk of exceeding planetary boundaries for water use. This concern is highlighted in the company's annual report, indicating the potential impact on its operations. While Ahold Delhaize reports water usage for its operations, this may understate the overall water consumption, particularly blue water, as the food industry plays a significant role in freshwater usage, and the company shares responsibility for the sourcing of these products.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV).

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	40.4	
Positive SV	230.7	4.98
Negative SV	-43.1	-1.02
Positive EV	0.0	0.00
Negative EV	-122.3	-6.88
IV (integrated value)	105.6	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	5.71
Existential Risk ratio	Negative externalities/FV	4.10
Futureproofing Ratio	IV/FV	2.61

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	An investigation into the practices of suppliers, especially of products imported from emerging economies. This requires more data on the supply chain standards.
Underpayment in value chain	An investigation into the practices of suppliers, especially of products imported from emerging economies. This requires more data on the supply chain standards.
Discrimination & inclusion (including gender)	Discrimination and inclusion, including gender diversity, could be material for Aegon Delhaize. The company has made progress in increasing gender representation and fostering an inclusive workplace. A further analysis of this issue could reveal the true state of this issue for different stakeholder groups. At this moment, we have not arrived at a way of measuring this impact.
Impact on local communities (local cohesion + other effects)	Ahold Delhaize's impact on local communities could be significant, fostering local cohesion through initiatives that support local sourcing, employment, and community engagement. At this moment, we have not arrived at a way of measuring this impact.
Training (employees)	Employee training provides substantial societal benefits by improving workforce skills, increasing productivity, and driving economic growth. As there is no data available on training programs of Ahold Delhaize, this material issue has not been analysed. Other AEX company provide information on training.
Business ethics	Business ethics could be a material issue for Ahold Delhaize, as ethical practices are crucial for maintaining trust with customers, employees, and investors. Investigating areas such as responsible sourcing, fair labor practices, and anti-corruption measures is essential to ensure the company meets its ethical commitments.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	Farming animals for supermarket products contributes to air pollution through greenhouse gases like methane and nitrous oxide. Ahold Delhaize's involvement in animal products could be investigated.
Soil pollution	Soil pollution could be a material issue for Ahold Delhaize, directly impacting agricultural supply chains and food safety. Investigating how the company's sourcing practices, particularly in farming and food production, contribute to soil degradation is essential.
Water pollution	Water pollution could be a material issue for Ahold Delhaize due to its reliance on water for food production, manufacturing, and distribution. Investigating the company's water waste disposal practices, and any pollution in local water systems could lead to a changed integrated value.
Land restoration / protection	Land restoration and protection could be material for Ahold Delhaize, particularly concerning its agricultural sourcing and environmental impact. Investigating how the company contributes to land degradation or supports restoration efforts is important.

1. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
2. *Retail Market Power in a Shopping Basket Model of Supermarket Competition*, Richards et al., 2018.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
5. *Ahold Delhaize Reviews*, Glassdoor, n.d.
6. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
7. See Annex Integrated Value Methodology.
8. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
9. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
10. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
11. We assume that healthy food has a health effect of 25%.
12. See Annex Integrated Value Methodology.
13. See Annex Integrated Value Methodology.
14. In the US, on average 8.7 litres of pure alcohol is consumed per person (15+ years old) per year (*Alcohol Consumption by State 2024*, World Population Review, 2024). The US has approximately 336 million inhabitants (*Population Statistics*, U.S. Department of Commerce, 2024). Assuming a homogeneous distribution between the ages of 0 and 80, this means there are around ((80-15)/80) * 336 million = 273 million inhabitants over 15 years old in the US. Therefore, a total of approximately 273 million * 8.7 litres = 2.375 billion litres of pure alcohol is consumed in the US each year. An average drink assumed at 5% gives us 2.375/0.05 = 47.5 bn liters of alcohol drinks sold.
15. *Bottoms up: How grocers can keep alcohol sales pouring in*, Moran, 2020.
16. *Industry Market Research, Reports, and Statistics.*, IBISWorld, n.d.
17. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
18. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
19. *Estimates of European food waste levels; the average of the primary and processed food waste,* Stenmarck et al., 2016.
20. Annex: Integrated Value Methodology Notes - Note 8
21. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024.
22. Equal to US population: 346 mn (*United States Population*, Worldometers, n.d.) multiplied by the US market share of Ahold Delhaize: 3.1% (*Industry Market Research, Reports, and Statistics*., IBISWorld, n.d.)
23. Calculated through a relative estimate of US full-time consumers and net sales in both regions.
24. *Land use in agriculture by the numbers*, Food and Agriculture Organization of the United Nations (FAOSTAT), 2020.
25. The Mean Species Abundance (MSA) is assumed to be 0.4.
26. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
27. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
28. *Ahold Delhaize Annual Report 2023*, Ahold Delhaize, 2024

AkzoNobel

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	AkzoNobel
INTEGRATED VALUE	€16.4 bn
FUTUREPROOFING RATIO	0.98
AEX FUTUREPROOF INDEX CLASSIFICATION	Lower-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€74.82
SHARES OUTSTANDING (ultimo 2023)	170.6 mn
NET DEBT	€4.1 bn
FV (stock price * shares outstanding + net debt)	€16.8 bn

To calculate the Integrated Value of AkzoNobel, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			898.40	50%	449.20	**20,826.7**
Input factors: Sales: 10,700[1] mn, price elasticity: 1.91.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1 + [(10-1.91)*0.5]/ 1.91 = 3.12 Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 10,700 / (1.91 * 3.12) * 0.5 = 898.40 mn					*Explanation:* Consumer surplus is the difference between the price charged by AkzoNobel and the price the customers are willing to pay. AkzoNobel contributes positively to consumer wellbeing by offering sustainable and innovative products, such as low-VOC paints, which improve air quality and durability. These products help create healthier living environments while minimizing the impact on the planet. Despite premium pricing potentially limiting access, AkzoNobel's efforts to integrate sustainability into product design demonstrate a commitment to enhancing consumer value. The standard attribution factor of 50.0% is applied, as AkzoNobel has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	135,520 Life Satisfaction Points	2,395 / Life Satisfaction Point[3]	324.63	100%	324.63	**15,051.2**
Input factors: Number of employees (000): 35.2[4], Glassdoor rating: 3.9[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.9-3.4) * 1.5 = 3.85 Total increase in life satisfaction points: 3.85 * 35,200 = 135.52				*Explanation:* AkzoNobel emphasises creating a supportive and inclusive work environment. Initiatives focused on diversity, equity, inclusion, professional development, and mental wellbeing highlight the company's efforts to enhance employee satisfaction. Flexible working arrangements and ongoing skills training further strengthen the company's positive contribution to employment wellbeing.		
Corporate taxes			82.32	100%	82.32	**3,816.7**
Input factors:[6] Corporate taxes 0.30 bn, net income before taxes: 1.28 bn, effective corporate tax rate: 35.5%. *Calculation:* (Effective corporate tax rate - 25%) * (net income before taxes) = (35.5%-25%) * 0.78 bn = €82.32 mn				*Explanation:* AkzoNobel reported €300 million in taxes paid for 2023, reflecting a significant financial contribution to public services and infrastructure. The effective corporate tax rate of 35.5% exceeds the fair share range (20%-25%),[7] indicating a positive impact on society by ensuring ethical and transparent tax practices.		
Training	12.33 Days (in thousands)	215[8]/ day	2.65	100%	2.65	**122.9**
Input factors: 98,603 hours of formal training9 *Calculation:* 98,603 Hours of Training / 8 Hours (Work Day) = 12,325 Days of Training Value flow: number of training days * shadow price = 12,325 * 215 = 2.65 mn				*Explanation:* AkzoNobel invested heavily in employee development by providing a total of 12,325 training days in 2023. Training initiatives support innovation, workforce skill-building, and long-term employee growth. This strong emphasis on professional development contributes positively to training.		
Health & Safety (workers)	Fatal: employees: 0; Contractors: 0 Non-fatal: employees 105; contractors: 91	Fatal: 3,348,316, Non-fatal: 3,946[10]	Own employees: -0.41 Contractors: -0.36	Own employees: 100%, Contractors: 50%	-0.59	**-27.5**
Input factors:[11] - number of fatal injuries to own employees: 0 - number of fatal injuries to contractors: 0 - LTIFR own employees: 0.31 / 200,000 working hours - LTIFR contractors: 0.27 / 200,000 working hours - Number of own employees: 35,200 - Number of contractors: 35,200[12] - Amount of weeks worked per year: 48[13] - Amount of hours worked per week: 40 *Calculation:* The amount of hours worked yearly by either an employee or a contractor: (amount of weeks worked per year * amount of hours worked per week = 48*40 = 1,920 workable hours per year for an FTE. Times 200,000 hours are worked for own employees and contractors: Own employees: (35,200*1,920)/200,000 = 337.9 Contractors: (35,200*1,920)/200,000 = 337.9 The number of non-fatal accidents for own employees and contractors: LTIFR x amount of times 200,000 hours worked Own employees: 0.31*337.9 = 105 non-fatal accidents Contractors: 0.27*337.9 = 91 non-fatal accidents Value flow = non-fatal accidents * shadow price = (105 + 91) * 3,946 = 0.77 mn				*Explanation:* In 2023, AkzoNobel's Total Reportable Rate (TRR) increased from 0.24 in 2022 to 0.31, indicating a rise in workplace safety incidents. Despite investments in training and preventive measures, the increase in incidents points to areas for improvement. The contribution to health and safety is negative.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Impact on local communities (local cohesion, health effects, other effects)	32,025 members of local communities learned new skills	431.15[14]/ upskilled worker	13.82	50%	6.91	**320.2**
Input factors: - members of local communities that learned new skills: 32,025[15] *Calculation:* Value flow: number of upskilled workers * shadow price = 32,025 * 431.15 = 13.82 mn				*Explanation:* Through the "AkzoNobel Cares" initiative, the company supported over 300 projects and provided skills training to 32,035 individuals in 2023. These efforts focus on fostering economic opportunities and improving livelihoods, leading to a positive contribution to local communities.		

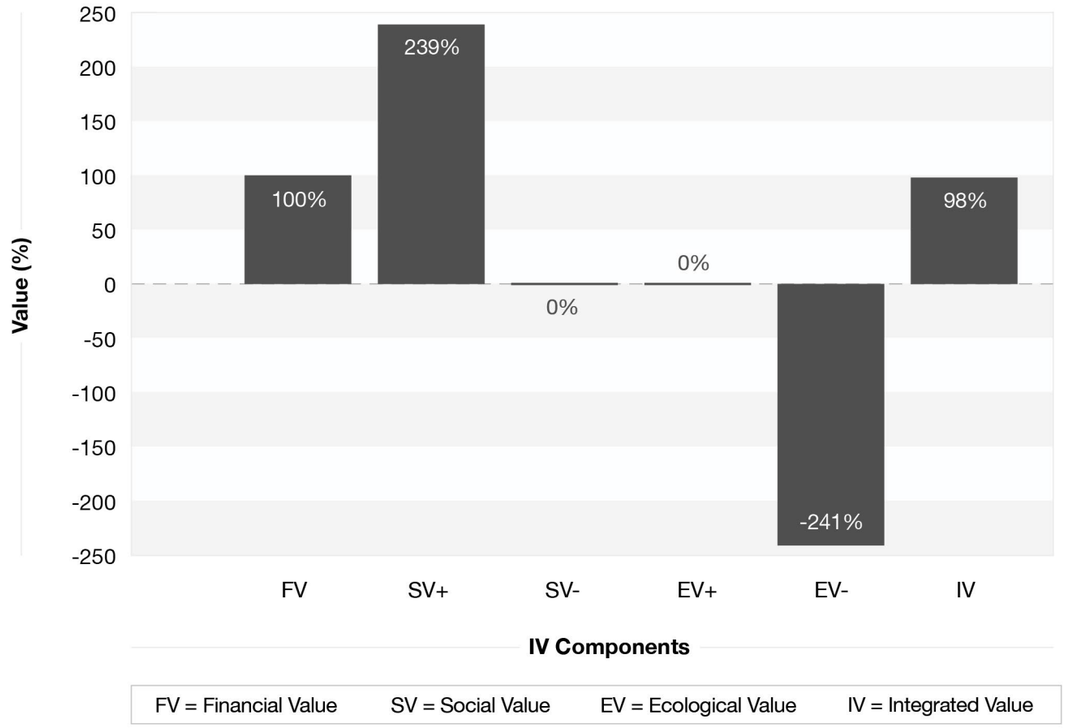
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 179.6 Kilo tons, Scope 3: 13,100 Kilo tons	206 / ton CO2eq[16]	-2,740.28	Scope 1 + 2: 100%, Scope 3: 50%	-1,388.67	**20,377.3**
Input factors:[17] Scope 1: 59.2 Scope 2: 120.4 Scope 3: 13,100 *Calculation:* Value flow: [(scope 1+2) + scope 3] * shadow price = (179.6 + 13,100) * 206 = 2,740.28 mn				*Explanation:* AkzoNobel reduced Scope 1 and 2 emissions by 11.4% in 2023, reporting 179.6 kilotons of CO_2 equivalents. However, Scope 3 emissions, totaling 13,100 kilotons, remain a significant challenge. While progress is being made in operational emissions, the overall contribution to GHG emissions is negative.		
Air Pollution	VOC = 910,000 kg, NOx = 70,000 kg SOx = 30,000 kg	VOC: 1.76 / kg[18] NOx: 1.67 / kg[19] SOx: 6.35 / kg[20]	-1.91	100%	-1.91	**-45.4**
Input factors:[21] - VOC = 910,000 kg - NOx = 70,000 kg - SOx = 30,000 kg *Calculation:* Value flow: pollution * shadow price = 910*1.76 + 70*1.67 + 30*6.35 = 1.91 mn				*Explanation:* Air pollution is a material factor due to emissions of volatile organic compounds (VOCs), nitrogen oxides (NOx), and sulfur oxides (SOx) from AkzoNobel's production processes and energy use. The company has implemented measures to reduce VOC emissions, aligning with stricter environmental regulations and improving air quality. However, significant challenges remain in mitigating NOx and SOx emissions, which are associated with energy consumption and raw material processing. Despite efforts to adopt cleaner technologies, the current impact on reducing air pollution is insufficient. Therefore, the contribution to air pollution is negative		
Waste	Non-reusable hazardous waste: 20 Kilo tons Non-reusable non-hazardous waste: 14 Kilo tons	Hazardous waste: 38.80[22]/ kg Non- hazardous waste: 3.88[23]/ kg	-830.32	100%	-830.32	**-19,769.5**

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Input factors:[24] - Total non-reusable hazardous waste: 20 Kilo tons - Total non-hazardous waste: 14 Kilo tons *Calculation:* Value flow = waste * shadow price = 20*38.80 + 14*3.88 = 830.32 mn				*Explanation:* AkzoNobel aims to achieve 100% circularity by 2030, but their performance in waste management has been mixed. In 2023, the company generated 34 kilotons of non-reusable waste, an increase from 32 kilotons in 2022. While steps are being taken to address waste management and promote recycling, the upward trend in waste generation highlights the need for accelerated efforts. As such, the contribution to waste and circularity is negative.		
Water usage	8,940,000 cubic meters	1.41[25]/ cubic meter	-12.62	100%	-12.62	**-300.5**
Input factors: Water consumption in the company's operations: 8,940,000 cubic meters[26] *Calculation:* Value flow: water usage * shadow price = 8,940,000 * 1.41 = 12.62 mn				*Explanation:* AkzoNobel consumed 8.94 million cubic meters of water in 2023, primarily for cooling and cleaning processes. While the company implements recycling in water-stressed regions, the lack of a comprehensive reduction plan limits broader impact. As a result, the contribution to water usage is negative.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV).

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	16.8	
Positive SV	40.1	0.87
Negative SV	-0.03	-0.001
Positive EV	0.0	0.00
Negative EV	-40.5	-2.23
IV (integrated value)	16.4	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	2.39
Existential Risk ratio	Negative externalities/FV	2.41
Futureproofing Ratio	IV/FV	0.98

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	AkzoNobel acknowledges its responsibility to respect human rights across its operations and supply chain. While the company has implemented policies and procedures to address issues such as working conditions, non-discrimination, and labour rights, challenges persist, particularly in regions with less stringent labor protections. The complexity of managing a global supply chain increases the risk of human rights violations, such as unsafe working conditions or insufficient oversight of third-party suppliers. Despite ongoing efforts, the value flow related to human rights breaches remains negative due to these risks. We now lack sufficient data to compute the value loss due to human rights breaches by AkzoNobel.
Health & Safety (local residents)	As a manufacturing company, AkzoNobel places priority on the health and safety of people, including local residents. The company has implemented a global health, safety, environment, and security (HSE&S) management program to ensure that the highest safety standards are applied to its activities and sites. Despite these measures, incidents have occurred, such as the explosion at a UK facility in 2020, which resulted in significant injuries to a worker and raised concerns about the safety of surrounding communities.[27] Despite this issue being material for AkzoNobel, we have not arrived at a way to monetise the impact.
Harmful business ethics	AkzoNobel is committed to conducting business with integrity and has established a Code of Conduct to guide ethical practices. However, past incidents, including regulatory fines and safety violations, indicate gaps in fully upholding these standards. While the company encourages employees to report unethical behavior through mechanisms like whistleblowing programs, challenges in consistent enforcement across global operations persist. As a result, the value flow for harmful business ethics remains negative.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Water pollution	AkzoNobel's operations contribute to water pollution, particularly through the production and disposal of chemicals. Despite measures to manage water use and reduce emissions, incidents such as the release of harmful substances into water bodies highlight ongoing risks. While the company has initiatives to improve water management and prevent contamination, the value flow for water pollution remains negative. We have not yet arrived at a way to monetize the impact on water pollution.
Scarce materials	AkzoNobel's operations contribute to the depletion of scarce materials, as many of its products rely on raw materials that are limited in availability, such as certain pigments, solvents, and other specialized chemicals. While the company has initiatives to promote resource efficiency and explore alternative materials, the demand for non-renewable resources in its production processes remains significant. Unfortunately, right now we do not have enough information to calculate the value loss on scarce materials.
Water pollution	Water pollution could be a material issue for Ahold Delhaize due to its reliance on water for food production, manufacturing, and distribution. Investigating the company's water waste disposal practices, and any pollution in local water systems could lead to a changed integrated value.
Land use/biodiversity loss	AkzoNobel's operations inevitably impact land use, particularly through the extraction of raw materials and chemical production processes. While the company states its sites are not located in areas of high biodiversity value, land use associated with its supply chain contributes to habitat disruption and ecosystem degradation.[28] Despite efforts to minimise waste and improve sustainability, the value flow for land use remains negative due to these environmental pressures. We have not yet arrived at a way to monetize the value flow on land use/biodiversity loss.

1. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
2. *Economic Impact Analysis for the Polymers and Resins IV NESHAP*, United States Environmental Protection Agency, 1996.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
5. *AkzoNobel Reviews*, Glassdoor, 2024.
6. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
7. Annex Integrated Value Methodology Notes
8. Annex: Integrated Value Methodology Notes - Note 8
9. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
10. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
11. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
12. Because of lack of information, it is assumed that the number of contractors is the same as number of employees.
13. *Op hoeveel vakantiedagen heb ik recht?*, Ministerie van Algemene Zaken, 2023.
14. Annex: Integrated Value Methodology Notes - Note 8
15. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
16. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
17. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
18. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
19. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
20. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
21. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
22. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
23. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
24. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
25. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
26. *AkzoNobel Annual Report 2023*, AkzoNobel, 2024.
27. *Akzonobel company fined £800,000 after explosion*, IOSH Magazine, 2022.
28. *Biodiversity*, AkzoNobel, n.d.

ArcelorMittal

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ArcelorMittal
INTEGRATED VALUE	-€310.7 bn
FUTUREPROOFING RATIO	-12.01
AEX FUTUREPROOF INDEX CLASSIFICATION	Laggard

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€26.5
SHARES OUTSTANDING (ultimo 2023)	819.3 mn
NET DEBT	€4.2 bn
FV (stock price * shares outstanding + net debt)	€25.9 bn

To calculate the Integrated Value of ArcelorMittal, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			5,975.56	32.0%	1,912.62	**88,675.9**
Input factors: Sales: 61,800[1] mn, price elasticity: 0.34.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.34)*0.5]/0.34 = 15.2.[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 61,800 / (0.34 * 15.2) * 0.5 = 5,975.56 mn.				*Explanation:* Consumer surplus is the difference between the price charged by ArcelorMittal and the price the customers are willing to pay. The company is currently one of the biggest steel manufacturers in the world, supporting several essential industries such as automotive, infrastructure, and energy. The diverse offer of products and the focus on sustainable steel allows to meet global demand for such materials at competitive prices, exploiting the benefits deriving from quality steel production. The attribution factor of 32.0% is based on the added value of ArcelorMittal: (Revenue - COGS) / Revenue.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	507,020 Life Satisfaction Points	2,395[4] euros / Life Satisfaction Point	1,214.56	100%	1,214.56	**56,311.6**
Input factors: Number of employees (000): 126.8[5], Glassdoor rating: 4.0.[6] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4 - 3.4) * 1.5 = 4 Total increase in life satisfaction points: 4 * 126,800 = 507,020				Explanation: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. Operating in over 60 countries and employing more than 120,000 people globally[7], the company supports economic stability and local community growth.		
Corporate taxes			-46.75	100%	-46.75	**-2,167.6**
Input factors:[8] Corporate taxes 0.22 bn, net income before taxes: 1.14 bn, effective corporate tax rate: 15.9%. *Calculation:* (Effective corporate tax rate - 20%) * (net income before taxes) = (15.9% - 20%) * 1.14 bn = -46.75 mn				*Explanation:* To reduce its tax obligations, ArcelorMittal has established offices in countries with more favourable tax regimes, such as Luxembourg.[9] To assess whether ArcelorMittal contributes to tax fairness and delivers a positive or negative social value, we examine whether the effective tax rate of ArcelorMittal falls below the fair share tax rate range of 20% to 25%.[10]		
Training	744.69 Days (in thousands)	215[11] / day	160.11	100%	160.11	**7,423.2**
Input factors: 47 training hours per employee[12]; number of employees (000): 126.8 *Calculation:* Training days = training hours * number of employees / 8 (hours per day) = 47 * 126.8 / 8 = 744.69 training days Value flow = training days * shadow price = 744.69 * 215 = 160.11 mn				*Explanation:* Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. ArcelorMittal demonstrates a strong commitment to employee development through initiatives like the ArcelorMittal University, which provides continuous learning opportunities across various disciplines. This dedication indicates that the company is performing well in promoting employee training and human capital development.		
Health & Safety (workers)	Fatal incidents: employees: 56, contractors: 5 Non-fatal incidents: employees 268.3, contractors: 28.1	Fatal: 3,348,316[13] Non-fatal: 3,946[14]	-205.42	Own employees: 100%, Contractors: 32%	-193.96	**-8,992.9**
Input factors:[15] number of fatal injuries to own employees: 56, number of fatal injuries to contractors: 5, LTIFR own employees: 1.13, LTIFR contractors: 0.58, Million hours worked own employees: 237.4, Million hours worked contractors: 48.4 *Calculation:* Number of non-fatal accidents for own employees and contractors by (LTIFR x Total hours worked)/1,000,000. Own employees: 1.13*237.4 = 268.3 Contractors: 0.58*48.4 = 28.1 Value flow = (56 + 5) * 3,348,316 + (268.3 + 28.1) * 3,946 = 205.42 mn				*Explanation:* In 2023, a tragic incident happened in Kazakhstan with 45 reported fatalities in an ArcelorMittal coal mine.[16] In response, an independent safety audit was launched, covering over 170 sites worldwide, to assess and enhance fatality prevention and associated risks.17 Overall, occupational health & safety can be measured by the Fatality Frequency Rate (FFR). Excluding the Kazakhstan incident ArcelorMittal reports to have 30% lower FFR than the World Steel Association industry average, for the period 2014-2022.[18] In 2023 it reported a Lost Time Injury Frequency Rate (LTIFR) of 1.13 per million hours worked for its own employees, and 0.58 for contractors. This is a more used KPI as ArcelorMittal has reported to shift to a 'predict and prevent' safety culture.		
Impact on local communities (local cohesion, health effects, other effects)	9,135.1 life years lost	107,692[19]	-983.78	32%	-314.88	**-14,599.1**

Input factors: number of early deaths per factory: 15.38,[20] number of factories: 62,[21] average age (world): 73.16,[22] average age (steelworkers): 54[23] # life years: 0.5 * (age world - age steelworkers) *Calculation:* Number of life years lost = number of deaths per factory * number of factories * # life years = 15.38 * 62 * 0.5 * (73.16 - 54) = 9,135.1 life years lost. Value flow = life years lost * shadow price = 9,135.1 * 107,692 = 938.78 mn	*Explanation:* Particulate matter (PM), which comes from dust and consists of fine airborne particles, also brings adverse health impacts. The microscopic particles are associated primarily with serious respiratory and cardiovascular health issues as these particles can penetrate deep into lung tissue and enter the bloodstream. Environmentally, PM affects visibility and soil health and can carry heavy metals, further contaminating local ecosystems. In order to quantify these effects of the steel producer's impact on communities, the Years of Life Lost (YLL) can be calculated as the number of deaths from pollution multiplied with the life expectancy at the time of death. In this case, the amount of death associated with pollution. The Guardian[12] reports that in the area of Taranto the factory's pollution has killed over 400 people in 13 years. Taranto houses almost 200,000 people. Assuming the average community around a factory holds 100,000, we assume the deaths to be 400 / 13 / 2 = 15.38 for 2023. Average world age was derived based on data from Macro Trends[22]. The average age of steelworkers is derived from assessing the health status and male steel workers to assess early death relationships. This is due to the fact that in areas where the firm's factories operate, pollution deriving from steel production has raised serious health concerns leading to early deaths. In several locations, like Steel Valley in South Africa or Taranto, Italy, higher incidence of respiratory diseases and cancer has been reported, and linked to ArcelorMittal's dioxin and other pollutants emissions. This has ultimately led to the creation of local social movements pressuring the company on this topic. Although ArcelorMittal has shown more awareness and committed to mitigate these effects, the challenge of the health impact on local communities remains a serious concern.

ENVIRONMENTAL ISSUES

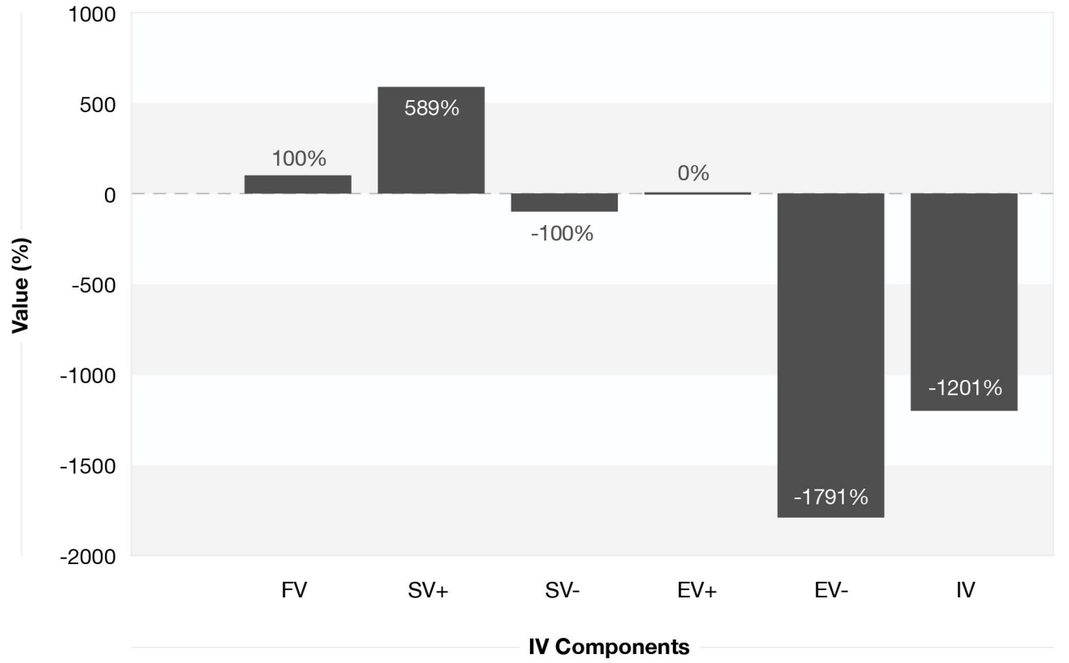
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 116,500 Kilo tons CO2eq, Scope 3: 6,500 Kilo tons CO2eq	206[24]/ ton CO2eq	-25,338.0	Scope 1 + 2: 100%, Scope 3: 32.0%	-24,469.36	**-359,062.2**
Input factors: Scope 1: 108,000 Scope 2: 8,500 Scope 3: 6,500[25] *Calculation:* Value flow attributable to the company: [(scope 1+2) + 32% * scope 3] * shadow price = (116,500 + 32% * 6,500) * 0.206 = 24,469.36 mn				*Explanation:* In response to the global urgency of reducing carbon emissions, ArcelorMittal has launched a decarbonisation strategy targeting both its Scope 1 and Scope 2 emissions. The company aims to cut emissions by 25% by 2030 and reach net-zero by 2050. Core to this strategy is a comprehensive shift towards cleaner production methods, including Direct Reduced Iron (DRI) and Electric Arc Furnace (EAF) technologies.[26] Despite ambitious promises, ArcelorMittal does not show the potential to fulfil them. Lacking a science-based target for 2030, necessary to reach the 1.5°C goal outlined by the Paris Agreement.[27] Additionally, ArcelorMittal has not yet committed to a Scope 3 emissions reduction target. And the company shows to prioritise its finances over decarbonisation investments, which have been notably lower than dividends and share buybacks. Over the span of 10 years, ArcelorMittal has allocated only €1.8 billion to CO_2 reduction, a small fraction of its €57 billion in global investments.[28] Due to lack of investment and the definitive destructing impact of carbon emissions, impact is expected to remain negative.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Air Pollution	Dust = 33,100,000 kg, NOx = 68,300,000 kg, SOx = 110,700,000 kg	Particular Matter Formation (Dust): 71.04 / kg, NOx: 1.67 / kg, SOx: 6.35 / kg[29]	-3,168.45	100%	-3,168.45	**-75,439.3**
Input factors:[30] Air pollution from steel and mining: - Dust = 28,000,000 + 5,100,000 kg - NOx = 62,400,000 + 5,900,000 kg - SOx = 103.800,000 + 6,900,000 kg *Calculation:* Value flow: 33.1*71.04 + 68.3*1.67 + 110.7*6.35 = 3,168.45 mn				*Explanation:* ArcelorMittal claims to have air quality management as one of its priorities, addressing dust, nitrogen oxides (NOx), and sulphur oxides (SOx) emissions as critical areas of focus.[31] In 2023, some improvements are reported in air emissions intensity, with dust emissions reduced to 0.48 kg per tonne of steel, NOx emissions to 1.07 kg per tonne, and SOx emissions to 1.79 kg per tonne.[32] Nevertheless, the absolute number of emissions remains very high. Several cases highlight the negative impact ArcelorMittal has on air quality. In Kazakhstan local communities faced high levels of toxic air pollution, including PM2.5, NO2, and SO2. This exposure is estimated to have caused 3,000 deaths, hundreds of preterm births and thousands of cases of childhood asthma. Associated economic costs amount up to approximately USD 4.2 billion.[33] Additionally, a leaked environmental inspection report revealed that ArcelorMittal's steelworks in Zenica, Bosnia and Herzegovina, did not meet deadlines for pollution measures.[34] This underscores the tendency of ArcelorMittal to not 'walk the talk', leading to the expectation of a lasting negative impact.		
Water pollution	Polluted discharged water: 0,684 million (fresh) 18,87 million (sea)	Freshwater Ecotoxicity: €0.0548/kg, Marine Ecotoxicity: €0.0025/kg[35]	-84.66	100%	-84.66	**-2,015.7**
Calculation: Multiplying the polluted discharged fresh and seawater with their respective shadow prices for using scarce water and water pollution. Input data are from the factbook.[36] Water discharged: (14.5 - 11.1) * 58.1 = 197.54 million m3 Polluted water: 197.54 * 10% = 19.75 million m3 Fresh water: 19.75 * 3,5% = 0.684 Seawater: 19.75 * 96.5% = 18.87 1 m3 = 1 tonne = 1,000 kg Value flow = polluted water * shadow price = (0.684 * 1000 * 0.0548 + 18.87 * 1000 * 0.0025) = 84.66 mn				*Explanation:* For the net water consumption, it is based on 14.5 cubic meters gross water intake per ton of steel, with 11.1 cubic meters water discharged in a sustainable manner. Net water consumption is derived by subtracting sustainable discharge from gross water intake. This is multiplied by ArcelorMittal's annual steel production of 58.1 million tonnes of steel.[37] ArcelorMittal does not address water pollution in its financial or sustainability reports. However, numerous articles highlight instances where the company has been fined for polluting water resources.[38] Based on this evidence, we estimate that 10% of the water discharged during the production process is polluted.		
Waste	Waste residue to landfill: 3.24 million tonnes	298[39] / tonne	-965.52	100%	-965.52	**-22,998.6**
Input: Waste residue to landfill: 3.24 million tonnes[40] *Calculation:* Value flow: waste residue * shadow price = 3.24 million tonnes * 298 = 965.52 mn.				*Explanation:* The company has reported substantial recycling efforts. In 2023 this promise proved consistent with their statement, with ArcelorMittal recycled approximately 20 million tonnes of steel scrap, avoiding an estimated 26 million tonnes of CO_2 emissions. However, besides consistent recycling efforts, there is still a significant portion of its waste ending up in landfills amounting to 3.24 million tonnes.		
Land use / biodiversity loss	44,300 hectares	3,294.14[41]	-145.93	100%	-145.93	**-3,474.5**

Inputs and calculation: Occupied square km mines: 70 square km (14 mines[42] * 5 square km[43]) * 1.9[44] = 133 square km Occupied square km steel plants: 62 (number of facilities[45]) * 5 square km = 310 square km Total occupied: 133 + 310 = 443 square km = 44,300 hectares MSA - loss: 1 Years considered: 1 Value flow = hectares * MSA * shadow price = 44,300 * 1 * 3294.14 = 145.93 mn				*Explanation:* ArcelorMittal has operations worldwide. One of its key businesses is mining, which spans India, Liberia, Brazil, and Baffinland in the far north of the Americas. The company aims to increase self-sufficiency, provide geographic diversification to safeguard its supply chain, and increase the total output of raw materials. ArcelorMittal is dedicated to minimising its environmental impact by adopting sustainable mining practices. The company claims that it prioritises the rehabilitation of mined land and actively works to preserve biodiversity, particularly in its mining operations in sensitive areas such as the Nimba mountain range in Liberia.[46] The Saranda forests in the district of Jharkhand represent India's largest sal forests. This biome boasts remarkable biodiversity and cultural importance and serves as a crucial elephant corridor facilitating wildlife migration. This area has faced significant challenges from iron mining operations, including joint ventures by ArcelorMittal.[47] This has similarly impacted the rich wildlife and biodiversity in Nimba, Liberia.[48] Protests have also been due to their negative impact on the Baffinland Biome. The extraction and transportation of iron ore have been linked to the disruption of wildlife habitats.		
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Water usage	6.9 million Cubic meters of freshwater used (net) in m3	1.41[49] / cubic meter	-9.76	100%	-9.76	**-232.4**
Input factors:[50] 14.5 cubic meters gross water intake per ton of steel 11.1 cubic meters of water discharged in a sustainable manner 58.1 million tonnes of annual steel production Percentage of gross water intake that is freshwater: 3.5% *Calculation:* Water discharged: (14.5 - 11.1) * 58.1 = 197.54 million m3 Fresh water: 197.54 * 3.5% = 6.9 million cubic m3 Value flow = fresh water usage * shadow price = 6.9 * 1.41 = 9.76 mn				*Explanation:* ArcelorMittal relies heavily on water for its steel production processes, making efficient water management a key focus. For the net water consumption, it is based on 14.5 cubic meters gross water intake per ton of steel, with 11.1 cubic meters water discharged in a sustainable manner. Net water consumption is derived by subtracting sustainable discharge from gross water intake. This is multiplied by ArcelorMittal's annual steel production of 58.1 million tonnes of steel.[51] Freshwater percentage is derived from ArcelorMittal's annual fact sheet to derive the net water usage of ArcelorMittal.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	25.9	
Positive SV	152.4	3.29
Negative SV	-25.8	-0.56
Positive EV	0.0	0.00
Negative EV	-463.2	-28.84
IV (integrated value)	-310.7	



FV = Financial Value SV = Social Value EV = Ecological Value IV = Integrated Value

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	5.89
Existential Risk ratio	Negative externalities/FV	18.90
Futureproofing Ratio	IV/FV	-12.01

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Even though there have been several reports of human right breaches, to find credible sources to be able to quantify these are scarce. While human right breaches[52] are very serious offences, it was opted to not quantify them due to lack of data, avoiding the risk of providing a wrong estimate.
Health and Safety (local residents)	As the health & safety of local residents surrounding the workplaces of ArcelorMittal is severely linked to the air pollution in the area, it was opted to avoid double-counting and solely consider air pollution.
Impact on local communities (local cohesion + other effects)	There has been a paradox in the impact on local communities, as ArcelorMittal is a significant employer for communities. But, it also leads to air and water pollution, soil depletion and other negative effects on the surroundings. To not overstate either the positive or negative and in the absence of appropriate data, this material factor is not quantified.
Business ethics	ArcelorMittal has been involved in multiple lawsuits regarding bribery, failing to comply to local laws, or polluting communities.[53] However, to quantify the actual business ethics requires specific data to be able to quantify. Therefore, it is opted to not quantify this material issue.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Scarce materials	ArcelorMittal's business model, comparable to any steel production business, is depleting the earth of scarce materials. However, due to the specific nature of the materials being used and the absence of an appropriate shadow price, the material factor of scarce materials is not quantified.

1. Arcelor Mittal Annual Report 2023.
2. Long-Term Value, Schoenmaker and Schramade.
3. *Ibid*.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Arcelor Mittal Annual Report 2023.
6. *ArcelorMittal Reviews*, Glassdoor, 2024.
7. Arcelor Mittal Annual Report 2023.
8. Arcelor Mittal Annual Report 2023.
9. Arcelor Mittal Annual Report 2023.
10. Annex Integrated Value Methodology Notes
11. Annex: Integrated Value Methodology Notes - Note 8
12. *Fact Book 2023*, ArcelorMittal, 2024.
13. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
14. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
15. *Fact Book 2023*, ArcelorMittal, 2024.
16. *Kazakhstan mourns after ArcelorMittal mine disaster kills 45*, The Guardian, 2023.
17. Arcelor Mittal Annual Report 2023.
18. Arcelor Mittal Annual Report 2023.
19. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
20. *Italian town fighting for its life over polluting Ilva steelworks*, The Guardian, 2012.
21. *Fact Book 2023*, ArcelorMittal, 2024.
22. *World Life Expectancy*, MacroTrends, 2024.
23. *Health Status fo male steel workers at an electric arc furnace (EAF)*, Cappelletti et al., 2016.
24. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
25. *Fact Book 2023*, ArcelorMittal, 2024.
26. Arcelor Mittal Annual Report 2023.
27. *Corporate Climate Assessment 2024*, Steelwatch, 2024.
28. *ArcelorMittal: Environment offender is 2024 Olympics partner*, Hubinet et al., 2024.
29. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
30. *Fact Book 2023*, ArcelorMittal, 2024.
31. Arcelor Mittal Annual Report 2023.
32. *Fact Book 2023*, ArcelorMittal, 2024.
33. *Air quality impacts of ArcelorMittal's Temirtau steel plant in Kazakhstan—1996 to 2023*, Centre for Research on Energy and Clean Air, 2024.
34. *Leaked Report Highlights Pollution Problems at ArcelorMittal's Bosnian Steelworks*, Geoghegan et al., 2024.
35. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
36. *Fact Book 2023*, ArcelorMittal, 2024.
37. Arcelor Mittal Annual Report 2023.
38. *ArcelorMittal: Environment offender is 2024 Olympics partner*, Hubinet et al., 2024
39. *Monetary valuation of unsorted waste: A shadow price approach*, Sala-Garrido et al., 2023.
40. *Fact Book 2023*, ArcelorMittal, 2024.
41. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
42. *Fact Book 2023*, ArcelorMittal, 2024.
43. *Beyond and above the tailings standards for all mines*, Farmer, 2020.
44. ArcelorMittal states that the mining area is approximately 90% larger than the land that is being 'used' by the company. (Arcelor Mittal Annual Report 2023)
45. *Fact Book 2023*, ArcelorMittal, 2024.
46. Arcelor Mittal Annual Report 2023.
47. *Impact of Mining and Industries in Jharkhand*, Priyadarshi, 2008.
48. *LIBERIA: Global steel giant ArcelorMittal fined for pollution*, AFRIK 21, 2022.
49. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
50. *Fact Book 2023*, ArcelorMittal, 2024.
51. Arcelor Mittal Annual Report 2023.
52. *'Wrong direction': Paris NGO regrets MNC ArcelorMittal still using coal-based steel*, Rajiv Shah, 2024
53. *"So. Africa: ArcelorMittal criminally charged for environmental pollution; company comments"*, Business and Human Rights Resource centre, 2019

ASM International

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ASM International
INTEGRATED VALUE	€20.7 bn
FUTUREPROOFING RATIO	0.92
AEX FUTUREPROOF INDEX CLASSIFICATION	Lower-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€469.95
SHARES OUTSTANDING (ultimo 2023)	49.2 mn
NET DEBT	-€0.6 bn
FV (stock price * shares outstanding + net debt)	€22.6 bn

To calculate the Integrated Value of ASM International, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			209.55	50%	104.77	**4857.7**
Input factors: Sales: 2,600[1] mn, price elasticity: 2.57.[2] *Calculation*: Correction Factor = 1 + [(10 – $price\ elasticity$) * $partial\ factor$]/$price\ elasticity$ = 1+[(10-2.57)*0.5]/2.57 = 2.45.[3] Corrected consumer surplus = $sales$ / ($price\ elasticity$ * $correction\ factor$) * 0.5 = 2,600/(2.57*2.45) *0.5 = 209.55 mn.				*Explanation:* Consumer surplus is the difference between the price charged by ASM International and the price the customers are willing to pay. By providing advanced deposition equipment, ASM enables its customers to produce higher-quality semiconductors at lower costs. This competitive edge benefits both ASM's clients and end-consumers, creating significant social value and reinforcing its position as a leader in the semiconductor industry. The standard attribution factor of 50.0% is applied, as ASM International has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	14.08	2,395 / Life Satisfaction Point[4]	33.73	100%	33.73	**1,563.8**
Input factors: Number of employees (000): 4.542, Glassdoor rating: 3.4.[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.4-3.4) * 1.5 = 3.1 Total increase in life satisfaction points: 3.1 * 4,542 = 14.08				*Explanation:* Employment wellbeing reflects ASM's commitment to attracting, retaining, and developing a highly skilled workforce that enhances employees' quality of life and job satisfaction. With 4,542 employees,[6] ASM supports innovation and operational excellence in the semiconductor industry, contributing to economic stability and fostering community development in the areas where it operates.		
Corporate taxes			-18.19	100%	-18.19	**-843.2**
Input factors:[7] Corporate taxes 0.11 bn, net income before taxes: 0.87 bn, effective corporate tax rate: 17.9% *Calculation:* (Effective corporate tax rate - 20%) * (net income before taxes) = (17.9%-20%) * 0.87 = –18.19 mn				*Explanation:* The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25%[8] of taxable profit. Corporate taxes represent the company's financial contribution to public goods, such as infrastructure, healthcare, and education. ASM benefits from Dutch tax incentives and pays taxes in other jurisdictions, such as the United States, Japan, and Singapore, reflecting its global operational footprint. Its effective tax rate of 17.9% falls below the fair share range, highlighting areas for improvement in its fiscal contributions to society.		
Training	6.68 Days (in thousands)	215[9]	1.44	100%	1.44	**66.6**
Input factors: Training days (000) 6.68[10]; Shadow price: 215 *Calculation:* Training days * shadow price = 6.68 * 215 / 1000 = 1.44 mn				*Explanation:* Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. ASM has established robust training and development policies, utilising the 70-20-10 training method, which focuses on on-the-job learning, coaching, and formal courses. This is further supported by yearly 360 feedback loops and the use of the e-learning platform Harvard Management Mentor (HMM). These initiatives demonstrate ASM's strong commitment to knowledge retention and employee development.		
Health & Safety (workers)	Non-fatal: 13.0	Non-fatal: 3,946[11]	-0.05	100%	-0.05	**-2.4**
Input factors:[12] Number of incidents: Non-fatal = 13 Shadow price: Non-fatal = €3,946 *Calculation:* Value Flow = incidents × shadow price = 13 × 3,946 = 0.05 mn				*Explanation:* Health and safety are critical for ASM as it operates in the semiconductor industry, which involves complex manufacturing processes that carry inherent risks. Workplace incidents, even non-fatal ones, can lead to human suffering, reputational damage, reduced productivity, and higher insurance premiums. In 2023, ASM reported 13 non-fatal incidents, resulting in a negative value flow of €0.05 million. Ensuring employee safety aligns with global labour standards and allows ASM to maintain its reputation as an innovative and responsible employer. By investing in safety measures and regular training, ASM can reduce the risk of future incidents and foster a safer work environment.		

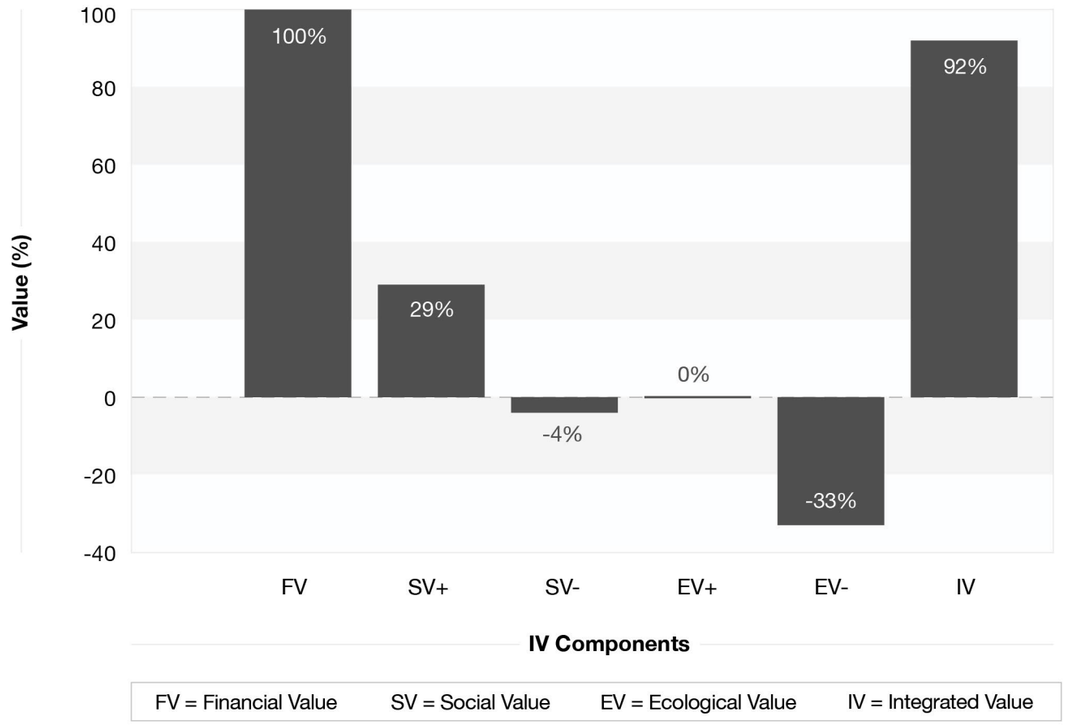
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1+2: 7.9, Scope 3: 2,750,000	206	-566.5	Scope 1+2: 100%, Scope 3 (own operations): 50%	-285.36	**-4,187.4**
Calculation: Scope 1 & 2: 7.9[13] tons Scope 3: 2,750,000 tons Shadow Price: €206/ton[14] Value flow 2023: (7.9 + 2,750,000) * 206 = 566.5 mn Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (7.9 + 50% * 2,750,000) * 206 = 285.36 mn				*Explanation*: To accurately reflect ASM's carbon reduction efforts, we use market-based results for Scope 1 and 2 emissions, highlighting their renewable energy sourcing and contractual arrangements with energy suppliers. The scope 1 & 2 emissions for 2023 are estimated to be 7.9 tons (market based). To estimate missing Scope 3 emissions data for 2020 and 2023, we relied on historical trends and available data. Using this we obtained an approximation of around 2,750,000 tonnes of CO2e in 2023, a 21.4% increase from 2022. This estimate considers ASM's Net-Zero Targets to reduce Scope 1 and 2 emissions by 50.4% by 2032 and 90% by 2035, and a 58.2% reduction in Scope 3 emissions per euro of value-added by 2032.[15]		
Water pollution	730,000	378/m3	-275.94	50%	-137.97	**-3,285**
Calculation: Total water usage of the semiconductor manufacturing industry 2023:[16] 1 billion m3 Recycling rate: 80% ASM's market share: 50% ALD share relative to the total semiconductor industry: 0.73% Value flow 2023: Total water usage (in millions) * (1 - recycling rate) * ASM's market share * ALD's share relative to total industry * Shadow Price Value flow 2023: 1000 * 0.2 * 0.5 * 0.0073 * 378 = 275.94 mn Using an attribution factor of 50%, we obtain a value flow attributable to ASM of 137.97 mn in 2023				*Explanation:* The water usage of the manufacturing of semiconductors is approximately 999.348 million m3 in FY 2022.[17] For simplicity, it assumed that this will be approximately 1 billion m3 in FY 2023, even though the real usage will likely be higher. The recycling rate is estimated at 80%, as companies such as TSMC, UMC, and VIS, have a recycling rate that exceeds 80%.[18] However, these companies tend to be industry leaders with regard to water recycling, with competitors having lower levels of water recycling, ranging from 40 to 60% water recycling levels. Therefore, a recycling rate of 80% is chosen, which means that 20% of the water usage is considered to be waste, resulting in a total of approximately 200 million m3 of water waste. ASM has an approximate 50% market share in ALD.[19] Since every step is as important as any other in the manufacturing process of semiconductors, we take the share of the sub-industry as ASM's share of total water pollution relative to the size of ALD to the whole industry. The ALD market was estimated to be US 4.46 billion in 2023,[20] relative to the whole semiconductor industry being US 611 billion.[21] Thus we use 50% and 0.73% as our factors for estimating the levels of water pollution. For simplicity, we will only focus on the two most common compounds in semiconductor wastewater.[22] Glycerol itself is generally considered to be non-toxic and does not pose any direct detrimental threat to the environment. On the contrary, Tetramethylammonium Hydroxide (TMAH) is a highly alkaline, quaternary ammonium compound, and when introduced into aquatic environments—intentionally or through accidental release—it can have several detrimental effects. TMAH is acutely toxic to many forms of aquatic organisms and has neurotoxic effects on mammals, including humans. Unfortunately, there is no shadow price available for the release of this compound into water at this moment. CE Delft (2023) offers prices for a wide variety of different compounds that share similar properties of TMAH. TMAH would be most comparable to substances that cause severe and immediate toxicity to aquatic life without necessarily accumulating to the same extent as highly persistent and bioaccumulative chemicals. We opt for organophosphorus pesticides, as they are known for their high acute toxicity to aquatic life. We chose Dichlorvos, with a central estimated shadow price of €75.6/kg.[23] This totals a shadow price of €378/m3 of wastewater, based on the minimum levels of TMAH of 5000 g/m3.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Waste	*427.4*	*260.34*	-0.11	100%	-0.11	**-2.6**
Calculation: Hazardous waste: 7.4 tons Non-hazardous waste: 420 tons Weighted average price: 7.4/427.4 * 4,820 + 420/427.4 * 180 = 260.34/ton Value flow in 2023: 427.4 * 260.34 = -€0.11 million				*Explanation:* In 2023, ASM's total landfill waste amounted to 420 tonnes, a significant increase from the 166 tonnes recorded in 2019.[24] While ASM has successfully increased the volume of waste diverted from landfills, the rising total landfill waste implies the need for further improvement in circularity. To establish the shadow price for landfill, we use the recommended rate of €180/ton.[25] We then multiply this shadow price by the amount of landfill waste in tons to obtain the monetized result. Hazardous waste from semiconductor companies consists mainly of acids, including hydrogen fluoride, nitric acid, ammonia, N-methyl-2-pyrrolidone, hydrochloric acid, nitrate compounds, and sulfuric acid. As there is no existing shadow price for calculating acids pollution. SO2 Emission, which is similar to acid pollution, is used to calculate the overall environmental negative impact of hazardous waste, resulting in a rate of €4820/ton.[26] For our integrated value, we calculated the weighted average price as €260.34/ton. This price assumes that the share of hazardous waste as a percentage of total waste remains constant over future years.			

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	22.6	
Positive SV	6.5	0.14
Negative SV	-0.8	-0.02
Positive EV	0.0	0.00
Negative EV	-7.5	-0.42
IV (integrated value)	20.7	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.29
Existential Risk ratio	Negative externalities/FV	0.37
Futureproofing Ratio	IV/FV	0.92

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Business ethics	This issue was considered for ASM, given its global operations and supply chain interactions. Risks such as corruption or ethical supply chain management could be relevant. However, due to the lack of specific and reliable data on breaches or ethical challenges, this issue could not be calculated.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Scarce materials	To estimate this value, total raw material usage values from ASM for scopes 1 and 2 and their scope 3 raw production values is needed. Alternatively, total raw material usage in the semiconductor industry is required to obtain some level of attribution, similar to that of water pollution. However, this data is unfortunately not publicly available and thus we are not able to estimate the environmental impact of scarce material usage.

1. ASM Annual Report 2023
2. Long-Term Value Site
3. *Ibid.*
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor, “ASM Reviews”, 2024
6. ASM Annual Report 2023
7. ASM Annual Report 2023
8. See Annex Integrated Value Methodology
9. Annex: Integrated Value Methodology Notes - Note 8
10. ASM Annual Report 2023
11. IWAF, IEF, 2024
12. ASM Annual Report 2023
13. ASM Annual Report 2023
14. Monetization Factors for True Pricing, 2023
15. ASM Annual Report 2022 & 2023 Estimated
16. Estimated
17. Semiconductor Digest, 2022
18. Wang et. al, 2023
19. ASM, 2024
20. Future Market Insights, 2023
21. Fortune Business Insights, 2024
22. Omar et al. 2013; Post et al. 2012; Wang et al. 2022; Teow et al. 2022
23. CE Delft, 2023
24. ASM Annual Report 2023
25. CE Delft, 2010
26. Monetization factors for true pricing, 2023

ASML Holding

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ASML Holding
INTEGRATED VALUE	€266.9 bn
FUTUREPROOFING RATIO	1.00
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€681.76
SHARES OUTSTANDING (ultimo 2023)	393.42 mn
NET DEBT	-€1.6 bn
FV (stock price * shares outstanding + net debt)	€266.7 bn

To calculate the Integrated Value of ASML, we analyzed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			2195.70	50%	1097.85	**50900.4**
Input factors: Sales: 27,600[1] mn, price elasticity: 2.57.[2] *Calculation*: Correction Factor = 1 + [(10 – $price\ elasticity$) * $partial\ factor$]/$price\ elasticity$ = 1+[(10-2.57)*0.5]/2.57 = 2.45.[3] Corrected consumer surplus = $sales$ / ($price\ elasticity$ * $correction\ factor$) * 0.5 = 27,600/(2.57*2.45) *0.5 = 2,195.7 mn.				*Explanation:* Consumer surplus is the difference between the price charged by ASML and the price the customers are willing to pay. ASML plays a market-leading role by providing highly specialised lithography machines, which are indispensable for semiconductor manufacturers worldwide. These machines enable the production of cutting-edge chips, ensuring ASML remains an essential partner in advancing global technology. The standard attribution factor of 50.0% is applied, as ASML has a primary responsibility in its value chain (measured as a company’s value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	182.39	2395 / Life Satisfaction Point	436.91	100%	436.91	**20256.6**
Input factors: Number of employees (000): 42.4, Glassdoor rating: 4.2.[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.2-3.4) * 1.5 = 4.3 Total increase in life satisfaction points: 4.3 * 42,400 = 182,390				*Explanation:* Employment wellbeing reflects ASML's dedication to providing a dynamic and supportive work environment that enhances employees' quality of life and job satisfaction. With 42,416[6] employees worldwide and its central location in Brainport Eindhoven, ASML's ability to attract and retain top-tier talent is essential for its success in the global semiconductor market.		
Corporate taxes			-445.32	100%	-445.32	**-20646.6**
Input factors:[7] Corporate taxes 1.63 bn, net income before taxes: 9.7 bn, effective corporate tax rate (over 2021-2023): 15.4% *Calculation:* (Effective corporate tax rate - 20%) * (net income before taxes) = (15.4%-20%) * 9.7 = –445.32 mn				*Explanation:* The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25%[8] of taxable profit. Corporate taxes represent the company's financial contribution to public goods, such as infrastructure, healthcare, and education. ASML, operating as a global leader in the semiconductor industry, has an effective tax rate of 15.4% over 2021 to 2023, which falls below the fair share range. This indicates a potential gap in its fiscal contributions to society.		
Training	336.12 Days (in thousands)	215[9]	72.27	100%	72.27	**3350.5**
Input factors: Training days (000) 336.12;[10] Shadow price: 215 *Calculation:* Training days * shadow price = 336.12 * 215 / 1000 = 72.27 mn				*Explanation:* Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. ASML emphasises employee development through comprehensive training programs designed to advance skills in high-tech engineering and management development (leadership). This dedication highlights ASML's role in promoting continuous learning and maintaining its position as a leader in the semiconductor industry.		
Health & Safety (workers)	Fatal: 4, Non-fatal: 82	Fatal: 3348416[11] Non-fatal: 3946	-13.72	100%	-13.72	**-636.0**
Input factors: Number of incidents:[12] Fatal = 4, Non-fatal = 82 Shadow price: Fatal = €3,348,416, Non-fatal = €3,946 *Calculation:* Value Flow = (Fatal incidents × Fatal shadow price) + (Non-fatal incidents × Non-fatal shadow price) = (4 × €3,348,416) + (82 × €3,946) = 13,393,664 + 323,572 = 13.72 mn				*Explanation:* As a leader in the semiconductor industry, ASML's operations involve advanced technology and high-risk environments, making health and safety a material issue. In 2023, ASML reported 4 fatal incidents and 82 non-fatal incidents, leading to a negative value flow of €13.72 million. Fatalities and injuries pose significant human, reputational and legal risks; and also disrupt operations. ASML's commitment to reducing workplace incidents and ensuring employee safety is crucial to sustaining productivity and aligning with global labour standards. Strengthening safety protocols and fostering a culture of accountability will be vital in mitigating these risks.		

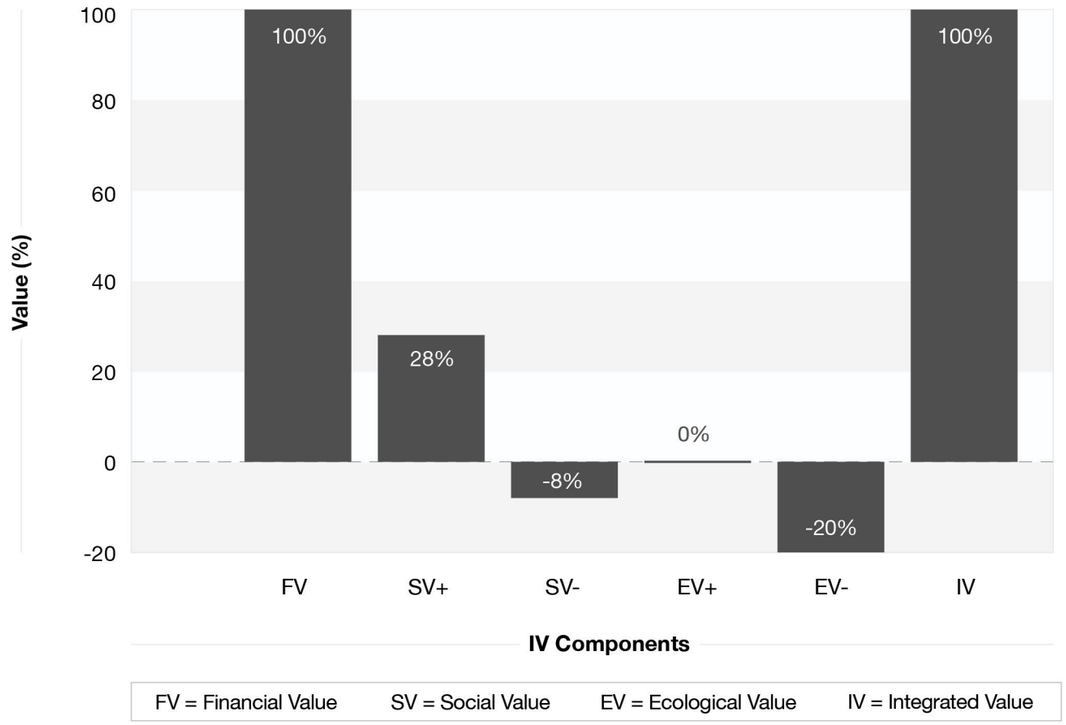
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1+2: 35.1, Scope 3: 15,025.2	206	-3,102.42	Scope 1+2: 100%, Scope 3: (own operations): 50%	-1557.49	**-22854.5**
Calculation: Scope 1 & 2: 35.1 kTon[13] Scope 3: 15,025.2 kTon[14] *Shadow Price: €206/ton*[15] Value flow 2023: (35.1 + 15,025.2) * 206 * 1000 = 3,102.42 mn Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (35.1 + 50% * 15,025.2) * 206 * 1000 = 1,557.49 mn				*Explanation:* ASML is focusing on net zero emissions for scope 1 and 2 in 2025. Scope 3 emissions are aimed to be net zero in 2025 for business travel, 2030 for supply chain and 2040 for the use of products). However, ASML reported that their scope 1 and 2 emissions went from 17.3 and 20.8 CO2 in kt to 19.2 and 15.9, which is an increase in scope 1 and a decrease in scope 2. On the contrary, their scope 3 emissions increased from 11.936,3 CO2 in kt to 15.025,2 CO2 in kt in 2023. This increase is due to the rapid growth of ASML, but they are focusing on reducing scope 3 emissions, especially in business travel and commuting.[16]		
Water pollution	6,770,000	378/m3	-2532.60	50%	-1266.30	**-30150.0**
Calculation: Total water usage of the semiconductor manufacturing industry 2023:[17] 1 billion m3 Recycling rate: 80% ASML's market share: 80%[18] Lithography share relative to the total semiconductor industry: 4.23% Quantity attributable: Total water usage (in millions) * (1 - recycling rate) * ASML's market share * lithography's share relative to total industry Quantity attributable: 1000 * 0.2 * 0.8 * 0.0423 = approximately 6.77 million Value flow 2023: 6,770,000 * 378 = -€2,532.6 Using an attribution factor of 50%, we obtain a value flow attributable of -€1266.30 million in 2023				*Explanation:* The water usage of the manufacturing of semiconductors is approximately 999.348 million m3 in FY 2022.[19] For simplicity, it assumed that this will be approximately 1 billion m3 in FY 2023, even though the real usage will likely be higher. The recycling rate is estimated at 80%, as companies such as TSMC, UMC, and VIS, have a recycling rate that exceeds 80%.[20] However, these companies tend to be industry leaders with regard to water recycling, with competitors having lower levels of water recycling, ranging from 40 to 60% water recycling levels. Therefore, a recycling rate of 80% is chosen, which means that 20% of the water usage is considered to be waste, resulting in a total of approximately 200 million m3 of water waste. ASML has an approximately 80% market share in lithography.[21] Since every step is as important as any other in the manufacturing process of semiconductors, the share of the sub-industry as ASML's share of total water pollution relative to the size of packaging and plating to the whole industry is taken. The lithography market size is estimated to be US 25.86 billion in 2023,[22] relative to the whole semiconductor industry being US 611 billion.[23] Thus we estimate 80% and 4.23% as our factors for the levels of water pollution. This market share and relative market share is multiplied by 200 million m3, from which we obtain approximately 6.77 million m3 as an indication of the scope 3 water pollution levels. For simplicity, we will only focus on the two most common compounds in semiconductor wastewater.[24] Glycerol itself is generally considered to be non-toxic and does not pose any direct detrimental threat to the environment. On the contrary, Tetramethylammonium Hydroxide (TMAH) is a highly alkaline, quaternary ammonium compound, and when introduced into aquatic environments—intentionally or through accidental release—it can have several detrimental effects. TMAH is acutely toxic to many forms of aquatic organisms and has neurotoxic effects on mammals, including humans. Unfortunately, there is no shadow price available for the release of this compound into water at this moment. CE Delft (2023) offers prices for a wide variety of different compounds that share similar properties of TMAH. TMAH would be most comparable to substances that cause severe and immediate toxicity to aquatic life without necessarily accumulating to the same extent as highly persistent and bioaccumulative chemicals. We opt for organophosphorus pesticides, as they are known for their high acute toxicity to aquatic life. We chose Dichlorvos, with a central estimated shadow price of €75.6/kg.[25] This totals a shadow price of €378/m3 of wastewater, based on the minimum levels of TMAH of 5000 g/m3.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Waste	3,807	21.71/ton	-0.08	100%	-0.08	**-2.0**
Input factors:[26] Waste diverted to disposal (incineration with energy recovery): 2,576 tons Waste diverted to disposal (incineration without energy recovery): 348 tons Waste diverted to disposal (landfill): 883 tons Shadow prices:[27] Waste diverted to disposal (incineration with energy recovery): €22.03/ton Waste diverted to disposal (incineration without energy recovery): €29.38/ton Waste diverted to disposal (landfill): €17.74/ton *Calculation* Weighted average shadow price: 2,576/3,807 * 22.03 + 348/3,807 * 29.38 + 883/3,807 * 17.74 = €21.71/ton				*Explanation:* To calculate the environmental value of waste disposal we use a comparison of landfill and incineration study from Rabl et al. (2008), as ASML reports on their different types of waste disposal. This study includes shadow price indications for different types of waste disposal based on the category (landfill or incineration) and the level of energy recovery used. For the integrated value, we apply an average shadow price of €21.71/ton, weighted for all components, assuming that the proportion of different waste diversions remains constant in future years.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	266.7	
Positive SV	74.5	1.61
Negative SV	-21.3	-0.46
Positive EV	0.0	0.00
Negative EV	-53.0	-2.82
IV (integrated value)	266.9	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.28
Existential Risk ratio	Negative externalities/FV	0.28
Futureproofing Ratio	IV/FV	1.00

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Human rights breaches were considered a potential issue for ASML due to its personnel policy, which has been under investigation for potentially discriminatory practices. In June 2023, the Dutch Committee on Human Rights ruled that ASML may lawfully reject job applicants based on nationality to comply with US export control rules. However, the Netherlands Institute for Human Rights has also launched an investigation to determine whether this policy violates human rights, particularly regarding individuals from Syria and Iran. This investigation was initiated after reports suggested that ASML's hiring practices could be seen as discriminatory. As of now, no final ruling has been issued due to the complexity of the case and administrative challenges. This issue was not included in the analysis due to the absence of a definitive ruling and the limited availability of detailed data on broader human rights impacts.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Scarce materials	To estimate this value, total raw material usage values from ASML for scopes 1 and 2 and their scope 3 raw production values is needed. Alternatively, total raw material usage in the semiconductor industry is required to obtain some level of attribution, similar to that of water pollution. However, this data is unfortunately not publicly available and thus we are not able to estimate the environmental impact of scarce material usage.

1. ASML Annual Report 2023
2. Long-Term Value Site
3. *Ibid*
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor, "ASML Reviews", 2024
6. ASML Annual Report 2023
7. ASML Annual Report 2023
8. See Annex Integrated Value Methodology
9. Annex: Integrated Value Methodology Notes - Note 8
10. ASML Annual Report 2023
11. IWAF, IEF, 2024
12. ASML Annual Report 2023
13. ASML Annual Report 2023
14. ASML Annual Report 2023
15. Monetization Factors for True Pricing, 2023
16. ASML Annual Report 2023
17. Estimated
18. This value is slightly lower than when using 80% or the reported market share according to NASDAQ in 2024. We took a slightly more conservative market share as the NASDAQ article was published mid 2024. Thus we rounded this value down, assuming ASML's market share increased between the end of FY 2023 and end of Q2 FY 2024
19. Semiconductor Digest, 2022
20. Wang et. al, 2023
21. NASDAQ, 2024
22. Fortune Business Insights, 2024
23. Fortune Business Insights, 2024
24. Omar et al. 2013; Post et al. 2012; Wang et al. 2022; Teow et al. 2022
25. CE Delft, 2023
26. ASML Annual Report 2023
27. Rabl et. al, 2008

ASR Nederland

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ASR Nederland
INTEGRATED VALUE	€162.5 bn
FUTUREPROOFING RATIO	1.08
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€42.76
SHARES OUTSTANDING (ultimo 2023)	211.15 mn
NET DEBT	€141.4 bn
FV (stock price * shares outstanding + net debt)	€150.5 bn

To calculate the Integrated Value of ASR Nederland, we analyzed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			810.31	27.3%	220.99	**10,246.1**
Input factors: - Sales: 8,800 mn[1] - Price elasticity: 0.86[2] *Calculation*: Correction Factor = 1 + [(10 − *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.86)*0.5]/0.86 = 6.31 Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 8,800 / (0.86 * 6.31) * 0.5 = 810.31 mn				*Explanation:* Consumer surplus, the difference between what consumers are willing to pay and the actual price of a product or service, is included as a material issue because it reflects the value consumers derive from a company's offerings. In ASR's case, the positive consumer surplus underscores the substantial value consumers gain from its services, even in a competitive insurance market. The attribution factor of 27.3% is based on the added value of ASR: (Insurance and fee income - Insurance and fee expenses) / (Insurance and fee income).		

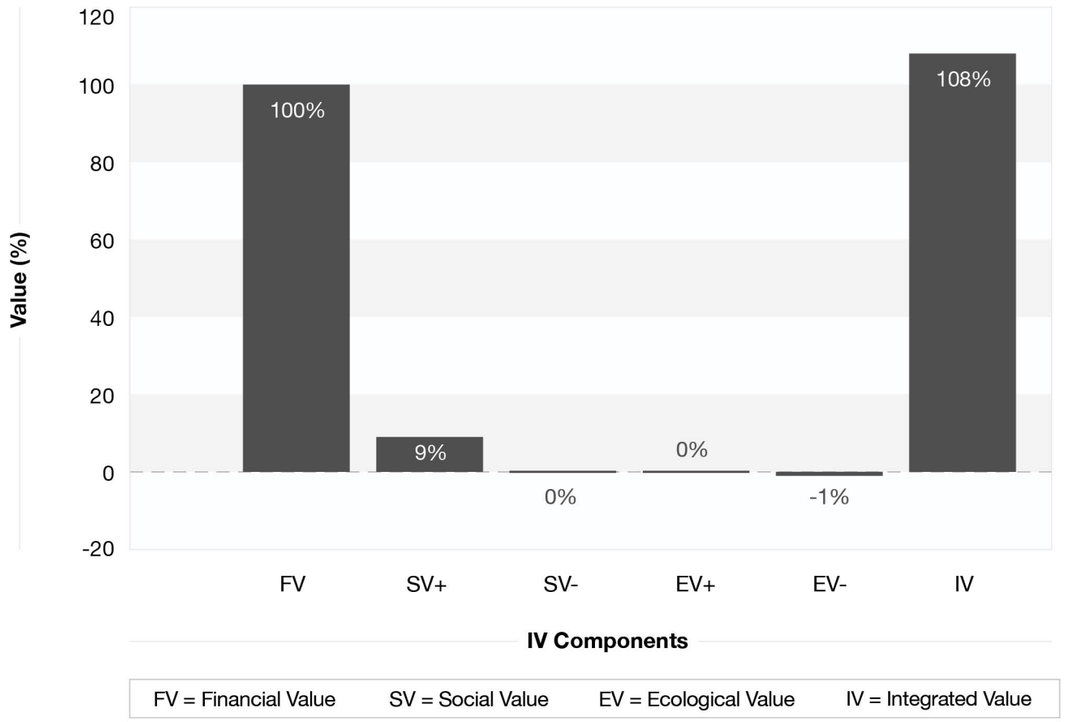
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	30,800 life satisfaction points	2,395[3]/ life satisfaction point	73.78	100%	73.78	**3,420.7**
Input factors: - Number of employees (000): 8.0[4] - Glassdoor rating: 3.9[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.9 - 3.4) * 1.5 = 3.85 Total increase in life satisfaction points: 3.85 * 8,000 = 30,800				*Explanation:* Employment wellbeing, which measures life satisfaction and financial impact compared to being unemployed, is assessed positively for ASR, highlighting its value in developed and developing markets. ASR is committed to fostering employment well-being by promoting health, preventing absenteeism, and supporting employee development. This approach not only allows employees to remain healthy and contribute to society but also enhances their opportunities in the labor market.		
Corporate taxes			0	100%	0	**0**
Input factors: - Effective corporate tax rate: 21.6%[1] Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0.				*Explanation:* Corporate taxes are a key aspect of ASR's social contribution, reflecting its role in supporting the public goods and infrastructure provided by the government. The firm has paid its fair share of taxes, defined as 20 to 25% of profit before tax.		
Training			5.60	100%	5.60	**259.6**
Input factors: - Cost of training and development programs: 5.60 mm[6] The whole cost, as reported by ASR, is treated as a positive value flow.				*Explanation:* Employee training significantly benefits society by enhancing workforce skills, boosting productivity, and driving economic growth. ASR Nederland demonstrates its firm dedication to employee development by allocating a substantial budget to training programs and learning initiatives.		
Cyber security breaches and data privacy	1.4 cyber incidents	5,339,367[7] / cyber incident	-7.25	100%	-7.25	**-336.1**
Input factors: - Number of cyber incidents in global financial industry: 3,348[8] - Assets held by ASR: €150,500 million[9] - Assets held by the global financial sector: €371 trillion[10] *Calculation:* ASR estimated cybersecurity breaches: 150.500/371,000 * 3,348 = 1.4 Value loss for ASR: 1.4 * 5.34 mn = €7.25 mn				*Explanation:* Cybersecurity and data privacy are essential for maintaining client trust and protecting sensitive information. As a leading financial services provider managing vast amounts of client data, ASR Nederland faces significant risks from cyberattacks and data breaches. Enhancing cybersecurity protocols and adhering to data protection regulations are vital to mitigating these risks.		

ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 0.6 kilo tonnes CO2eq Scope 3 (own operations): 3.3 kilo tonnes CO2eq Scope 3 (financed emissions): 7,116.5 kilo tonnes CO2eq[11]	206[12]/ ton CO2eq	-1,466.80	Scope 1 + 2: 100% Scope 3 (own operations): 27.3% Scope 3 (financed emissions): 6%	-88.42	**-1,297.5**
Inputs: - Scope 1 + 2: 0.6 kt CO2eq - Scope 3 (own operations): 3.3 kt CO2eq - Scope 3 (financed emissions): 7,116.5 kt CO2eq *Calculation:* Value loss due to emissions: [(scope 1+2) + 27.3% * scope 3 (operations) + 6% * scope 3 (financed emissions)] * shadow price = (600 + 27.3% * 3,300 + 6% * 7,116,500) * 206 = 88.42 mn				*Explanation:* As a financial service provider, ASR influences GHG emissions both directly through its operations and indirectly through its investments and insurance portfolio. While ASR's direct emissions are relatively low, its financed emissions contribute significantly to environmental impact, making them a critical area of responsibility. ASR is not yet measuring its insured emissions through its insurance portfolio.		
Land use / biodiversity loss	49,995 ha	3,294.12[13]	-65.88	27.3%	-17.97	**-427.8**
Inputs: - MSA: 0.4[14] - ABN AMRO hectares deteriorated: 30,000[15] - ASR EV (FV): 150.5 bn[1] - ABN AMRO EV (FV): 365.5 bn[19] - ASR land portfolio: 37,646 hectares[1] Pro rata estimation of ASR Nederland based on ABN AMRO plus its land portfolio. *Calculation:* Estimated number of hectares deteriorated by ASR: 30,000 * 150.5 / 365.5 = 12,349 ha Value loss due to biodiversity: 0.4 (MSA) * 3,294 * 27.3% (attribution) * (30,000 * 150.5 / 365.5 + 37,646) = 17.97				*Explanation:* Biodiversity is affected by the land use and environmental practices of companies within ASR's investment portfolios. While ASR Nederland strives to manage its lands sustainably, the land management choices made by firms in its portfolio can significantly impact biodiversity. We calculate ASR's impact through a pro rata estimation of ABN AMRO since it reported its impact on biodiversity loss. On top of that, ASR's land portfolio is included.		
Land restoration/ protection	6,000 ha	3,294.12[16]	3.95	100%	3.95	**183.3**
Inputs: - MSA: 0.2[17] - Land under biodiversity-friendly practice: 6,000 ha *Calculation:* Value flow: MSA * ha * SP (shadow price) = 0.2 * 6,000 ha * 3,294.12 = 3.95 mn				*Explanation:* ASR plays an active role in promoting biodiversity as a landowner of 37,7646 hectares. The company incentivises sustainable land management by offering financial rewards to farmers who adopt biodiversity-friendly practices on leased properties, with around 6,000 hectares under green leases dedicated to such efforts.[18] Additionally, approximately 16.5% of ASR's managed land is located near Natura 2000 sites, highlighting its potential for positive ecological impact.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	150.5	
Positive SV	13.9	0.30
Negative SV	-0.3	-0.01
Positive EV	0.2	0.00
Negative EV	-1.7	-0.11
IV (integrated value)	162.5	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.09
Existential Risk ratio	Negative externalities/FV	0.01
Futureproofing Ratio	IV/FV	1.08

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low-income people	Products and services designed to support low-income individuals could be included as a material factor, as ASR Nederland prioritises financial resilience within the insurance sector. At this moment, we have not arrived at a way of measuring this impact.
Harmful business ethics	Business ethics could be a material issue for insurers like ASR Nederland, as it underpins stakeholder trust and adherence to regulatory standards, particularly in combating financial crimes such as money laundering. For insurers, robust ethical practices are vital to ensuring compliance systems effectively mitigate risks associated with fraudulent activities.
Discrimination & inclusion (including gender)	Discrimination and inclusion could be a material issue for an insurer such as ASR. In 2023, 50% of its Management Board were women, surpassing its goal of 33% gender-diverse leaders. While this is a strong start, ASR continues to work on increasing diversity at all levels, fostering innovation, diverse perspectives, and an inclusive culture where everyone can thrive. At this moment, we have not arrived at a way of measuring this impact.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	Air pollution is a material issue for insurers like ASR. The company might influence air pollution through its financed investments. However, the data on air pollution of financed companies or investments was not available at this time.

1. *Annual report 2023*, ASR Nederland, 2024.
2. *The Price Elasticity of Demand for Whole Life Insurance*, Babbel, 1985.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Annual report 2023*, ASR Nederland, 2024.
5. *ASR Reviews*, Glassdoor, n.d.
6. *Annual report 2023*, ASR Nederland, 2024.
7. *Cost of a Data Breach Report 2024, IBM, 2024*. (Exchange rate 1.105)
8. *Number of cyber incidents in the financial industry worldwide from 2013 to 2023*, Petrosyan, 2024.
9. *Annual report 2023*, ASR Nederland, 2024.
10. *Global Banking Annual Review 2024: Attaining escape velocity*, McKinsey, 2024.
11. *Annual report 2023*, ASR Nederland, 2024.
12. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
13. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
14. The Mean Species Abundance (MSA) is assumed to be 0.4.
15. *Impact Report 2023*, ABN AMRO, 2024.
16. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
17. The Mean Species Abundance (MSA) is assumed to be 0.2 better for the nature inclusive farming.
18. *Climate and biodiversity report*, ASR Nederland, 2024.
19. *Integrated Annual Report 2023*, ABN AMRO, 2024.

BE Semiconductor Industries

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	BE Semiconductor Industries
INTEGRATED VALUE	€10.1 bn
FUTUREPROOFING RATIO	0.95
AEX FUTUREPROOF INDEX CLASSIFICATION	Lower-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€138.3
SHARES OUTSTANDING (ultimo 2023)	77.016 mn
NET DEBT	-€0.1 bn
FV (stock price * shares outstanding + net debt)	€10.6 bn

To calculate the Integrated Value of BE Semiconductor Industries, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			46.14	50%	23.07	**1069.6**
Input factors: Sales: 600[1] mn, price elasticity: 2.57.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-2.57)*0.5]/2.57 = 2.45.[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 600 / (2.57 * 2.45) * 0.5 = 46.14 mn				*Explanation:* Consumer surplus is the difference between the price charged by BE Semiconductor Industries and the price the customers are willing to pay. The company provides high-quality, durable, and innovative products that are critical for enabling its semiconductor clients to maintain their competitive edge. BESI enhances product longevity, energy efficiency, and cost savings for its clients, contributing to customer satisfaction and reinforcing its reputation as a reliable partner in the semiconductor industry. The standard attribution factor of 50.0% is applied, as BESI has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

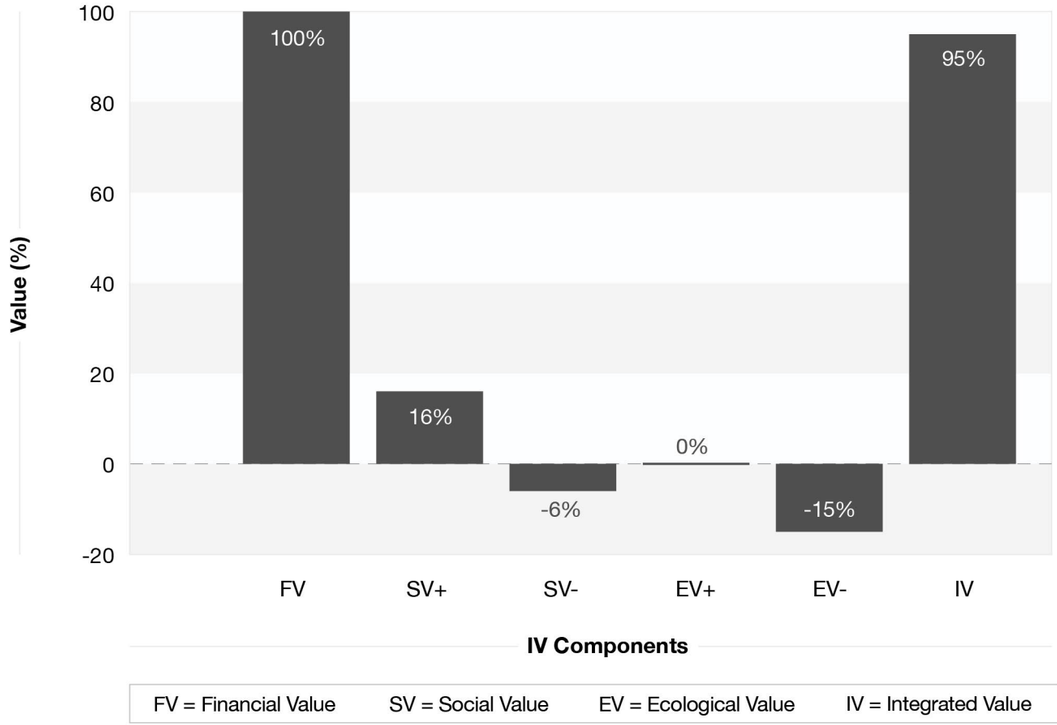
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	5.38	2395 / Life Satisfaction Point	12.89	100%	12.89	**597.7**
Input factors: Number of employees (000): 1.736, Glassdoor rating: 3.4.[5] *Calculation:* Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.4-3.4) * 1.5 = 3.1 Total increase in life satisfaction points: 3.1 * 1,736 = 5,380				*Explanation:* Employment wellbeing reflects BESI's commitment to maintaining a motivated and skilled workforce in the highly competitive semiconductor sector. With 1,736 employees, BESI prioritises employee engagement, safety, and inclusivity, ensuring job satisfaction while driving innovation and operational excellence. The company's efforts contribute to economic stability and community growth in the regions it operates.		
Corporate taxes			-13.29	100%	-13.29	**-616.0**
Input factors:[6] Corporate taxes 0.03 bn, net income before taxes: 0.21 bn, effective corporate tax rate: 13.6% *Calculation:* (Effective corporate tax rate - 20%) * (net income before taxes) = (13.6%-20%) * 0.21 = 13.29 mn				*Explanation:* Corporate taxation is a critical measure of a company's financial responsibility and contribution to public goods. BE Semiconductors has an effective tax rate of 13.6%, which is below the fair share tax range of 20%-25%.[7] This gap highlights BESI's reliance on tax incentives, emphasising the importance of balancing fiscal benefits with fair contributions to public resources.		
Training	6.73 Days (in thousands)	215[8]	1.45	100%	1.45	**67.1**
Input factors: Training days (000) 6.73;[9] Shadow price: 215 *Calculation:* Training days * shadow price = 6.73 * 215 / 1000 = 1.45 mn				*Explanation:* Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. BE Semiconductor Industries supports employee development with tailored training programs that focus on high-tech manufacturing skills, ensuring a motivated and knowledgeable workforce. This commitment underscores BESI's focus on operational excellence and innovation in the semiconductor industry.		
Health & Safety (workers)	Non-fatal: 3	Non-fatal: 3946[10]	-0.01	100%	-0.01	**-0.5**
Input factors: Number of incidents: Non-fatal = 3[11] Shadow price: Non-fatal = €3,946 *Calculation:* Value Flow = incidents × shadow price = 3 × €3,946 = 0.01 mn				*Explanation:* For BE Semiconductor Industries, health and safety are particularly important due to its role in the high-tech semiconductor equipment industry. While BESI reported only 3 non-fatal incidents in 2023, resulting in a negative value flow of €0.01 million, maintaining a safe work environment is essential for sustaining operational excellence and keeping up labour standards. Workplace injuries can impact employee morale, productivity, and BESI's reputation as a reliable partner. By prioritising safety training and ensuring compliance with global standards, BESI can continue to minimise risks and promote a safe and healthy workplace.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1+2: 5.1, Scope 3: 9.8	206	-3.07	Scope 1+2: 100%, Scope 3 (own operations): 50%	-2.07	**-30.4**
Calculation: Scope 1 & 2: 5.1 kTon[12] Scope 3: 9.8 kTon[13] Shadow Price: €206/ton[14] Value flow 2023: (5.1 + 9.8) * 206 * 1000 = 3.07 mn Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (5.1 + 50% * 9.8) * 206 * 1000 = 2.07 mn				*Explanation:* In 2023 absolute Scope 1 & 2 emissions increased from 3,755 to 5,124 tCO2 (+36%). Scope 3 emissions intensity increased from 13.6 to 17.0 tCO2e/€million revenues (+25%). Absolute Scope 3 emissions roughly equal: from 9,817 tCO2e to 9,843 tCO2e. Overall, BE Semiconductor Industries has relatively low emissions for all scopes, due to their key focus on their ESG strategy.		
Water pollution	352,000	€378/m3	-€133.06	100%	-66.53	**-1584**
Calculation: Total water usage of the semiconductor manufacturing industry 2023:[15] 1 billion m3 Recycling rate: 80% Besi's market share: 22% Packaging and Plating share relative to the total semiconductor industry: 0.8% Value flow 2023: Total water usage (in millions) * (1 - recycling rate) * Besi's market share * Packaging and Plating's share relative to total industry * Shadow Price Value flow 2023: 1000 * 0.2 * 0.22 * 0.008 * 378 = 133.06 mn Using an attribution factor of 50%, we obtain a value flow attributable to Besi of 66.53 mn in 2023				*Explanation:* The water usage of the manufacturing of semiconductors is approximately 999.348 million m3 in FY 2022.[16] For simplicity, it assumed that this will be approximately 1 billion m3 in FY 2023, even though the real usage will likely be higher. The recycling rate is estimated at 80%, as companies such as TSMC, UMC, and VIS, have a recycling rate that exceeds 80%.[17] However, these companies tend to be industry leaders with regard to water recycling, with competitors having lower levels of water recycling, ranging from 40 to 60% water recycling levels. Therefore, a recycling rate of 80% is chosen, which means that 20% of the water usage is considered to be waste, resulting in a total of approximately 200 million m3 of water waste. Besi has an approximate 22% market share in packaging and plating,[18] for simplicity, we will ignore the die attach part (in the benefit of Besi). Since every step is as important as any other in the manufacturing process of semiconductors, we take the share of the sub-industry as Besi's share of total water pollution relative to the size of packaging and plating to the whole industry. The size of packaging and plating was estimated to be around US 5.1 billion,[19] relative to the whole semiconductor industry being US 611 billion.[20] Thus we use 22% and 0.8% as our factors for estimating the levels of water pollution. For simplicity, we will only focus on the two most common compounds in semiconductor wastewater.[21] Glycerol itself is generally considered to be non-toxic and does not pose any direct detrimental threat to the environment. On the contrary, Tetramethylammonium Hydroxide (TMAH) is a highly alkaline, quaternary ammonium compound, and when introduced into aquatic environments—intentionally or through accidental release—it can have several detrimental effects. TMAH is acutely toxic to many forms of aquatic organisms and has neurotoxic effects on mammals, including humans. Unfortunately, there is no shadow price available for the release of this compound into water at this moment. CE Delft (2023) offers prices for a wide variety of different compounds that share similar properties of TMAH. TMAH would be most comparable to substances that cause severe and immediate toxicity to aquatic life without necessarily accumulating to the same extent as highly persistent and bioaccumulative chemicals. We opt for organophosphorus pesticides, as they are known for their high acute toxicity to aquatic life. We chose Dichlorvos, with a central estimated shadow price of €75.6/kg.[22] This totals a shadow price of €378/m3 of wastewater, based on the minimum levels of TMAH of 5000 g/m3.			

Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Waste	249	€458.4/ton	-0.11	100%	-0.11	**-2.7**
Calculation: Hazardous waste: 14.9 5.1 Ton[23] Non-hazardous waste: 234.1 Ton[24] Weighted average price: 14.9/249 * 4,820 + 234.1/249 * 180 = 458.4/ton Value flow in 2023: 458.4 * 249 = 0.11 mnn				*Explanation:* Since Besi does not report on their waste diversion rate (so not directed to landfill), we assumed that all their non-hazardous waste is diverted to landfill. To establish the shadow price for landfill, we use the recommended rate of €180/ton.[25] We then multiply this shadow price by the amount of landfill waste in tons to obtain the monetised result. Hazardous waste from semiconductor companies consists mainly of acids, including hydrogen fluoride, nitric acid, ammonia, N-methyl-2-pyrrolidone, hydrochloric acid, nitrate compounds, and sulfuric acid. As there is no existing shadow price for calculating acids pollution. SO2 Emission, which is similar to acid pollution, is used to calculate the overall environmental negative impact of hazardous waste, resulting in a rate of €4820/ton.[26] For our integrated value, we calculated the weighted average price as €458.4/ton. This price assumes that the share of hazardous waste as a percentage of total waste remains constant over future years.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	10.6	
Positive SV	1.7	0.04
Negative SV	-0.6	-0.01
Positive EV	0.0	0.00
Negative EV	-1.6	-0.07
IV (integrated value)	10.1	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.16
Existential Risk ratio	Negative externalities/FV	0.21
Futureproofing Ratio	IV/FV	0.95

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Business ethics	BESI's ethical risks could include fair labour practices in supply chains, anti-corruption compliance, and adherence to international regulatory standards. These areas are important for a company operating in high-tech global markets. However, no detailed or specific incidents of ethical breaches were reported.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Scarce materials	To estimate this value, total raw material usage values from BESI for scopes 1 and 2 and their scope 3 raw production values is needed. Alternatively, total raw material usage in the semiconductor industry is required to obtain some level of attribution, similar to that of water pollution. However, this data is unfortunately not publicly available and thus we are not able to estimate the environmental impact of scarce material usage.

1. BE Semiconductor Industries Annual Report 2023
2. Long-Term Value Site
3. Ibid.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. *Glassdoor*, "BE Semiconductor Reviews", 2024
6. BE Semiconductor Industries Annual Report 2023
7. See Annex Integrated Value Methodology
8. Annex: Integrated Value Methodology Notes - Note 8
9. BE Annual Report 2023
10. IWAF, IEF, 2024
11. BE Semiconductor Industries Annual Report 2023
12. BE Semiconductor Industries Annual Report 2023
13. BE Semiconductor Industries Annual Report 2023
14. Monetization Factors for True Pricing, 2023
15. Estimated
16. Semiconductor Digest, 2022
17. Wang et. al, 2023
18. S&P Global, 2024
19. Transparency Market Research, 2023
20. Fortune Business Insights, 2024
21. Omar et al. 2013; Post et al. 2012; Wang et al. 2022; Teow et al. 2022
22. CE Delft, 2023
23. BE Semiconductor Industries Annual Report 2023
24. BE Semiconductor Industries Annual Report 2023
25. CE Delft, 2010
26. Monetization factors for true pricing, 2023

DSM Firmenich

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	DSM Firmenich
INTEGRATED VALUE	€23.5 bn
FUTUREPROOFING RATIO	0.88
AEX FUTUREPROOF INDEX CLASSIFICATION	Lower-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€92
SHARES OUTSTANDING (ultimo 2023)	265.284 mn
NET DEBT	€2.5 bn
FV (stock price * shares outstanding + net debt)	€26.9 bn

To calculate the Integrated Value of DSM Firmenich, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			942.38	50%	471.19	**21,846**
Input factors: Sales: 10,600[1] mn, price elasticity: 1.28[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1.28)*0.5]/1.28 = 4.4[3] Corrected consumer surplus = *sales* / (*price elasticity * correction factor*) * 0.5 = 10,600/(1.28*4.4) *0.5 = 941M.				*Explanation*: Consumer surplus is the difference between the price charged by DSM Firmenich and the price the customers are willing to pay. The company is a global leader in nutrition, health, and sustainable living, supporting essential industries such as food, health, and personal care. Its focus on innovation and sustainable solutions enables it to meet global demand for high-quality products at competitive prices. The standard attribution factor of 50.0% is applied, as DSM Firmenich has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	111	2395[4] / Life Satisfaction Point	265.90	100%	265.90	**12,328.0**
Input factors: Number of employees (000): 30.0, Glassdoor rating: 3.8.[6] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.8-3.4) * 1.5 = 3.7 Total increase in life satisfaction points: 3.7 * 30,000 = 111,000				*Explanation*: Employment wellbeing reflects DSM Firmenich's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. Operating with a diverse workforce of 30,000 employees, the company plays a significant role in fostering economic stability and local community growth while driving innovation in the fields of nutrition, health, and sustainable living.		
Corporate taxes			0	100%	0	**0**
Input factors: Corporate taxes -0.18, effective corporate tax rate: 21.0% *Calculation*: Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0.				*Explanation*: The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit. DSM Firmenich's effective tax rate is considered within the fair share range.		
Training	27.5 Days (in thousands)	215[9] / day	5.91	100%	5.91	**274.1**
Input factors: 220.000 training hours[10] *Calculation*: Value flow = training hours / 8 hours per day = 220 / 8 = 27.5				*Explanation*: Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. DSM Firmenich demonstrates its commitment to employee development through a variety of training programs aimed at fostering innovation and leadership. This dedication indicates that the company is performing well in promoting employee training and human capital development.		
Health & Safety (workers)	Non-fatal: 161	Non-fatal: 3946[11]	-0.64	100%	-0.64	**-29.5**
Input factors:[12] Health cases: 50 Total working hours: 71,429,000 hours Total recordable incident rate per 200,000 hours (TRIR): 0.31 Shadow price per non-fatal incident: €3,946 *Calculation*: Total recordable incidents = (Total Working Hours / 200,000) * TRIR = (71,429,000 / 200,000) * 0.31 = 111 incidents Total non-fatal incidents = Health Cases + Recordable Incidents = 50 + 111 = 161 incidents Value Flow = Total Non-Fatal Incidents * Shadow Price per Incident = 161 * €3,946 = €0.64 million				*Explanation*: In 2023, occupational health and safety remained a critical issue for DSM-Firmenich due to the significant social and economic costs associated with workplace incidents. Injuries and illnesses can lead to decreased productivity, higher insurance premiums, legal risks, and reputational damage. Ensuring employee safety aligns with global labor standards and mitigates the risks of both fatal and non-fatal incidents, which can disrupt operations and increase long-term costs. DSM-Firmenich measures occupational health and safety using the Total Recordable Incident Rate (TRIR), a key indicator of workplace safety. In 2023, the reported TRIR exceeded the company's safety goal, signaling underperformance in this area. Many of the recorded incidents were attributed to individual behaviour and awareness, emphasising the need for improved training programs. Additionally, ensuring consistent implementation of safety standards across DSM's global operations presents ongoing challenges and highlights agency problems. Addressing these gaps is essential for fostering a safer work environment and reducing the overall social impact of workplace incidents.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health Effects (on consumers) pos			1443.80	50%	721.90	**33,469.9**
Calculation: Healthcare Savings = Regional Healthcare Costs * Market Share * Reduction Rate Europe: €120 billion * 2.69% * 5% = €161.4 mn US: €60 billion * 2.52% * 5% = €75.6 mn Asia: €744 billion * 1.92% * 5% = €715.68 mn Latin America: €120 billion * 2.22% × 5% = €133.32 mn Total Healthcare Savings: €161.4 + €75.6 + €715.68 + €133.32 = €676.37 mn Productivity Gains = Total Reach * % with Reduced Absenteeism * Value per Workday = €63.95 * 20% * €60 = €767.40 mn Value flow = total impact = €676.37 + €767.40 = 1443.8 mn				*Explanation*: The health effects of DSM-Firmenich's products are significant because they create direct societal value by improving public health and economic outcomes. In 2023, the company generated €5.308 billion in sales across its health-related divisions, with a global reach of approximately 63.95 million people annually. This reach was calculated using DSM-Firmenich's market share in key regions—Europe (35%), US (23%), Asia (27%), and Latin America (15%)—and regional population data. The company's positive impact is measured through two main contributions: i) Reduction in healthcare costs: DSM-Firmenich's products help mitigate malnutrition-related hospitalisations, which represent substantial healthcare costs globally. Using market share data and healthcare cost estimates for Europe (€120 billion), the US (€60 billion), Asia (€744 billion), and Latin America (€120 billion), DSM-Firmenich's products are assumed to reduce these costs by 5%. This results in a total healthcare savings of €676.37 million annually. ii) Increased productivity: By improving health, DSM-Firmenich's products reduce absenteeism, with 20% of consumers experiencing one less day of missed work annually. Using a value of €60 per workday, productivity gains amount to €767.4 million annually. Combining these two effects, the total societal value created is €1,443.77 million annually, which reflects the company's substantial impact on public health and economic productivity.	
Health Effects (on consumers) neg			-1757.80	50%	-878.90	**-40,749.0**
Input factors:[14] Sales in 2023: €5.308 billion across health-related divisions. Europe (35%), US (23%), Asia (27%), and Latin America (15%). Healthcare Costs Related to Processed Food: Europe (€70 billion), US (€87.5 billion), Asia (€162.75 billion), Latin America (€70 billion) *Calculation*: Processed food costs = Regional Cost * Market Share * Product Contribution Rate For example, Processed food costs in Europe = €70 billion * 2.69% * 30% = €564.9 million annually. Aggregating across all regions: Value Flow = (Processed food costs in Europe + US + Asia + Latin America) = 1,757.8 mn				*Explanation*: DSM-Firmenich's products also have negative health impacts due to their use in processed foods, which are linked to health issues like obesity. Approximately 30% of the company's products are utilised in processed foods, making this a material issue for the company's societal impact. Using regional healthcare cost data related to processed foods, DSM-Firmenich's market share in each region, and the product contribution rate, the annual costs attributable to processed foods are calculated. For example, in Europe, DSM-Firmenich's sales of approximately €1.8 billion represent a 2.69% market share of the €68.9 billion nutritional market. Applying this market share and the 30% product contribution rate to the €70 billion healthcare costs associated with processed foods results in annual costs of €564.9 million. Similar calculations are conducted for the US, Asia, and Latin America, where the healthcare costs linked to processed foods are estimated at €87.5 billion, €162.75 billion, and €70 billion, respectively. By aggregating the results across all regions, DSM-Firmenich's processed food-related contributions to healthcare costs amount to €1,757.8 million annually.	

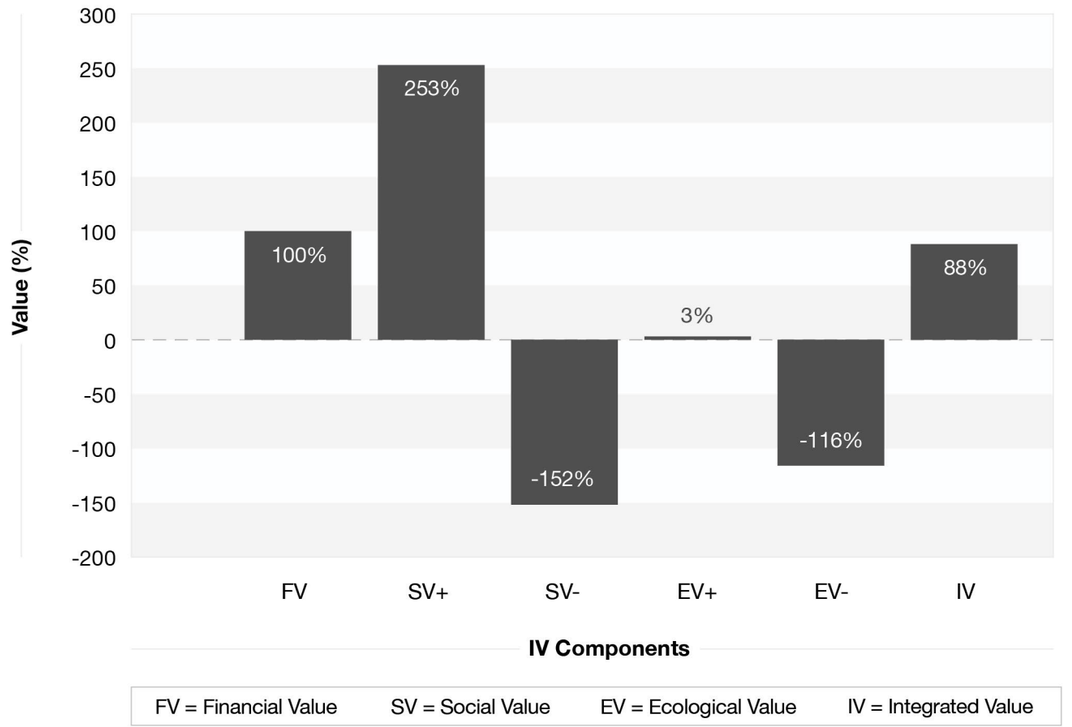
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1+2: 915, Scope 3: 9,996	206	-2247.67	Scope 1+2: 100%, Scope 3: 50%	-1220.24	**-17,905.8**
Input factors:[15] *Scope 1: 606,000* *Scope 2: 309,000* *Scope 3: 9,996,000* *Calculation:* Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (915 + 50% * 9,996) * 206 = 1,220.24 mn				*Explanation*: DSM-Firmenich has committed to achieving Net-Zero carbon emissions by 2045, with its targets aligned with the Science Based Targets initiative as of 2024[16]. Significant progress has already been made, with both DSM and Firmenich reducing their carbon emissions relative to 2016 and 2017 levels. These reductions are primarily driven by energy efficiency improvements and the increased use of renewable energy. As part of this commitment, DSM-Firmenich has pledged to purchase 100% of its electricity from renewable sources. Despite these efforts, DSM-Firmenich's greenhouse gas (GHG) emissions remain a critical environmental factor, as they contribute to the greenhouse effect.		
Air Pollution	VOC = 2,700,000 kg, NOx = 600,000 kg, SOx = 20,000 kg[17]	VOC: 1.76 / kg[18] NOx: 1.67 / kg[19] SOx: 6.35 / kg[20]	-5.88	100%	-5.88	**-140.0**
Input factors: - VOC = 2,700,000 kg - NOx = 600,000 kg - SOx = 20,000 kg *Calculation:* Value flow: 2,700,000*1.76 + 600,000*1.67 + 20,000*6.35 = 5.88 mn				*Explanation*: DSM Firmenich recognises the multifaceted negative effects of air pollution, including its impact on human health and the environment. Air pollution contributes to respiratory and other diseases, increases ecotoxicity across terrestrial, freshwater, and marine ecosystems, and leads to nitrogen deposition, disrupting biogeochemical flows. Through its operations, the company is responsible for emissions of volatile organic compounds (VOCs), nitrogen oxides (NOx), and sulfur oxides (SOx). Sulfur oxide emissions primarily result from the combustion of fossil fuels, while nitrogen oxide emissions are linked to vehicle emissions and the use of inorganic fertilizers in supply chains related to Nutrition, Health & Sustainable Living, and Animal Nutrition. Despite its focus on sustainability, DSM Firmenich's activities highlight the environmental and societal costs of air pollution.		
Water pollution	3.0	1.16	-3.47	100%	-3.47	**-82.7**
Input factors: water polluted reported in COD at 3 kt; shadow price of €1.157/kg COD[21] *Calculation:* Value flow = 3.0 * 1.157 = 3.47 mn				*Explanation*[22]: In 2023, DSM Firmenich treated only 12% of its wastewater, discharging the remaining 88% untreated into the environment. With no historical data available, it is difficult to assess progress in wastewater management. The company does not provide comprehensive information or specific examples of improvements in this area within its financial or sustainability reports. This lack of transparency, combined with the high percentage of untreated discharge, raises concerns about its environmental impact on freshwater and marine ecosystems. DSM Firmenich must enhance its wastewater management and reporting to align with sustainable practices and mitigate its contribution to water pollution.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Waste	Non-reusable hazardous waste: 12.5 Kilo tons, Non-reusable non-hazardous waste: 14.9 Kilo tons[23]	Hazardous waste: 38.80[24] / kg, Non- hazardous waste: 3.88[25] / kg	-542.81	100%	-542.81	**-12,924.1**
Input factors: - Total non-reusable hazardous waste: 12.5 Kilo tons - Total non-hazardous waste: 14.9 Kilo tons *Calculation:* Value flow = waste * shadow price = 12.5*38.80 + 14.9*3.88 = 542.18 mn				*Explanation*[26]: Waste is a material factor for DSM due to its operations in the food, nutrition, and materials industries, which generate significant by-products and waste streams. The company actively works to reduce waste through circular economy initiatives, such as recycling and repurposing materials, to minimize its environmental footprint. However, challenges remain in fully eliminating (hazardous and non-hazardous) waste, making it a critical area for sustainability efforts.		
Water usage	5.80	1.41	-8.19	100%	-8.19	**-195.0**
Calculation: 5.8 m3 of net water consumption[27] Value flow = 5.8 * SP fresh water use per ton (€1.41) = -8.19 mln (1 m3 = 1 tonne)				*Explanation*: DSM Firmenich relies heavily on water for its operations, particularly in water-stressed regions, making efficient water management critical. In 2023, 33.2% of the company's facilities were located in areas with significant water scarcity. While DSM Firmenich has made investments in water efficiency and recycling processes, there is still a need to further reduce net water consumption and engage stakeholders in these vulnerable regions.		
GHG emission reduction	100	206	20.64	80%	16.51	**765.4**
Input factors:[28] GHG emission reduction = 100 kt of CO_2 *Calculation:* Value Flow attributable to DSM = 100 * 206 * 80% = 16.51 mn				*Explanation*: Bovaer is a feed supplement developed by DSM-Firmenich to tackle one of agriculture's most challenging climate issues: methane emissions from cattle. By inhibiting an enzyme involved in methane production during digestion, Bovaer can reduce emissions by up to 30% in dairy cattle and 45% in beef cattle, offering a scalable solution to a major contributor to global warming. In 2023, Bovaer contributed to a global reduction of approximately 100,000 metric tons of CO_2e emissions. DSM-Firmenich, as the producer and distributor of Bovaer, is credited with 80% of this reduction, equivalent to 80,000 tons of CO_2e. The environmental value of this impact is monetised using a shadow price of €206 per ton of CO_2e, resulting in a positive value flow of €16.51 million. This highlights Bovaer's transformative role in reducing agricultural methane emissions and underscores DSM-Firmenich's pivotal contribution to scalable climate solutions. By enabling farmers to lower their environmental footprint, the company reinforces its commitment to addressing pressing global sustainability challenges.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	26.9	
Positive SV	67.9	1.46
Negative SV	-40.8	-0.88
Positive EV	0.77	0.02
Negative EV	-31.2	-1.78
IV (integrated value)	**23.5**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	2.55
Existential Risk ratio	Negative externalities/FV	2.68
Futureproofing Ratio	IV/FV	0.88

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Child labor within Egypt's jasmine industry, part of DSM Firmenich's supply chain, was considered as a potential issue. According to various reports, children may be involved in agricultural tasks, raising significant ethical and social concerns. While suppliers bear the primary responsibility for addressing this issue, DSM Firmenich is expected to play an active role in monitoring and mitigating such risks across its supply chain. However, this issue was not included in the analysis due to the lack of reliable and verifiable data. The available information is based on assumptions and estimates that cannot be substantiated with sufficient accuracy. This creates significant limitations in quantifying the actual impact or DSM Firmenich's responsibility. The potential presence of child labor highlights the importance of improving transparency and traceability in supply chains. Enhanced reporting and engagement with suppliers and local organizations would allow for a more robust assessment in the future, ensuring that such critical issues are addressed effectively and comprehensively.
FACTOR	MATERIALITY ESTIMATE
Scarce materials	DSM Firmenich usesscarce materials. However, due to the specific natu of the materials being used and the absence of an appropriate shadow price, the material factor of scarce materials is not quantified.

1. DSM Firmenich Integrated Annual Report 2023
2. Long-Term Value Site
3. *Ibid*.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor, "DSM Firmenich Reviews", 2024
6. DSM Firmenich Annual Report 2023
7. DSM Firmenich Annual Report 2023
8. See Annex Integrated Value Methodology
9. Annex: Integrated Value Methodology Notes - Note 8
10. DSM Firmenich Annual Report 2023
11. IWAF, IEF, 2024
12. DSM Firmenich Annual Report 2023
13. Flynn, 2023
14. DSM Firmenich Annual Report 2023
15. DSM Firmenich Annual Report 2023
16. DSM Firmenich Annual Report 2023
17. DSM Firmenich Annual Report 2023
18. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
19. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
20. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
21. Thuy et al. (2024)
22. DSM Firmenich Annual Report 2023
23. DSM Firmenich Annual Report 2023
24. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
25. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
26. DSM Firmenich Annual Report 2023
27. DSM Firmenich Annual Report 2023
28. McKinsey, 2023

Heineken

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Heineken
INTEGRATED VALUE	-€64.0 bn
FUTUREPROOFING RATIO	-0.94
AEX FUTUREPROOF INDEX CLASSIFICATION	Laggard

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€91.94
SHARES OUTSTANDING (ultimo 2023)	565.43 mn
NET DEBT	€16.5 bn
FV (stock price * shares outstanding + net debt)	€68.5 bn

To calculate the Integrated Value of Heineken, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			3,466.67	50%	1,733.33	**80,363.6**
Input factors: Sales: 36,400[1] mn, price elasticity: 0.50[2] *Calculation*: Correction Factor = 1 + [(10 − *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.5)*0.5]/0.5 = 10.5[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 36,400 / (0.5 * 10.5) * 0.5 = 3,466.67 mn				*Explanation*: Assessing whether Heineken provides its consumers a greater value than they are already paying and less than what they are paying for, their consumer surplus, is materially relevant as it underscores other social value factors. With a wide range of products and services that go beyond consumption and capturing consumers willingness to pay, Heineken has proven to provide a positive consumer surplus. The standard attribution factor of 50.0% is applied, as Heineken has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	399,310 life satisfaction points	2,395[4] / Life Satisfaction Point	956.53	100%	956.53	**44,348.3**
Input factors: number of employees (000): 89.7[5], Glassdoor rating: 4.3[6] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.3-3.4) * 1.5 = 4.45 Total increase in life satisfaction points: 4.45 * 89,700 = 399,310				*Explanation*: At Heineken, health and employment well-being are considered a key priority. Employment well-being can be described as: "additional well-being experienced by employees resulting from their employment at the organization". Heineken has set up the so-called HEI-Life framework, in which four dimensions of well-being are being addressed: social, physical, professional, and emotional.		
Corporate taxes	[redacted]		0	100%	0	**0**
Input factors: corporate taxes (mn): 120, effective corporate tax rate: 25.0%[7] Between the Fair Tax Rate Bracket of 20%-25%[8], therefore the value flow is 0.				*Explanation*: Heineken is subject to a variety of tax laws and pays taxes in 70 countries worldwide. Heineken seeks to minimise adverse effects on its operations and financial performance while balancing its tax responsibilities with its long-term corporate objectives.		
Training	70 days (in thousands)	215[9] / day	15.05	100%	15.05	**697.8**
Input factors: 560,000 hours of formal training[10] *Calculation*: 560,000 Hours of Training / 8 Hours (Work Day) = 70,000 Days of Training Value flow: number of training days * shadow price = 70 * 215 = 15.05 mn				*Explanation*: Heineken emphasises the learning and growth of its employees, teams, and the organisation as a whole. The company is committed to investing in the training and development of its workforce, adopting the 70-20-10 approach to learning. This model highlights that about 70% of learning is derived from on-the-job experiences and practice, 20% comes from engagement, networking, and interactive dialogue, while the remaining 10% is gained through formal training and structured courses. In 2023, Heineken's dedication to employee development was evident, as its employees received 560,000 hours of formal training. This significant investment in training not only boosts individual employee skills but also enhances the overall productivity and effectiveness of the organisation.		
Health & Safety (workers)	Fatal incidents: employees: 2, Contractors: 1 Non-fatal incidents: employees 1,073, contractors: 198	Fatal: 3,348,416[11] Non-fatal: 3,946[12]	-15.06	100% employees 50% contractors	-13.00	**-602.5**
Input factors:[12] Fatal incidents (employees): 2, Fatal incidents (contractors): 1 Non-fatal incidents (employees): 1,073 Non-fatal incidents (contractors): 198 Shadow Prices: fatal: 3,348,416, non-fatal: 3,946 *Calculation*: Value Flow attributable to Heineken = fatal accidents * shadow price + non-fatal accidents * shadow price = (2 + 1 * 50%) * 3,348,416 + (1,073 + 198 * 50%) * 3,946 = 13.00 mn				*Explanation*: Enforcing employee protection rights and providing them with a safe production environment to operate in, reflects in Heineken's reputation as a responsible employer. Understanding whether a company's number of fatalities or injuries is high or low can shed light on its core social obligations. Our assessment finds Heineken's performance to be negative in this regard, due to the number of reported incidents that have a material impact on society and integrated value.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health Effects on Consumers	Americas 88.4 mn liters of beer Europe 76.4 liters of beer Africa Asian Pacific 77.8 liters of beer[14]	US shadow price: 4.75 / liter Europe shadow price: 1.69 / liter Africa Asian Pacific shadow price: 0.845 / liter [15]	-14,600.48	50%	-7,300.24	**-228,132.5**
Input factors: Consolidated 242.6 mn hectoliters of beer produced in 2023, with regional split as follows Americas: 88.4 mn hectoliters Europe: 76.4 mn hectoliters Africa Asian Pacific: 77.8 mn hectoliters Correction factor (binge drinking): 25%[16] Correction factor (alcohol-free beer): 5%[17] *Calculation*: Value Flow: liters of beer * shadow price * correction binge drinking * correction alcohol-free = (88.4 * 4.75 + 76.4 * 1.69 + 77.8 * 0.845) * 100 (hectoliter) * 25% * (1 - 0.05) = 14,600.48 mn				*Explanation*: Damage due to alcohol consumption poses a significant societal issue and a crucial business challenge for a company like Heineken, due to the growing awareness of the health risks associated with alcohol, companies like Heineken face increasing pressure to balance profitability with accountability. Besides health-related issues, alcohol consumption also contributes to economic productivity losses and higher crime rates, adding to its societal impact.[18] The goal of Heineken is to drive the conversation on responsible consumption and support initiatives that reduce harmful drinking. The company offers consumers more options through its 0.0 portfolio of beer and cider brands while empowering them with clear, transparent product information.		

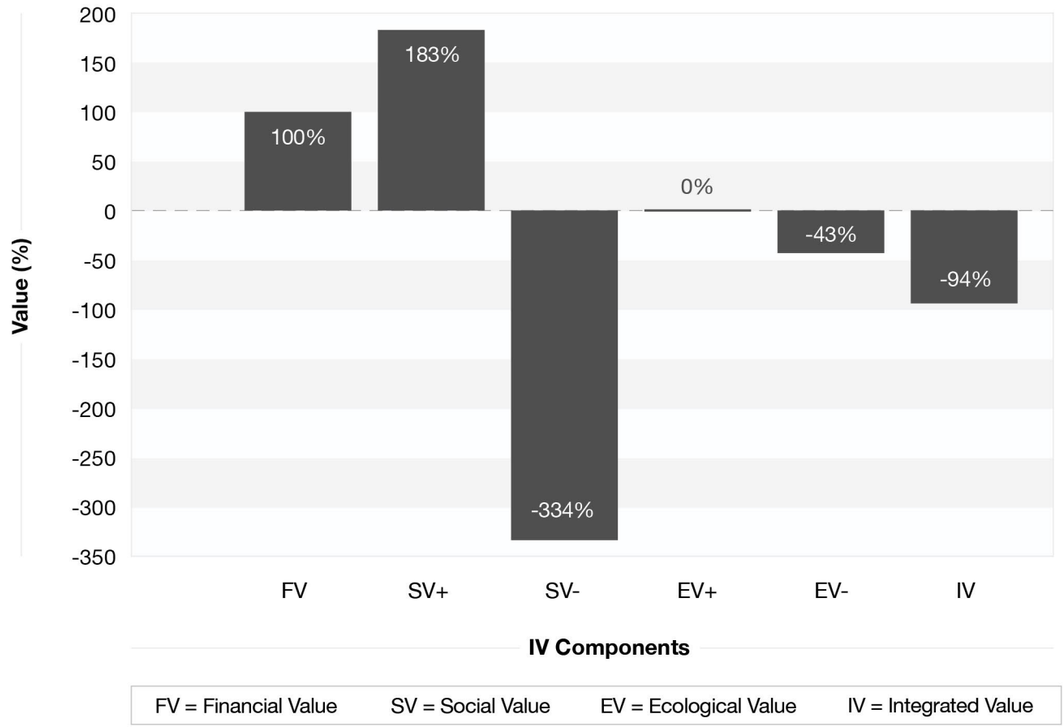
ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 1,200.0 kilo tons CO2eq, Scope 3: 14,100.0 kilo tons CO2eq	206[12] / ton CO2eq	-3,151.80	Scope 1 + 2: 100%, Scope 3 (own operations): 50.0%	-1,702.41	**-24,981.0**
Input factors:[20] Scope 1 + 2: 1,200.0 kilo tons CO2eq Scope 3 (own operations): 14,100.0 kilo tons CO2eq *Calculation:* Value Flow attributable to the company: [(scope 1+2) + 50% * scope 3] * shadow price = (1,200 + 14,100 * 50%) * 206 = 1,702.41 mn				*Explanation*: As part of its "Brew a Better World" strategy, Heineken wants to reach overall net zero emissions by 2040 in its entire value chain and 2030 in its production processes, with their targets being approved by the Science Based Targets initiatives (SBTi). As a mid-way point, they want to reach net zero in scope 1 and 2 as well as reduce 21% of scope 3 emissions by 2030. Moreover, since 2021 the company has increased the number of employees working on the net zero carbon agenda, created new training programs to educate on climate change, and started working with advocacy groups that can influence policymakers. But Heineken needs to do more in their efforts since it only reduced scope 1 & 2 emissions by 34% and 20% of scope 3 since 2018 but considering the importance placed in annual reports on carbon emission reductions, its progress is steady. Therefore, given that the production of all of Heineken's core products is a result of manufactured goods that require raw inputs such as hops, water, and energy, we conclude that carbon emissions are the most material environmental factor for Heineken.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Air Pollution	26,690,000 kg NOx[21]	NOx: 1.67 / kg[22]	-44.44	100%	-44.44	**-1,058.2**
Input factors: - NOx: 26,690,000 kg *Calculation:* Value flow: pollution in mn kg * shadow price = 26.69 * 1.67 = 44.44 mn				*Explanation*: Air pollution refers to the release of pollutants into the air. Specifically, pollutants that are detrimental to human health and the planet. Like many other sectors, the brewing industry is responsible for emitting pollutants. These pollutants have harmful effects on the environment and human health.		
Waste	63.00 Thousands of Tons	298[23] / ton	-18.77	100%	-18.77	**-447.0**
Input factors: 63,000 ton of landfill waste[24] *Calculation:* Value Flow = 63,000 * 298 = 18.77 mn				*Explanation*: The production of a popular beverage such as beers or ciders implies the existence of large-scale consumer and production waste. With 4.5 million tons of waste generated in 2021, management of waste is an additional key material factor in our integrated valuation. Reviewing their commitments to recycling waste in the production chains, Heineken shows to be very proactive as they are reaching goals in recyclable or reusable formats of their products every year towards their 2030 goals. Furthermore, a slower development is seen in the waste going to landfills as some land-fill free sites were not land-fill free due to lack of proper waste management.		
Land Use / Biodiversity Loss	163,529 hectares used	3,294.12[25] / ha	-215.47	50%	-107.74	**-2,565.2**
Input factors: 163,529 hectares used[26] MSA: 0.4[27] *Calculation:* Value Flow = 163,529 * 0.4 * 3,294.12 = 215.47 mn				*Explanation*: Land use is another significant material factor for Heineken, given the company's direct involvement in malt production—a key ingredient in brewing. Malt production relies heavily on barley, a crop that can contribute to environmental stress through intensive land use, water consumption, and potential soil degradation. To address these concerns, Heineken has committed to sourcing 100% of its ingredients sustainably by 2030, focusing specifically on barley and hops. In Algeria, Heineken has taken additional steps by collaborating with local partners on a sustainable agriculture project aimed at supporting local farmers.		
Water Usage	3.36 mn m3	1.41[28] / cubic meter	-4.74	100%	-4.74	**-112.9**
Input factors: 3.36 million cubic meters of water used[29] Shadow price fresh water use per cubic meter (€1.41) *Calculation:* Value Flow: water use * shadow price = 3.36 mn * 1.41 = 4.74 mn				*Explanation*: Water is one of the essential brewing ingredients. Therefore, the usage of water is especially important, specifically in water-scarce regions. As the report states that most of the water is being used to grow crops, we believe that the efficient management of water in water-stressed areas is of material issue in our integrated value analysis. From an initial impression, their average water usage globally is 3.2 hl/hl compared to the 2008 benchmark of 5.0, showing positive progress but leaving room for improvement.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	68.5	
Positive SV	125.4	2.70
Negative SV	-228.7	-7.31
Positive EV	0.0	0.00
Negative EV	-29.2	-1.88
IV (integrated value)	**-64.0**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	1.83
Existential Risk ratio	Negative externalities/FV	3.77
Futureproofing Ratio	IV/FV	-0.94

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Heineken is committed to upholding human rights across its global operations and supply chain. The company has established clear policies and guidelines to prevent human rights abuses, including forced labor, child labor, and unfair working conditions. Heineken conducts regular audits and requires its suppliers and partners to adhere to these strict human rights standards. Additionally, the company engages in partnerships and initiatives that promote human rights awareness and improvement within the industry.
Underpayment in Value Chain	Heineken strives to ensure fair compensation practices throughout its value chain. The company works closely with suppliers to ensure that wages meet at least the legal or industry minimum standards in their respective regions. Heineken's commitment extends to supporting programs that improve the livelihoods of smallholder farmers and workers in its supply chain, such as through agricultural training and fair-trade practices, helping to raise incomes and stabilize economic conditions for those involved in their production processes.
Discrimination & Inclusion	Heineken places a high priority on promoting diversity and inclusion within its workforce and broader activities. The company has implemented policies to ensure equal opportunity and non-discrimination in hiring, promotions, and daily operations. Heineken actively works to create an inclusive culture that celebrates diversity across all levels of the company, including gender, race, ethnicity, and sexual orientation, through various programs and initiatives aimed at fostering an inclusive environment.
Impact on Local Communities	Heineken recognises its significant role in the local communities where it operates. On the one hand, alcohol consumption could contribute to enjoyment and wellbeing (but with negative health effects as calculated). On the other hand, Heineken invests in community development projects that address local needs such as education, water access, and health care. Heineken also supports economic development through local sourcing and employment opportunities. Environmental conservation efforts are part of its community strategies, aiming to minimise the company's operational impacts on local environments and improve the quality of life for community members. Heineken's community engagement strategies are tailored to reflect the unique characteristics and needs of each locality, ensuring that its presence brings positive changes and sustainable benefits.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Soil Pollution	Heineken addresses soil pollution by advocating for sustainable agriculture in its supply chain. The company promotes the use of environmentally friendly farming practices among its barley, hops, and other raw material suppliers. These practices include reducing the use of harmful pesticides and fertilizers that can lead to soil contamination, and encouraging crop rotation and other soil health-enhancing techniques. This not only minimizes soil pollution but also improves soil fertility and reduces erosion, contributing to the overall sustainability of the agriculture sector involved in their production process.
Water Pollution	Heineken is committed to reducing water pollution across its operations. This commitment includes optimising water use in brewing and ensuring that wastewater discharged from its breweries meets or exceeds regulatory standards. Heineken invests in advanced water treatment facilities and technologies that minimize the release of pollutants into local water bodies. The company also engages in water conservation initiatives, recognizing that reduced water usage lessens the potential for water pollution.
Waste Management & Recycling	Heineken emphasises effective waste management and recycling as part of its sustainability goals. The company focuses on reducing waste at its production facilities by reusing and recycling materials wherever possible. For instance, spent grains from the brewing process are often repurposed as animal feed or compost, diverting significant amounts of waste from landfills. Heineken also collaborates with partners to improve packaging sustainability, including increasing the use of recycled materials in its cans and bottles and reducing the overall material used in packaging to decrease waste output. These efforts are aligned with Heineken's broader environmental objectives to mitigate its ecological footprint and promote a more sustainable and circular economy.

1. Heineken Annual Report 2023.
2. *Long-Term Value*, Schoenmaker and Schramade, 2024.
3. Ibid.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Heineken Annual Report 2023.
6. *Heineken Reviews*, Glassdoor, 2024.
7. Heineken Annual Report 2023.
8. See Annex Integrated Value Methodology notes
9. Annex: Integrated Value Methodology Notes - Note 8
10. Heineken Annual Report 2023.
11. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
12. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
13. Heineken Annual Report 2023.
14. Heineken Annual Report 2023.
15. See Annex Integrated Value Methodology.
16. Binge drinking contributes around three-quarters to the total societal costs of alcohol consumption. Since Heineken strongly advertises responsible drinking, we take a conservative approach by not attributing the societal costs of binge drinking. Hence, we apply a correction factor of 0.25 (i.e., only 25% of the effects of alcohol are taken into account)
17. 5% of total beer sold being non-alcoholic: Heineken Annual Report 2023.
18. *What are the Economic Costs to Society Attributable to Alcohol Use? A Systematic Review and Modelling Study.*, Manthey et al., 2021.
19. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
20. Heineken Annual Report 2023.
21. Heineken Annual Report 2023.
22. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
23. *Monetary valuation of unsorted waste: A shadow price approach*, Sala-Garrido et al., 2023.
24. Heineken Annual Report 2023.
25. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
26. Approximately 163,529 hectares of land would be required to grow enough barley to produce 695 kilotonnes of malt (2023 production, Heineken Annual Report 2023), assuming an average yield of 5 tonnes per hectare and an 85% conversion rate to malt.
27. The Mean Species Abundance (MSA) is assumed to be 0.4.
28. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
29. To quantify water usage by Heineken, we assume that each of the 168 sites produces 1.4 mn hl of beer annually (242.2 mn hl beer production / 168 sites). With 32 sites in water stressed areas, the beer production in water stressed areas accounts for 44.8 mn hl of beer production and scarce water usage of 134.3 mn hl (Heineken Annual Report 2023). 90% of Heineken's water usage stems from growing crops. We will thus apply a 25% rate on the scarce water usage to account for the water usage in its supply chain, attributing only 33.6 mn hl of scarce water usage directly to Heineken, equal to 3.36 mn m3.

IMCD

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	IMCD
INTEGRATED VALUE	€16.1 bn
FUTUREPROOFING RATIO	1.58
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€157
SHARES OUTSTANDING (ultimo 2023)	57.0 mn
NET DEBT	€1.3 bn
FV (stock price * shares outstanding + net debt)	€10.2 bn

To calculate the Integrated Value of IMCD, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

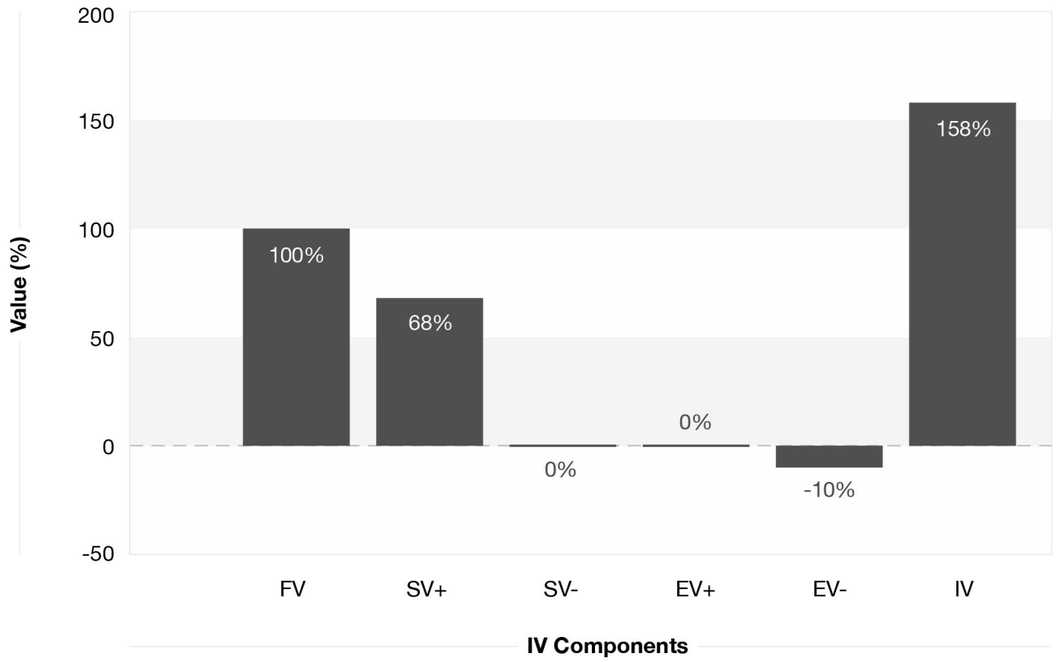
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			372.08	25.7%	95.72	**4,437.8**
Input factors: Sales: 4,440[1] mn, price elasticity: 1.91[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1.91)*0.5]/1.91 = 3.12[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 4440 / (1.91 * 3.12) * 0.5 = 372.08 mn				*Explanation*: IMCD enables worldwide customers to have access to specialty chemicals and is invested in its relationship with customers to provide the best solutions for every situation. Through its distribution networks, it provides valuable services at a lower cost than could ultimately be charged, leading to a positive consumer surplus. The attribution factor of 25.7% is based on the added value of IMCD: (Revenue - COGS) / Revenue.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	16.81 (000)	2,395[12]	40.27	100%	40.27	**1867.3**
Input factors: Number of employees (000): 4.736, Glassdoor rating: 3.7[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.7-3.4) * 1.5 = 3.55 Total increase in life satisfaction points: 3.55 * 4.7 = 16.81 (000)				*Explanation*: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. Operating in different countries and employing more than 4700 people globally, the company supports economic stability and local community growth.		
Corporate taxes			11.28	100%	11.28	**523.0**
Input factors[6]: Corporate taxes 110 mn, net income before taxes: 403.1 mn, effective corporate tax rate: 27.8% *Calculation*: (Effective corporate tax rate - 20%) * (net income before taxes) = (27.8%-25%) * 403.1 mn = 11.28 mn				*Explanation*: To assess whether IMCD contributes to tax fairness and delivers a positive or negative social value, we examine whether the effective tax rate of IMCD falls below the fair share tax rate range of 20% to 25%. The tax share exceeds 25%, therefore representing a positive social value flow for society for the excess percentage.		
Training	8.2 (000) days	215[8] / day	1.76	100%	1.76	**81.7**
Input factors: 13.85 training hours per employee[9] Number of employees: 4,736 *Calculation*: (13.85 * 4,736) / 8 = 8.2 (000) days				*Explanation*: IMCD is dedicated to training its employees, to reach their maximum potential. This is highlighted through the 13.85 training hours on average per employee. The training of employees is assessed as a positive social value.		
Health & Safety (workers)	Fatal injuries: 0 Non-fatal injuries: 11	Fatal: 3,348,416 Non-fatal: 3,946	-0.04	100%	-0.04	**-2.0**
Input factors:[10] Fatal injuries: 0 Non-fatal injuries: 11 *Calculation*: Value flow = injuries * shadow price = 0 * 3,348,416 + 11 * 3,946 = 0.04 mn				*Explanation*: Despite increased precautions described by IMCD, multiple employees have been injured in activities that are work-related. IMCD has shown improvement by 30% reduction in injury rates compared to 2022[11].		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1+2 emissions: 12.4 kilo tonnes Scope 3 emissions: 374.8 kilo tonnes	206[12] / ton CO2eq	-79.76 mn	Scope 1 + 2: 100% Scope 3 (own operations): 25.7%	-22.41	**-328.8**
Input factors:[13] Scope 1+2 emissions: 12.4 kilo tonnes Scope 3 emissions: 374.8 kilo tonnes *Calculation:* Value flow: [(scope 1+2) + scope 3] * shadow price = (12.4 + 374.8) * 206 = 79.76 mn Value flow attributable to IMCD: 12.4 * 206 + 25.7% * 374.8 * 206 = 22.41 mn				*Explanation*: IMCD claims to decrease its GHG emissions and is an advocate of supply chain decarbonisation. Year on year, it has decreased its GHG emissions by 2%[14], setting a positive trend but still has room for improvement. Scope 3 emissions are attributed according to the value added by IMCD.		
Air Pollution	VOC = 910 * 60.7% = 552.4 tons, NOx = 70 * 60.7% = 42.5 tons, SOx = 30 * 60.7% = 18.2 tons	VOC: 1.76 / kg[15] NOx: 1.67 / kg[16] SOx: 6.35 / kg[17]	-1.16	100%	-1.16	**-27.6**
Input factors: As IMCD does not provide data on air pollution, we apply pro rata from AkzoNobel VOC: 910 tonnes NOx: 70 tonnes SOx: 30 tonnes Enterprise value AkzoNobel: 16.8 bn Enterprise value IMCD: 10.2 bn *Calculation:* Pro rata factor is EV IMCD / EV Akzo = 10.2 / 16.8 = 60.7% Value flow: pollution * shadow price = 910*60.7%*1.76 + 70*60.7%*1.67 + 30*60.7%*6.35 = 1.16 mn				*Explanation*: IMCD is an intermediary for specialty chemicals and therefore does not report on its own air pollution factors. However, as it is contributing to air pollution, the values of AkzoNobel are pro-rata applied to IMCD to reflect the role IMCD has in air pollution. Air pollution is a material factor due to emissions of volatile organic compounds (VOCs), nitrogen oxides (NOx), and sulfur oxides (SOx) from IMCD's suppliers' production processes and energy use. The company has implemented measures to reduce VOC emissions, aligning with stricter environmental regulations and improving air quality. However, significant challenges remain in mitigating NOx and SOx emissions, which are associated with energy consumption and raw material processing. Despite efforts to adopt cleaner technologies, the current impact on reducing air pollution is insufficient. Therefore, the contribution to air pollution is negative.		
Waste	Hazard waste (non-reusable) = 0.523 kt Non-hazardous waste (non-reusable) = 1.87 kt	38.8/ kg 3.88/ kg[19]	-27.55	100%	-27.55	**-655.9**
Input factors:[20] Hazard waste (non-reusable) = 0.523 kilotonnes Non-hazardous waste (non-reusable) = 1.87 kilotonnes *Calculation:* Value flow = waste * shadow price = 0.523 * 38.8 + 1.87 * 3.88 = 27.55 mn				*Explanation*: Although IMCD does not produce significant amounts of waste as intermediary, it applies a responsible waste management approach to its operations.		
Water Usage	6.3 (000) m3	1.41[21] / m3	-0.01	100%	-0.01	**-0.2**
Input factors: Water consumption in the company's operations: 6,300 cubic meters[22] *Calculation:* Value flow: water usage * shadow price = 6.3 * 1.41 / 1000 = 0.01 mn				*Explanation*: IMCD indicates it understands the value of scarce water and is actively promoting water-saving within the company and its suppliers. However, it also stresses the issue is not very material to the company as it is mainly used for its own facilities and internal processes[23]. Nevertheless, the water usage of IMCD has a negative overall material value flow.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	10.2	
Positive SV	6.9	0.15
Negative SV	-0.002	-0.00004
Positive EV	0.0	0.00
Negative EV	-1.1	-0.05
IV (integrated value)	**16.1**	



FV = Financial Value	SV = Social Value	EV = Ecological Value	IV = Integrated Value

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.68
Existential Risk ratio	Negative externalities/FV	0.10
Futureproofing Ratio	IV/FV	1.58

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & inclusion (including gender)	Due to unavailability of data to make appropriate estimates of discrimination & inclusion materiality, this issue was not quantified.
Health & Safety (local residents)	As IMCD is mainly a distributor of specialty chemicals and does not produce them themselves, there is little data on the specialty chemicals, the volumes, and their potential effects on local residents. Therefore, this material issue was not quantified.
Business Ethics	There was not sufficient data found, nor an appropriate method to quantify the business ethics of IMCD.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Water Pollution	IMCD's own operations have relatively low water usage and therefore water pollution. However the specialty chemicals distributed via IMCD have a significant water usage. However, due to lack of data on the speciality chemicals and the suppliers, this material issue could not be quantified.
Land use/ biodiversity loss	Chemicals are known to harm nature and therefore have a role in land use and biodiversity loss. The quantification of the effects of the chemicals is a complicated method that requires specific data that is not available for IMCD. Therefore, this issue was not quantified.

1. IMCD Annual Report 2023
2. Long-Term Value Site
3. *Ibid*.
4. IMCD Annual Report 2023
5. Glassdoor, "IMCD Reviews", 2024
6. IMCD Annual Report 2023
7. Annex Integrated Value Methodology Notes
8. Annex: Integrated Value Methodology Notes - Note 8
9. IMCD Annual Report 2023
10. IMCD Annual Report 2023
11. Idem
12. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
13. IMCD Annual Report 2023
14. IMCD Annual Report 2023
15. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
16. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
17. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
18. AkzoNobel Annual Report 2023
19. *"Environmental prices handbook"*, CE Delft, 2024
20. IMCD Annual Report 2023
21. *"Environmental prices handbook"*, CE Delft, 2024
22. IMCD Annual Report 2023
23. IMCD Annual Report 2023

ING Groep

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	ING Groep
INTEGRATED VALUE	€991.6 bn
FUTUREPROOFING RATIO	1.02
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€13.5
SHARES OUTSTANDING (ultimo 2023)	3,343.6 mn
NET DEBT	€923.4 bn
FV (stock price * shares outstanding + net debt)	€968.6 bn

To calculate the Integrated Value of ING Groep, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			5,712.86	34.0%	1,944.17	**90,138.7**

Input factors: Sales: 57,300[1] mn, price elasticity: 0.03[2]

Calculation: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.03)*0.5]/0.03 = 167.17

Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 57,300 / (0.03 * 167.17) * 0.5 = 5,712.86 mn

Explanation: Consumer wellbeing is included because it reflects the economic and social value created by ING's financial services. A central measure of this is consumer surplus, defined as the difference between the price consumers are willing to pay and the actual price they pay. In the financial industry, consumer surplus is generally positive and serves as an indicator of market benefits. The relationship between the price elasticity of demand and consumer surplus is crucial in assessing wellbeing. Price elasticity measures how demand responds to price changes, with lower elasticity indicating higher consumer loyalty and greater surplus. For ING, a price elasticity of 0.03 suggests significant market power and consumer trust. ING enhances consumer wellbeing through tailored, innovative digital financial services that cater to diverse needs. These factors highlight ING's role in creating meaningful benefits for its consumers, making consumer wellbeing a key material issue. The attribution factor of 34.0% is based on the added value of ING: (Interest and fee income - Interest and fee expenses) / (Interest and fee income).

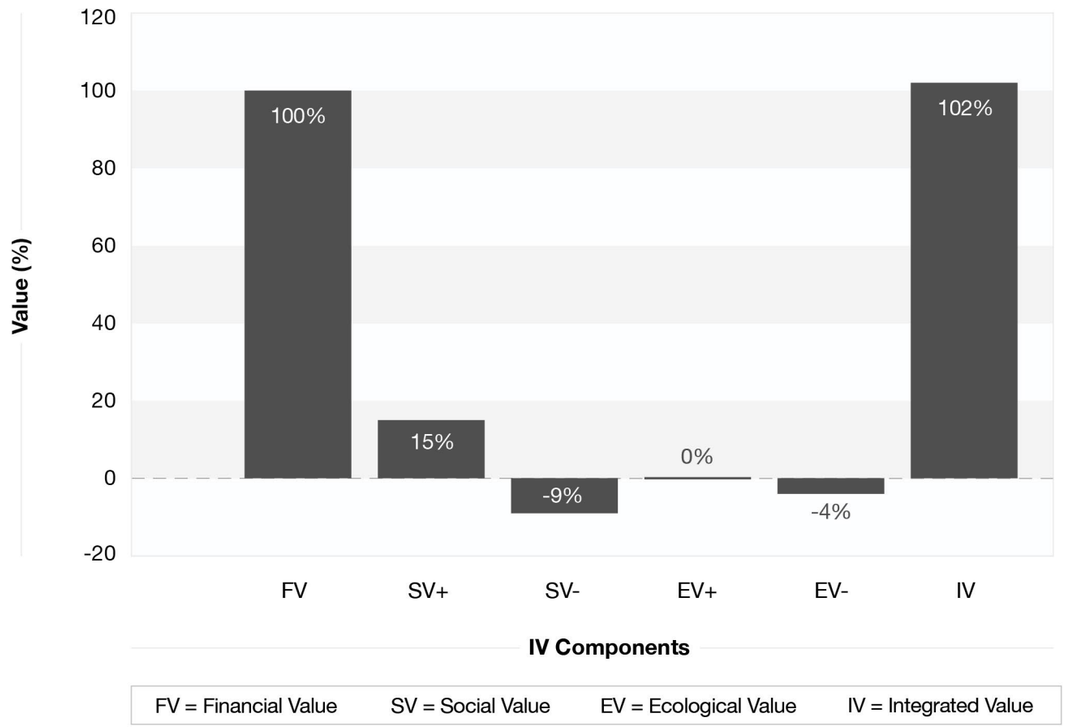
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	255,570 Life Satisfaction Points	€2,395 / Life Satisfaction Point[3]	612.20	100%	612.20	**28,383.9**
Input factors: Number of employees (000): 59.4[4], Glassdoor rating: 4.2.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.2-3.4) * 1.5 = 4.3 Total increase in life satisfaction points: 4.3 * 59,400 = 255,570				*Explanation*: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. ING positively contributes to employment wellbeing by fostering a supportive and engaging workplace. The company emphasises employee satisfaction through initiatives that promote personal and professional growth, diversity, and work-life balance. High employee satisfaction levels reflect ING's commitment to creating a positive and productive work environment, demonstrating its role in enhancing overall employee wellbeing.		
Corporate taxes			429.27	100%	429.27	**19,902.5**
Input factors:[4] - Effective tax rate: 29.1% - Net Income before taxes: 10.5 bn - Corporate taxes: 2.97 bn Since the tax rate paid is higher than 25%, the value flow is positive. *Calculation*: (29.1% - 25%) * (10.5 bn) = 429.27 mn				*Explanation*: The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit. ING Group says they "seek to establish and maintain an open and constructive dialogue with local TA's"[6]. And this seems to be the case when looking at the reported effective tax rate, which constitutes the company paying their 'fair share'. They also pay a so-called 'top-up tax' to operations in countries where the effective tax rate is below 15%.		
Training			106.01	100%	106.01	**4,914.8**
Input factors: - ING Enterprise Value (FV): 968.6 bn[4] - ABN AMRO EV (FV): 365.5 bn[22] - ABN AMRO training value flow: €40.0 mn[22] Pro rata estimation of ING based on ABN AMRO. *Calculation*: ING EV (FV) / ABN AMRO EV (FV) * ABN AMRO training value flow = 968.6 / 365.5 * 40.0 = 106.01 mn				*Explanation*: ING contributes positively to workforce development by prioritising training and skill enhancement for its employees. Training initiatives focus on equipping employees with the necessary skills to adapt to a dynamic business environment, fostering professional growth and innovation. By investing in training programs, ING not only enhances employee capabilities but also strengthens its long-term competitiveness, highlighting its commitment to employee development. As ING does not report how much it spends on training, relative valuation to the contribution on this factor by ABN AMRO is conducted.		
Cyber security breaches and data privacy	8.8 cyber incidents	5,339,367[7] / cyber incident	-47.00	100%	-47.00	**-2,179.2**
Input factors: - Number of cyber incidents in global financial industry: 3,348[8] - Assets held by ING: €975,583 million[9] - Assets held by the global financial sector: €371 trillion[10] *Calculation*: ING estimated cybersecurity breaches: 975.583/371,000 * 3,348 = 8.8 Value loss for ING: 8.8 * 5.34 mn = €47.00 mn				*Explanation*: ING invests heavily in data security and privacy measures to protect customer information. Despite ongoing efforts, financial institutions like ING face significant risks, including cyberattacks and system failures. ING has suffered recently from system failures, other consumers could access someone else's bank account. Cybersecurity is one of the top issues for ING as shown in their annual report as the materiality factor with the 3rd largest impact on the bank.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Harmful business ethics			-5,219.42	34.0%	-1,776.24	**-82,353.1**
Input factors: - Total amount of money laundering in the Netherlands: €16 billion annually, of which 49% is attributed to banks[11] - Market share ING: 20.0%[12] - Correction foreign business ING: 30.0%[13] *Calculation*: Annual value loss linked to ING: (16,000 * 49.0%* 20.0%) / 30.0% = €5,219.42 mn				*Explanation*: Business ethics remain a critical challenge for ING, particularly in maintaining regulatory compliance and addressing issues like fraud and money laundering. The bank faced significant reputational damage following a €775 million settlement in 2018 for failures in its anti-money laundering processes.[14] While ING has implemented governance frameworks and internal controls to address these issues, past incidents and ongoing concerns continue to impact stakeholder trust. As a result, the contribution to business ethics is negative. The amount of money laundering that is calculated based on market share, is lowered by an attribution factor of 34.0% as the bank is used by criminals outside of ING for money laundering.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 14.0 kt CO2eq Scope 3 (own operations): 15.0 kt CO2eq Scope 3 (financed emissions): 192,459.5 kt CO2eq[15]	206[16] / ton CO2eq	-39,652.63	Scope 1 + 2: 100% Scope 3 (own operations): 34.0% Scope 3 (financed emissions): 6%	-2,386.81	**-35,023.9**
Calculation: Value loss due to emissions: (14 kt + 15 kt * 34% + 192,459.5 kt * 6%) * 206 / 1000 (units) = 2,386.81 mn				*Explanation*: In addition to the operational emissions of financial institutions, it is necessary to include their financed emissions. Apart from generating a significant amount of emissions, the bank is also undertaking a role to make an impact to change towards a low-carbon economy by 2027 having at least 150 billion euros a year focused on transitioning clients' business models towards being sustainable. They also aim to grow renewable energy financing to 7.5 billion a year by the end of 2025.		
Land use / biodiversity loss	79,502 ha	3,294.12[17]	-104.76	34%	-35.65	**-848.8**
Input factors: - MSA: 0.4[18] - ABN AMRO hectares deteriorated: 30,000[19] - ING EV (FV): 968.6 bn[20] - ABN AMRO EV (FV): 365.5 bn[21] Pro rata estimation of ING based on ABN AMRO. *Calculation:* Value loss due to biodiversity: 0.4 * 3,294 * 34% * 30,000 * 968.6 / 365.5 = 35.65 mn				*Explanation*: Biodiversity is impacted through the land occupation of ING and its operations. Based on the ING 2023 annual report's materiality matrix, ING classifies its effect on biodiversity as lower impact with a lower likelihood. Moreover, ING's annual report does not specify its monetized units of impact on biodiversity in further detail. Nevertheless, the overall impact of ING on biodiversity is considerable.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	968.6	
Positive SV	143.3	3.09
Negative SV	-84.5	-1.82
Positive EV	0.0	0.00
Negative EV	-35.9	-2.42
IV (integrated value)	**991.6**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.15
Existential Risk ratio	Negative externalities/FV	0.12
Futureproofing Ratio	IV/FV	1.02

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low-income people	Products and services designed to support low-income individuals could be a material issue for a bank like ING, as it focuses on promoting financial inclusion and resilience. ING addresses the needs of financially vulnerable clients by offering tailored banking products, such as affordable loans and savings accounts, that provide essential services at accessible rates to help improve their financial stability. At this moment, we have not arrived at a way of measuring this impact as there is no research on a shadow price, and ING does not report how much it spends on these initiatives.
Discrimination & inclusion (including gender)	Diversity and inclusion could be material issues for ING, as they impact both customer trust and employee satisfaction. ING has faced legal challenges related to customer discrimination, highlighting the importance of addressing bias in its services. At this moment, we have not arrived at a way of measuring this impact.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	Air pollution could be a material issue for ING, impacting both the environment and public health. ING's financing and investment activities may influence industries that contribute to air pollution, making it important for the bank to align with sustainability goals and reduce exposure to high-pollution sectors. The data on air pollution of financed companies or investments was not available at this time.

1. *Annual Report 2023*, ING Group, 2024.
2. *Interest Rate Elasticity of Bank Loans: The Case for Sector-Specific Capital Requirements*, Hense, 2015.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Annual Report 2023*, ING Group, 2024
5. *ING Reviews*, Glassdoor, 2024.
6. *Annual Report 2023*, ING Group, 2024.
7. *Cost of a Data Breach Report 2024*, IBM, 2024. (Exchange rate 1.105)
8. *Number of cyber incidents in the financial industry worldwide from 2013 to 2023*, Petrosyan, 2024.
9. *Annual Report 2023*, ING Group, 2024.
10. *Global Banking Annual Review 2024: Attaining escape velocity*, McKinsey, 2024.
11. *From recovery to balance*, De Nederlandsche Bank, 2022.
12. *Major banks in the Netherlands*, TheBanks.eu, n.d.
13. *Annual Report 2023*, ING Group, 2024.
14. *ING pays 775 million due to serious shortcomings in money laundering prevention*, Netherlands Public Prosecution Service, 2018.
15. *Annual Report 2023*, ING Group, 2024.
16. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
17. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
18. The Mean Species Abundance (MSA) is assumed to be 0.4.
19. *Impact Report 2023*, ABN AMRO, 2024.
20. *Annual Report 2023*, ING Group, 2024.
21. *Integrated Annual Report 2023*, ABN AMRO, 2024.
22. *Integrated Annual Report 2023*, ABN AMRO, 2024.

KPN

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	KPN
INTEGRATED VALUE	€33.4 bn
FUTUREPROOFING RATIO	1.82
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€3.12
SHARES OUTSTANDING (ultimo 2023)	3947.42 mn
NET DEBT	€6.1 bn
FV (stock price * shares outstanding + net debt)	€18.4 bn

To calculate the Integrated Value of KPN, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			485.61	50%	242.81	**11257.4**
Input factors: Sales: 5,400[1] mn, price elasticity: 1.12[2] *Calculation*: Correction Factor = 1 + [(10 − *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1.12)*0.5]/1.12 = 5.0.[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 5,400 / (1.12 * 5.0) *0.5 = 485.61 mn.					*Explanation*: Consumer surplus is the difference between the price charged by KPN and the price the customers are willing to pay. This is a key factor for KPN, as it reflects the company's impact on customer satisfaction and loyalty, which are critical in the telecommunications industry. By offering value-driven broadband and mobile services, KPN enhances consumer surplus and strengthens its position in the market. The standard attribution factor of 50.0% is applied, as KPN has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).	

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	40.35	2395 / Life Satisfaction Point[4]	96.67	100%	96.67	**4481.9**
Input factors: Number of employees (000): 9.724, Glassdoor rating: 4.1.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.1-3.4) * 1.5 = 4.15 Total increase in life satisfaction points: 4.15 * 9,724 = 40,350				*Explanation*: Employment wellbeing reflects KPN's commitment to fostering a supportive and inclusive work environment that enhances employees' quality of life and job satisfaction. With 9,724 employees, the company emphasises collective labour agreements, mental health initiatives, and training programs, recognising that employee satisfaction directly impacts productivity and retention while supporting economic growth and stability in its markets.		
Corporate taxes			0	100%	0	**0**
Input factors: Corporate taxes 0.25 bn, net income: 0.8 bn, effective corporate tax rate: 22.5%[5] *Calculation*: Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0.				*Explanation*: The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit. Corporate taxes represent the company's financial contribution to public goods, such as infrastructure, healthcare, and education. KPN reported an effective corporate tax rate of 22.5% in 2023, which falls within the fair share range.		
Training	97.97 Days (in thousands)	215[8]	21.06	100%	21.06	**976.6**
Input factors: Training days (000) 97.97[9]; Shadow price: 215 *Calculation*: Training days * shadow price = 97.97 * 215 / 1000 = 21.06 mn				*Explanation*: Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. KPN demonstrates its commitment to employee development through targeted training programs aimed at improving technical and digital skills essential for the telecommunications industry. This dedication highlights KPN's role in fostering workforce innovation and adaptability.		
Health & Safety (workers)	Non-fatal: 39.9	Non-fatal: 3946[10]	-0.16	100%	-0.16	**-7.3**
Input factors: Number of incidents: Non-fatal = 39.9[11] Shadow price: Non-fatal = €3,946 *Calculation*: Value Flow = incidents × shadow price = 39.9 × 3,946 = 0.16 mn				*Explanation*: As a telecommunications leader, KPN operates in a dynamic industry where employee safety is essential to ensure operational continuity and service reliability. In 2023, KPN reported 39.9 non-fatal incidents, resulting in a negative value flow of €0.16 million. Workplace injuries not only lead to financial costs but also impact employee morale and retention. By implementing proactive safety measures and fostering an inclusive culture of well-being, KPN can mitigate these risks and align with global labour standards to ensure a productive and resilient workforce.		

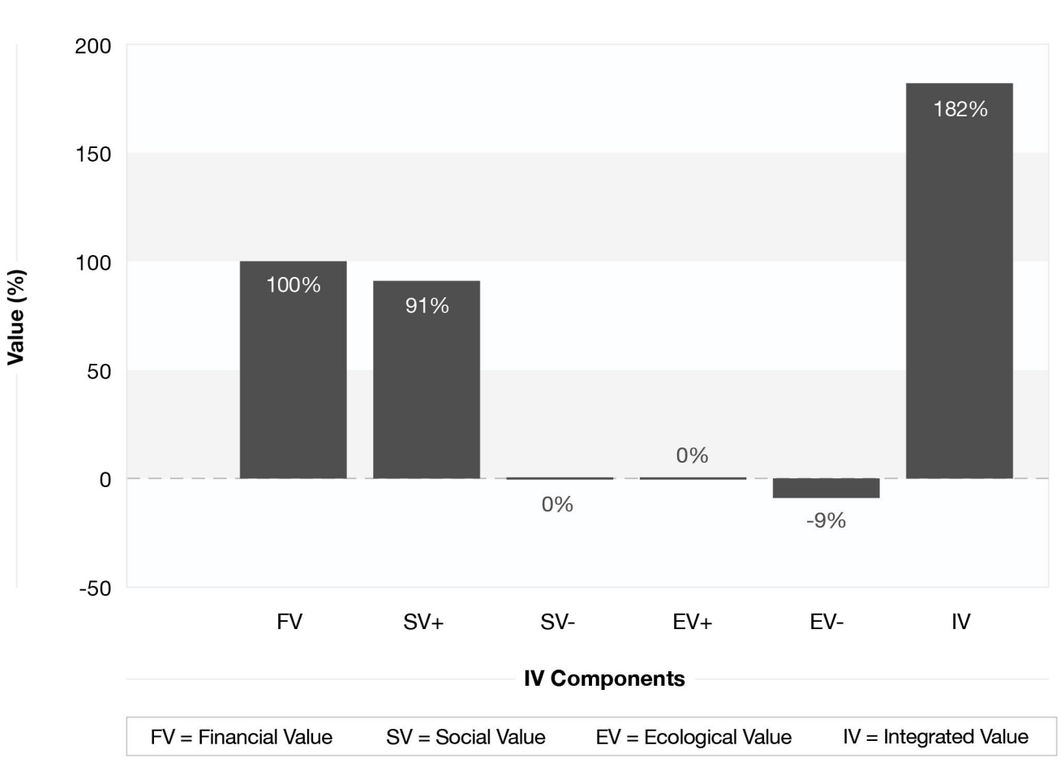
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Cybersecurity breaches + data privacy	0.14	3,529,412[12] / cyber incident	-0.49	100%	-0.49	**-22.9**
Input factors: Industry average breach frequency = 0.16 breaches per company annually KPN's security adjustment = 13% Shadow price per breach = €3,529,412 *Calculation*: Estimated breaches for KPN = 0.16 × (1 − 0.13) = 0.16 × 0.87 = 0.14 breaches annually Value Flow = Estimated breaches × Shadow price = 0.14 × 3,529,412 = 0.49 mn				*Explanation*: Cybersecurity breaches and data privacy are critical issues for KPN as a leading telecom provider, given the sensitive user data it manages and the importance of maintaining trust in its services. A breach could lead to significant financial penalties, legal ramifications, and reputational damage, directly affecting KPN's operations and stakeholder confidence. To estimate the risk of breaches for KPN, we started with the industry average breach frequency of 0.16 breaches annually for European telecom providers in 2023. However, KPN's enhanced security rating, reflecting its strong cybersecurity measures, warranted an adjustment to this average. Specifically, KPN's security score reduced its breach frequency by 13%, resulting in an adjusted breach estimate of 0.14 breaches annually.		

ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1+2: 162.3, Scope 3: 759.0	206	-189.79	Scope 1+2: 100%, Scope 3: 50%	-111.80	**-1640.6**
Input factors: Scope 1 & 2: 162.3 kTon[14] Scope 3: 759 kTon[15] Shadow Price: €206/ton[16] *Calculation:* Value flow 2023: (162.3 + 759) * 206 * 1000 = 189.79 mn Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (162.3 + 50% * 759) * 206 * 1000 = 111.8 mn				*Explanation*: KPN has made significant strides in reducing its carbon emissions across all scopes. Direct emissions (Scope 1) decreased from 13 kTon CO2e in 2021 to 9 kTon CO2e in 2023, while indirect emissions (Scope 2) dropped from 241 kTon CO2e in 2021 to 154 kTon CO2e in 2023. Additionally, value chain emissions (Scope 3) were reduced to 759 kTon CO2e in 2023 from 824 kTon CO2e in 2021, marking a 30% reduction compared to the base year 2014.[17]		
Water usage	0.103	1.41	-0.15	100%	-0.15	**-3.5**
Input factors: Water consumption: 103,200 cubic metres[18] Shadow price: €1.41/m3[19] *Calculation:* Value flow (attributable): 1.41 * 0.103 = 0.15 mn				*Explanation*: In 2023, KPN's total water consumption reached 103,200 cubic meters (m3), with 26,500 m3 used in offices and shops and 76,800 m3 dedicated to operations. This reflects a slight increase from 2022, where total water usage was recorded at 95,000 m3, divided similarly across offices, shops, and operations.[20]		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	18.4	
Positive SV	16.7	0.36
Negative SV	-0.03	-0.001
Positive EV	0.0	0.00
Negative EV	-1.6	-0.11
IV (integrated value)	**33.4**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.91
Existential Risk ratio	Negative externalities/FV	0.09
Futureproofing Ratio	IV/FV	1.82

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Business ethics	KPN's business ethics risks could involve data privacy compliance, anti-corruption practices, and ethical marketing of digital services. These issues are particularly relevant given KPN's role in managing sensitive customer data and its regulatory environment. However, no substantial data on ethical controversies or practices was available, resulting in the exclusion of this issue.
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Land use/biodiversity loss	KPN collaborates with Groene Netten and Naturalis Biodiversity Center to explore enhancing biodiversity within its operations. This initiative considers impacts on land use, air quality, water usage, and soil quality, aiming to create a more sustainable approach that extends into KPN's supply chain. Unfortunately, no data on biodiversity is provided by KPN for 2023. Hopefully, in future reports KPN will report on this, so we can incorporate it into future AEX Futureproof indices.

1. KPN Integrated Annual Report 2023
2. Long-Term Value Site
3. *Ibid*.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor, "KPN Reviews", 2024
6. KPN Annual Report 2023
7. See Annex Integrated Value Methodology
8. Annex: Integrated Value Methodology Notes - Note 8
9. KPN Annual Report 2023
10. IWAF, IEF, 2024
11. KPN Annual Report 2023
12. *Cost of a Data Breach Report 2024*, IBM, 2024. (Exchange rate 1.105)
13. Kondruss, 2024
14. KPN Annual Report 2023
15. KPN Annual Report 2023
16. Monetization Factors for True Pricing, 2023
17. KPN Annual Report 2023
18. KPN Annual Report 2023
19. Monetization factors for true pricing, 2023
20. KPN Annual Report 2023

NN Group

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	NN Group
INTEGRATED VALUE	€219.9 bn
FUTUREPROOFING RATIO	1.11
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€35.75
SHARES OUTSTANDING (ultimo 2023)	273.94 mn
NET DEBT	€187.8 bn
FV (stock price * shares outstanding + net debt)	€197.6 bn

To calculate the Integrated Value of NN Group, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

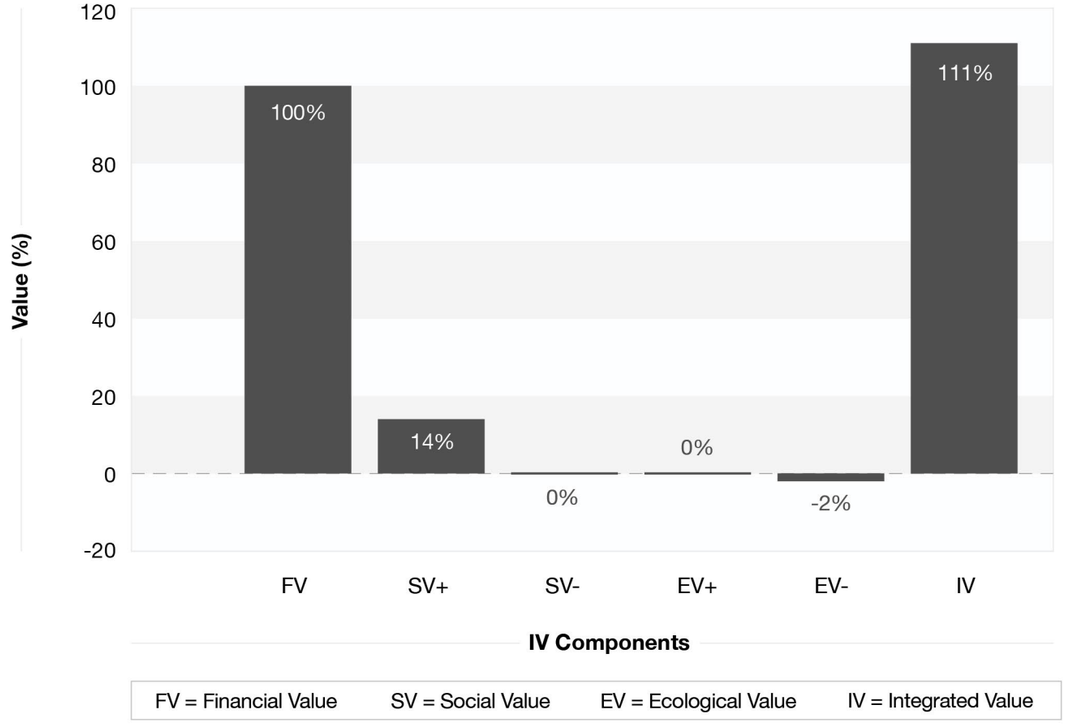
SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			994.48	41%	407.37	**18,887.0**
Input factors: Sales: 10,800[1] mn, price elasticity: 0.86[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.86)*0.5]/0.86 = 6.31. Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 10,800/(0.86*6.31)*0.5 = 994.48 mn					*Explanation*: NN Group supports consumer wellbeing through financial products and services that provide stability and security, such as insurance, pensions, and investment options. These offerings help individuals navigate uncertainties related to health, retirement, and unexpected life events. Initiatives like personalised digital tools and enhanced accessibility further strengthen this contribution, leading to a positive impact on consumer wellbeing. The attribution factor of 41% is based on the added value of NN Group: (Insurance and fee income - Insurance and fee expenses) / (Insurance and fee income).	
Employment wellbeing	66,010 Life Satisfaction Points	€2,395 / Life Satisfaction Point[3]	158.11	100%	158.11	**7,330.7**
Input factors: Number of own employees (000): 15.4[4], Glassdoor rating: 4.2.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.2-3.4) * 1.5 = 4.3 Total increase in life satisfaction points: 4.3 * 15,400 = 66.01					*Explanation*: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. NN Group focuses on employee wellbeing through initiatives such as health programs, mental health resources, and flexible working arrangements. The company promotes diversity and inclusion, aiming to create an equitable workplace for all employees. Opportunities for professional development, including training and career advancement, support employee satisfaction and productivity. These measures indicate a positive contribution to employment wellbeing.	
Corporate taxes			0	100%	0	**0**
Input factors: Effective corporate tax rate: 22.80%[1] Since the effective corporate tax rate falls between the fair share of 20-25%, the value flow of corporate taxes is 0.					*Explanation*: NN Group contributed to public services and infrastructure through its corporate tax payments, adhering to an effective tax rate within the fair range of 20–25%. This reflects the company's commitment to responsible tax practices and compliance with regulatory standards. Transparent reporting of taxes paid in various jurisdictions demonstrates NN Group's accountability and alignment with societal expectations. By supporting public finances without engaging in aggressive tax minimisation strategies, NN Group provides a neutral contribution through corporate taxes.	
Training			15.80	100%	15.80	**732.5**
Calculation: To arrive at the value flow for training, we use the total amount spent on training (€15.8 mn[6]).					*Explanation*: In 2023, NN Group invested €15.8 million in employee training programs to enhance skills and support career growth. These programs include leadership development, digital skills training, and technical courses to meet evolving business demands. By prioritizing upskilling, NN Group ensures employees are well-equipped to address future challenges, resulting in a positive contribution to training.	
Cyber security breaches and data privacy	1.8 cyber incidents	5,339,367[7] / cyber incident	-9.52	100%	-9.52	**-441.4**
Input factors: - Number of cyber incidents in global financial industry: 3,348[8] - Assets held by NN: €197,600 million[9] - Assets held by the global financial sector: €371 trillion[10] *Calculation*: NN estimated cybersecurity breaches: 197.600/371,000 * 3,348 = 1.8 Value loss for NN: 1.8 * 5.34 mn = €9.52 mn					*Explanation*: Cyber security is an essential focus for NN Group, given the sensitivity of client data and the increasing risks of cyberattacks in the financial sector. NN Group implements protective measures outlined in its strategy, such as strengthening IT infrastructure and regularly assessing cyber resilience. Despite these efforts, the increasing complexity of cyber threats continues to challenge the effectiveness of these measures, resulting in a negative contribution to cyber security breaches.	

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 7.0 Kilo tons, Scope 3 (own operations): 3.0 Kilo tons, Scope 3 (financed emissions): 22,082.0 Kilo tons CO2eq.[11]	206 / ton CO2eq[12]	-4,558.74	Scope 1 + 2: 100% Scope 3 (own operations): 41.0% Scope 3 (financed emissions): 6%	-275.10	**-4,036.8**
Input factors: Scope 1 + 2: 7.0 Financial Scope 3 (own operations): 3.0 Financial Scope 3 (financed emissions): 22,082.0 *Calculation:* Value flow attributable to the company: [(scope 1+2) + 41.0%* scope 3 (own operations) + 6%*l scope 3 (financed emissions)] * shadow price = (7.0 + 41.0%*3.0 + 6%*22,082.0)*0.206 = €275.10 mn				*Explanation*: NN Group reported Scope 1 and 2 emissions of 7 kilotons of CO_2 equivalents in 2023, reflecting operational emissions such as energy use in offices. The company also financed Scope 3 emissions totaling 22,082 kilotons, which stem primarily from its investment portfolio. NN Group has committed to achieving net-zero emissions in its operations by 2040 and for its entire investment portfolio by 2050, aligning with international climate goals. However, the scale of financed emissions highlights significant challenges in transitioning to more sustainable investments, leading to a negative contribution to GHG emissions. NN is not yet measuring its insured emissions through its insurance portfolio.		
Land use / biodiversity loss	16,218 ha	3,294[13]	-21.37	41%	-8.75	**-208.4**
Input factors: - MSA: 0.4[14] - ABN AMRO hectares deteriorated: 30,000[15] - NN Group EV (FV): 197.6 bn[16] - ABN AMRO EV (FV): 365.5 bn[17] Pro rata estimation of NN Group based on ABN AMRO. *Calculation:* Value loss due to biodiversity: 0.4 * 3,294 * 41% * 30,000 * 197.6 / 365.5 = €8.75 mn				*Explanation*: NN Group's investment activities indirectly contribute to land use and biodiversity loss. Investments in sectors such as agriculture, real estate, and infrastructure are estimated to have impacted 16,218 hectares of land in 2023, contributing to deforestation and habitat degradation. While NN Group has policies in place to address sustainable investment practices, there is limited evidence of concrete measures to mitigate these environmental impacts. The lack of actionable plans and clear progress leads to a negative contribution to land use and biodiversity loss.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	197.6	
Positive SV	27.0	0.58
Negative SV	-0.4	-0.01
Positive EV	0.0	0.00
Negative EV	-4.2	-0.28
IV (integrated value)	**219.9**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.14
Existential Risk ratio	Negative externalities/FV	0.02
Futureproofing Ratio	IV/FV	1.11

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low income people	By offering affordable insurance and financial products tailored to the needs of underserved populations, NN Group has a positive effect on society through products and services that enable low income people. However, this issue could not be added as there is no research on a shadow price for these initiatives, nor does NN Group report how much it spends on these products and services.
Discrimination & inclusion (including gender)	Diversity and inclusion could be a material issue for a company like NN Group, which emphasizes creating an inclusive and inspiring work environment. In 2023, women made up 40% of senior management, reflecting steady progress toward gender equity. NN Group has implemented a Diversity & Inclusion (D&I) strategy and launched initiatives like the D&I network to promote awareness and inclusivity across its workforce. However, challenges persist, such as addressing broader representation gaps and fostering a workplace culture that benefits all employees. At this moment, we have not developed a concrete method to measure the full societal and business impact of these initiatives, leading to its exclusion from the valuation.
Harmful business ethics	Harmful business ethics should be included for NN Group due to its historical involvement in controversies, such as the mismanagement of unit-linked insurance products (woekerpolis affaire), which led to hidden fees and reduced returns for customers.[18] These practices raised concerns about transparency, fairness, and customer trust, culminating in legal action and reputational damage. While NN Group has since improved its governance and compliance frameworks, the lingering effects of past ethical lapses continue to impact stakeholder confidence. At this moment, it was not possible to use a pro rata valuation to ABN AMRO for NN Group as NN Group is not only a bank (mainly insurance), and we have not arrived at another way of measuring this impact.
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Air pollution	NN Group's sustainability efforts primarily focus on GHG emissions and energy efficiency initiatives. Since air pollution impacts are not directly quantified or addressed in NN's reporting, they have not been included as a distinct material factor. While NN Group's financed activities may indirectly contribute to air pollution, the absence of detailed disclosures or metrics related to emissions such as VOCs, NOx, and SOx prevented its inclusion in the current analysis

1. NN Group Annual Report 2023, NN Group, 2024.
2. The Price Elasticity of Demand for Whole Life Insurance, Babbel, 1985.
3. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. NN Group Annual Report 2023, NN Group, 2024.
5. NN Group Reviews, Glassdoor, 2024.
6. NN Group Annual Report 2023, NN Group, 2024.
7. Cost of a Data Breach Report 2024, IBM, 2024. (Exchange rate 1.105)
8. Number of cyber incidents in the financial industry worldwide from 2013 to 2023, Petrosyan, 2024.
9. NN Group Annual Report 2023, NN Group, 2024.
10. Global Banking Annual Review 2024: Attaining escape velocity, McKinsey, 2024.
11. NN Group Annual Report 2023, NN Group, 2024.
12. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
13. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
14. The Mean Species Abundance (MSA) is assumed to be 0.4.
15. Impact Report 2023, ABN AMRO, 2024.
16. NN Group Annual Report 2023, NN Group, 2024.
17. Integrated Annual Report 2023, ABN AMRO, 2024.
18. Na ASR schikt ook verzekeraar NN Group woekerpolisaffaire: 300 miljoen euro, Vogels, 2024.

Philips

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Philips
INTEGRATED VALUE	€116.5 bn
FUTUREPROOFING RATIO	4.68
AEX FUTUREPROOF INDEX CLASSIFICATION	Leader

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€21.09
SHARES OUTSTANDING (ultimo 2023)	906 mn
NET DEBT	€5.8 bn
FV (stock price * shares outstanding + net debt)	€24.9 bn

To calculate the Integrated Value of Philips, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			€1743.76	50%	871.88	**40423.6**
Input factors: Sales: 18,200[1] mn, price elasticity: 0.42[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.42)*0.5]/0.42 = 12.4.[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 18,200 / (0.42 * 12.4) *0.5 = 1,743.76 mn.				*Explanation*: Consumer surplus is the difference between the price charged by Philips and the price the customers are willing to pay. Philips is a leader in healthcare technology, offering innovative solutions in areas such as diagnostics, imaging, and connected care. Its focus on improving health outcomes and access to care enables Philips to meet the needs of patients and healthcare providers worldwide, providing high-quality products and services at competitive prices. The standard attribution factor of 50% is applied, as Philips has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	266.09	2395 / Life Satisfaction Point[4]	637.42	100%	637.42	**29553.0**
Input factors: Number of employees (000): 69.115, Glassdoor rating: 3.9.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.9-3.4) * 1.5 = 3.85 Total increase in life satisfaction points: 3.85 * 69,115 = 266,090				*Explanation*: Employment wellbeing reflects Philips' commitment to creating a supportive and innovative workplace that enhances employees' quality of life and job satisfaction. With a global workforce of over 69,115 employees, Philips drives operational excellence through its focus on employee engagement, diversity, and training programs. These efforts directly contribute to economic stability and community development in the regions where it operates.		
Corporate taxes			-15	100%	-15	**-695.5**
Input factors: Corporate taxes -0.10 bn, net income: 0.6 bn, effective corporate tax rate: 17.0%[6] *Calculation*: (Effective corporate tax rate - 20%) * (net income before taxes) = (17.0%-20%) * (0.6 - 0.10) = 15 mn				*Explanation*: The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit.[7] Corporate taxes represent the company's financial contribution to public goods, such as infrastructure, healthcare, and education. Philips reports an effective corporate tax rate of 17.0%, which is below the fair share range.		
Training	373.41 Days (in thousands)	215[8]	80.28	100%	80.28	**3722.2**
Input factors: Training days (000) 373.41[9]; Shadow price: 215 *Calculation*: Training days * shadow price = 373.41 * 215 / 1000 = 80.28 mn				*Explanation*: Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. Philips places a strong emphasis on employee development, offering a range of training programs focused on innovation, healthcare technology, and leadership. This commitment reflects the company's efforts to enhance employee expertise and drive operational excellence.		
Products and services that enable low income people	221	5	1105	50%	552.50	**25615.9**
Input factors: Number of people impacted in underserved communities: 221 million Average impact per individual: €5 *Calculation*: Total social impact = Number of individuals impacted * Average impact per individual = 221 million * €5 = 1,105 mn Attributed Value Flow = 1.105 * 50% = 552.5 mn				*Explanation*: Philips reported positively impacting 221 million people in underserved communities in 2023.[10] This figure represents a substantial commitment by the company to improving access to essential health technologies and consumer products in low-income regions. The impact varies significantly depending on the type of product or service provided, ranging from low-cost consumer goods to high-value medical technologies. Due to the lack of detailed data about the specific nature of these contributions and their distribution, a conservative estimation approach is adopted. The average impact per individual is assumed to fall within the range of €5 to €50. This range accounts for the diversity of Philips' offerings, from products with a modest contribution to health outcomes to devices that can have life-saving implications. To ensure a conservative and realistic estimate, the lower bound of €5 per person is used as the baseline for calculations. Based on this assumption, the total societal impact of Philips' contributions in underserved communities is calculated as the product of the number of individuals impacted and the average impact per individual. Using the €5 estimate, the total social impact equals 221 million people multiplied by €5 per person, resulting in €1.1 billion. The 50% attribution factor applies, as the efforts of local healthcare systems, governments, NGOs, or other partners involved in delivering and supporting these products and services also count. In conclusion, the estimated impact of Philips' products and services in underserved communities amounts to at least € 553 million on an annual basis.			

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health & Safety (workers)	Non-fatal: 172	Non-fatal: 3946[11]	-0.68	100%	-0.68	**-31.5**
Input factors: Number of incidents: Non-fatal = 172[12] Shadow price: Non-fatal = €3,946 *Calculation*: Value Flow = incidents * shadow price = 172 * €3,946 = 0.68 mn				*Explanation*: As a global leader in healthcare technology, Philips has a strong focus on employee health and safety. However, in 2023, Philips reported 172 non-fatal incidents, resulting in a negative value flow of €0.68 million. Workplace injuries can affect productivity and pose reputational risks for a company known for its commitment to health and well-being. Strengthening safety protocols, providing regular training, and promoting a culture of safety will enable Philips to reduce incidents, comply with international labor standards, and maintain its reputation as an employer of choice.		
Health effects (on consumers) pos	QALYs (EU, NA): 52,413 QALYs (ROW): 78,620	EU/NA: 15,368 ROW: 7,684	1409.58	50%	704.79	**32676.9**
Input factors: Total lives impacted in 2023: 1.71 billion[13] People from Underserved communities impacted: 221 million Assumed proportion with significant health impact: 1% Average QALYs gained per significantly impacted life: 0.0088 Attribution factor: 50% Shadow price per QALY: North America & Europe: €15,368 ; Other countries: €7,684 North America: 20% ; Europe: 20% ; Other countries: 60% *Calculation*: Total consumers impacted = Total lives impacted - Underserved communities impacted = 1.71 billion - 221 million = 1.489 billion Lives significantly impacted = Total consumers impacted × Assumed proportion with significant health impact = 1.489 billion × 0.01 = 14.89 million QALYs = Lives significantly impacted × Average QALYs gained per life = 14.89 million × 0.0088 = 131,032 QALYs QALYs (NA + EU) = 131,032 × (20%+20%) = 52,413 QALYs Health effects (NA + EU) = 52,412 × €15,368 = 805,5 mn QALYs (Other countries) = 131,032 × 60% = 78,620 QALYs Health effects (Other countries) = 78,620 × €7,684 = 604,1 mn Annual Value Flow (Total) = €805.5 + €604.1 = 1409.6 mn				*Explanation*: Philips reported touching 1.71 billion[14] lives in 2023. Given the diverse nature of Philips' offerings, not all products contribute equally to significant health improvements. High-impact medical devices in the Diagnosis & Treatment and Connected Care segments are more likely to lead to substantial health benefits compared to consumer products in the Personal Health segment. In the absence of precise data detailing the health impact per product or segment, the 1% assumption serves as a reasonable proxy to estimate the proportion of lives significantly improved by Philips' high-impact medical technologies. Once again, this is an assumption as there is no readily available data point here. For a more accurate assessment, access to detailed impact studies or internal data from Philips would be necessary. To avoid double-counting, we deduct the 221 million people impacted in underserved communities from the total lives impacted. Assuming that 1% of these lives experienced significant health improvements, the number of significantly impacted lives is 14.89 million. For each significantly impacted life, we estimate an average improvement of 0.0088 QALYs[15]. The total QALYs gained is then 131,032. The shadow price for one QALY is estimated to be €15,368[16] for lives in the US and Europe. For other countries, we assume half this value due to the lower price level, resulting in a shadow price of €7,684. Using the geographical split provided by Philips' report (20% North America, 20% Europe, 60% other countries), the monetised value of health impact attributed to Philips is €704,79 million. Philips' focus on health innovation underscores its significant and positive role in addressing global health challenges.		
Impact on local communities (local cohesion, health effects, other effects)		183.00	50%	91.50	**4242.3**	

Input factors: Population screened = 35,000 children Prevalence rate of RHD = 30 per 1,000 QALYs gained per child = 15 Shadow price per QALY (Uganda) = €1,549 Number of projects annually = 10 Correction factor = 0.75 *Calculation*: Diagnosed cases = Population screened * Prevalence rate = 35,000 * (30 / 1,000) = 1,050 children Total QALYs gained (per project) = Diagnosed cases * QALYs per child = 1,050 * 15 = 15,750 QALYs Monetised value (per project) = Total QALYs gained * SP per QALY = 15,750 * €1,549 = 24.4 mn Annual value flow for 10 projects with correction factor = Monetised value per project * Number of projects * Correction factor = 24.4 * 10 * 75% ≈ 183 mn Attributed value flow with 50% attribution factor = Annual Value Flow * Attribution factor = 183 * 50% = 91.5 million	*Explanation*: Since its establishment in 2014, the Philips Foundation has initiated over 100 CSR[17] projects worldwide (average of 10 projects per year). These projects aim to improve healthcare delivery in disadvantaged communities by addressing systemic barriers and collaborating with local NGOs. To quantify the annual value flow for 2023, we select a representative project from the Foundation's portfolio, such as the rheumatic heart disease (RHD) screening program in Uganda.We use this project as a benchmark for calculating the impact (with a 75% correction factor as this is one of the showcase projects) and then multiply its value by 10 to reflect the total impact of 10 annual projects. The Children's National Health System and the Uganda Heart Institute established a country-wide clinical and research infrastructure focused on screening, prevention, and care to support a vastly underserved population with RHD. Philips Foundation donated Philips Lumify mobile ultrasound devices, in order to screen more than 35,000 children for RHD in Gulu, Uganda. Funding provided by the Foundation also made it possible to perform screening operations and follow up with children suffering from RHD. While preventable, RHD continues to cause significant levels of morbidity and mortality in children and young adults living in countries with fragile health systems. This project is assumed to be representative of Philips Foundation's annual CSR projects because: - It is a large and significant project that Philips highlights prominently in its reports, suggesting that it is more impactful than the average project. - However, the monetisable impact per individual is much lower in Uganda due to significantly lower income levels compared to countries like Switzerland, the Netherlands, or Austria. The prevalence of RHD in Africa varies between 2.9 and 30.4 per 1,000[18], depending on the population and region (Source: Rheumatic Heart Disease Burden in Africa and the Need to Build Robust Infrastructure). For this analysis, we use the upper bound of 30 per 1,000 because: -The initiative focuses on "a vastly underserved population with – or at risk of developing – rheumatic heart disease (RHD)." -The 30 per 1,000 prevalence reflects regions or subpopulations where conditions such as poverty, healthcare inaccessibility, and high Group A Streptococcus (GAS) exposure align with those in the area served by Philips in Uganda. Population Screened: 35,000 children ; Prevalence Rate: 30 per 1,000 ; Diagnosed Cases: 35,000 × 30/1,000 = 1,050 children diagnosed with RHD. We assume each diagnosed and treated child gains 15 QALYs due to the severity of RHD without treatment and the effectiveness of early diagnosis and treatment: - RHD significantly shortens life expectancy if untreated - Untreated RHD causes severe symptoms, reducing quality of life. Early diagnosis allows for interventions like antibiotics (to address streptococcal infections), valve repair or replacement surgeries, and long-term management. Such interventions prevent progression of the disease, enabling children to lead relatively normal lives, restoring both quality and length of life. The total annual value flow attributed to Philips for 2023 is €91.5 million.

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Cyber security breaches + data privacy	3	9,891,403[19]	-29.67	100%	-29.67	**-1375.8**
Input factors: Estimated breaches per year: 3 Cost per breach: €9.89 million[19] *Calculation*: Value Flow = Estimated breaches * Cost per breach Negative Impact = 3 * €9.891403 million = 29.67 mn				*Explanation*: Cybersecurity breaches and data privacy are critical issues for Philips, given the sensitive nature of the healthcare data it handles and its reliance on interconnected digital systems. Recent incidents, such as the 2023 Philips Respironics breach and vulnerabilities in the Vue PACS system, underscore the recurring risks associated with unauthorized data access and service disruptions. These events demonstrate the systemic vulnerabilities of both proprietary and third-party systems, which increase Philips' exposure to cyber threats globally. To estimate the financial impact of potential breaches, we assumed a conservative frequency of three breaches annually. This assumption reflects: i) Industry benchmarks, where large healthcare technology companies experience multiple breaches annually due to the high value of healthcare data; ii) Philips' scale and complexity, which involve managing vast amounts of sensitive data across multiple platforms and regions; iii) Documented incidents, such as the Vue PACS and Respironics breaches, which highlight recurring vulnerabilities in Philips' systems. Using the average cost of a data breach in the healthcare sector (€9.89 million per breach), the total monetized impact of three breaches is estimated at €29.67 million annually. This calculation captures the significant risks associated with detection, response, regulatory fines, and reputational damage in a highly regulated industry.		
Product responsibility and safety	12380	107692[20]	-1333.23	100%	-1333.23	**-30906.7**
Input factors: Number of deaths: 561 Life expectancy at age of death: 20 years Number of cases: 116,000 Disease duration: 0.1 year Disability weight: 0.1 Shadow price per DALY: €107,692 *Calculation*: YLL = Number of deaths × Life expectancy = 561 × 20 = 11,220 YLD = Number of cases × Disease duration × Disability weight = 116,000 × 0.1 × 0.1 = 1,160 Total DALYs = YLL + YLD = 11,220 + 1,160 = 12,380 Monetised Impact = 12,380 × €107,692 = 1,333 mn The sleep apnea safety problem is a major incident. For the long-term valuation of product responsibility and safety, we assume a 50% percent probability for this type of major accidents happening.				*Explanation*: Product responsibility and safety are critical for Philips as a global leader in health technology, given the severe implications of product failures on public health and trust. In 2023, Philips recalled 10.8 million sleep apnea devices due to safety concerns, including significant health risks such as cancer, respiratory issues, and potential fatalities. The FDA[21] reported 116,000 health incidents and 561 deaths associated with these devices, underscoring the critical need for robust product safety measures and effective risk management. To quantify the health impact of these incidents, the Disability-Adjusted Life Years (DALYs) metric was used. DALYs account for both years of life lost (YLL) due to premature death and years lived with disability (YLD) due to health complications. For the deaths associated with the recalled devices, a life expectancy of 20 years at the time of death was assumed, resulting in a YLL of 11,220 (561 × 20). The YLD was calculated using the number of cases (116,000), an assumed disease duration of 0.1 year, and a disability weight of 0.1, yielding a YLD of 1,160. The total DALYs resulting from these incidents were 12,380 The monetised negative impact was calculated using a shadow price of €107,692 per DALY, resulting in a total of €1,333.23 million. While Philips has taken steps to address the issue, the ongoing health impacts and negative perceptions emphasise the importance of prioritising product safety to mitigate risks, maintain public trust, and align with global health standards.		

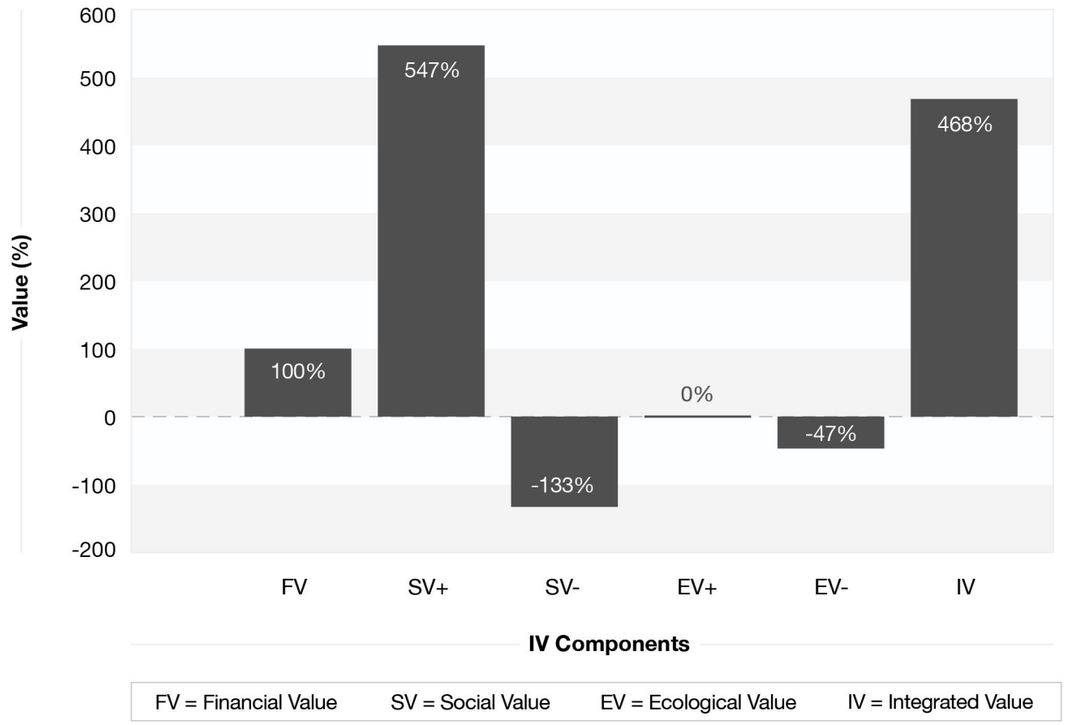
ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1+2: 167.9, Scope 3: 4,973	206	-1,059.03	Scope 1+2: 100%, Scope 3 (own operations): 50%	-547.74	**-8,037.5**
Calculation: Scope 1 and 2: 167.9 kTon[22] Scope 3: 4,973 kTon[23] Shadow Price: €206/ton[24] Value Flow 2023: (167.9 + 4,973) * 206 * 1000 = 1,059.03 mn Value Flow Attributable: [(scope 1+2) + 50%* scope 3] * shadow price * 1000 = (167.9 + 50% * 4,973) * 206 * 1000 = 547.74 mn				*Explanation*: A primary environmental factor for Philips is its greenhouse gas (GHG)/carbon emissions. Recognising change as a critical global challenge, Philips established ambitious goals for reducing its carbon footprint. The company has set targets to cut, in absolute terms, Scope 1 and Scope 2 emissions by 25% by 2025 compared to 2019, following the Science Based Targets initiative (SBTi) guidelines. By 2030, Philips also aims to decrease Scope 3 emissions by 42% across its entire value chain, aligning with the 1.5°C global warming scenario outlined in the Paris Agreement[25]. Through its Supplier Sustainability Program, Philips aims for at least 50% of its suppliers to commit to carbon reduction targets, enhancing its sustainable value chain. This initiative is tracked by the Environmental Profit & Loss (EP&L) account, which quantifies environmental impact in economic terms. Philips' approach to supply chain decarbonization demonstrates its commitment to sustainability. By setting ambitious goals and engaging suppliers through tailored climate action strategies it became the first health technology company of whom its Scope 3 emissions reduction targets were assessed and approved by the SBTi[26].		
Air Pollution	73,931,000 kg VOC[27]	VOC: 1.76 / kg[28]	-130.12	100%	-130.12	**-3,098.1**
Input factors: - VOC: 73,931,000 kg *Calculation:* Value flow attributable to company: 1.76 * 73,931,000 = 130.12 mn				*Explanation*: Volatile Organic Compounds (VOCs) are a significant contributor to air pollution, as they can react with nitrogen oxides (NOx) and other harmful compounds to form highly toxic fine particulates, commonly referred to as PM 2.5. These particulates are a major component of ground-level smog, which poses severe risks to both human health and the environment. Ground-level smog not only exacerbates respiratory and cardiovascular diseases in humans but also stimulates disease in plants, inhibits seed production, and disrupts the delicate processes of fertilization, threatening biodiversity and ecosystem stability. The consequences of air pollution extend beyond immediate health impacts, contributing to long-term environmental degradation and global climate challenges. Recognising the urgent need to address these critical issues, Philips is committed to minimising the direct exposure to harmful VOCs and reducing atmospheric photochemical reactions. This proactive approach benefits exposed employees, protects public health, and safeguards both local and global ecosystems, underlining the company's dedication to combating the far-reaching effects of air pollution for a healthier and more sustainable future.		

Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Water pollution	149,000,000	0.254/m3	-37.85	50%	-18.92	**-450.5**
Calculation: Global water usage: 4.3 trillion cubic meters Commercial and institutional water usage range: 10-20% Hospital water usage as a percentage of commercial and institutional water usage: 7% Annual wastewater of medical equipment as a percentage of total water usage of hospitals: 11% Philips market share in the medical tech industry: 3% Attributable waste water: 4.3 * 0.15 * 0.07 * 0.11 * 0.03 = 149 million cubic meters 61 Bq/L is equal to 61 kBq/M3 Shadow Price: 61 * 0.00417 = €0.254/m3 Value flow 2023: 0.254 * 149,000,000 = 37.85 mn				*Explanation*: Even though Philips does not report on their water pollution levels, we can still make a rough estimation on their scope 3 levels. The medical industry contributes highly to the pollution of water and quite a big share of wastewater remains untreated before being disposed of into the environment. The annual wastewater of medical equipment is estimated to be 11% of the total water usage of hospitals in the US.[29] Furthermore, hospitals in the US use approximately 7% of all water usage of commercial and institutional facilities yearly. In our calculations we assume that these water usage percentages are the same in the countries where Philips sells its products. The usage of commercial and institutional water usage relative to total water usage ranges from 10 to 20%, depending on the local economy and industrial focus. We use 15% as the basic share for commercial and institutional usage. Using the global annual water usage of approximately 4.3 trillion cubic meters.[30] Using both the percentages we get an estimated 4.97 billion cubic meters of water usage attributed to medical equipment. Philips had a market share in the medical tech industry of approximately 3 percent in 2021.[31] This converts to approximately 149 million cubic meters of scope 3 water waste attributable to Philips in 2023. The uncontrolled discharge of hospital water waste (HWW) effluents into various aquatic environments poses significant risks to human health and water quality. Contaminants in HWW have been linked to skin, kidney, and respiratory illnesses and have the potential to be carcinogenic.[32] HWW has high levels of BOD, COD, TOC, and Suspended Solids (SS). All the former are usually filtered out by traditional water filtration systems. However, over 300 pharmaceutically active compounds, including antibiotics like aminoglycosides and β-lactams, are also found in ranges of 0.4–20.6 µg/L. Chromium, nickel, mercury, platinum, lead, copper, iron, cadmium and zinc have also been found in HWW across the globe. Even Iodine-131I was detected between 15.0 to 61.8 Bq/L. Unfortunately, there is no shadow price for Iodine-131I to water or any shadow price for water pollution through antibiotics. However, there is a shadow price for the emission of Iodine into the air. While both air and water can carry and disperse iodine-131, the pathways of exposure and the potential impact on human health and the environment differ, with water often presenting a more prolonged risk to ecosystems and human health due to ingestion and bioaccumulation. Thus taking the shadow price of air will slightly understate the true environmental impact. To compensate for this we will take a value of 61 Bq/L, which is close to the upper bound of Iodine-131I pollution in HWW. Due to the unavailability of heavy metals levels in HWW, we exclude heavy metals in the shadow price to prevent any inaccurate estimations. Taking the shadow price of CE Delft[33] of €0.00417/kBq we get a shadow price of €0.254/m3.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Water usage	0.66	1.41	-0.93	100%	-0.93	**-22.2**
Input factors: Water usage in 2023: 661,000 m3 Shadow price of fresh water usage: €1.41/m3[34] *Calculation:* Value flow (attributable): 661,000 * 1.41 = 0.93 mn				*Explanation*: Philips is not a water-intensive company; however, various business divisions within Philips use water. The three largest divisions using water withdrawal are Diagnosis and treatment, Connected Care, and Personal Health. Combined, they account for 661 thousand cubic meters of water withdrawal in 2023. Philips actively promotes sustainable water use.[35] However, there are no significant downward trends visible within the company. Excessive water withdrawal can contribute to environmental degradation and strain on freshwater ecosystems.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	24.9	
Positive SV	136.2	2.94
Negative SV	-33.0	-1.38
Positive EV	0.0	0.00
Negative EV	-11.6	-0.70
IV (integrated value)	**116.5**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	5.47
Existential Risk ratio	Negative externalities/FV	1.79
Futureproofing Ratio	IV/FV	4.68

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Human rights breaches were considered a potential issue for Philips due to its global operations and influence as a major health technology provider. Philips has faced scrutiny for its progress on human rights, as noted by an investor-backed group dedicated to the UN Sustainable Development Goals (SDGs). The group called out Philips, among other companies, for insufficient progress in aligning with global human rights standards, signaling potential gaps in reporting and implementation. However, due to the lack of specific and verifiable data on human rights breaches directly linked to Philips' operations, this issue was not included in the analysis.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Land use/biodiversity loss	Philips did voluntarily plant trees in Germany, which would have positive environmental impact. Unfortunately, the current literature is not comprehensive enough to estimate the positive effect of planting trees in the future years. However, the growing attention on ESG literature will hopefully provide us with shadow prices in the future that enable us to incorporate this into Philips' integrated value.

1. Philips Annual Report 2023
2. Long-Term Value Site
3. *Ibid*
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor, "Philips Reviews", 2024
6. Philips Annual Report 20233
7. See Annex Integrated Value Methodology
8. Annex: Integrated Value Methodology Notes - Note 8
9. Philips Annual Report 2023
10. Philips Annual Report 2023
11. IWAF, IEF, 2024
12. Philips Annual Report 2023
13. Philips Annual Report 2023
14. Philips Annual Report 2023
15. Black et al, 2014
16. Sampson et al, 2022
17. Philips Foundation, Local Projects
18. Rheumatic Heart Disease Burden in Africa and the Need to Build Robust Infrastructure
19. IBM Cost of a Data Breach Report, 2023.
20. IWAF, IEF, 2024
21. FDA, 2024
22. Philips Annual Report 2023
23. Philips Annual Report 2023
24. Monetization Factors for True Pricing, 2023
25. Ginneken, 2023
26. Philips, 2023
27. Philips Annual Report 2023
28. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
29. EPA, 2012
30. Irrigreen
31. Statista
32. Bandari et. al, 2023
33. CE Delft, 2023
34. Monetization Factors for True Pricing, 2023
35. Philips Annual Report 2023

Randstad

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Randstad
INTEGRATED VALUE	€33.4 bn
FUTUREPROOFING RATIO	2.34
AEX FUTUREPROOF INDEX CLASSIFICATION	leader

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€56.72
SHARES OUTSTANDING (ultimo 2023)	178.4 mn
NET DEBT	€4.2 bn
FV (stock price * shares outstanding + net debt)	€14.3 bn

To calculate the Integrated Value of Randstad, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Consumer wellbeing			2,309.09	23.6%	545.45	**25,289.3**
Input factors: Sales: 25,400[1] mn, price elasticity: 1.00[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1)*0.5]/1 = 5.5. Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 25,400/(1*5.5) *0.5 = 2,309.09 mn				*Explanation*: Consumer surplus is the difference between the price charged by Randstad and the price its customers are willing to pay. The company is currently one of the biggest talent companies in the world, providing talents to many different industries. The attribution factor of 23.6% is based on the added value of Randstad: (Revenue - Cost of Services) / Revenue.		

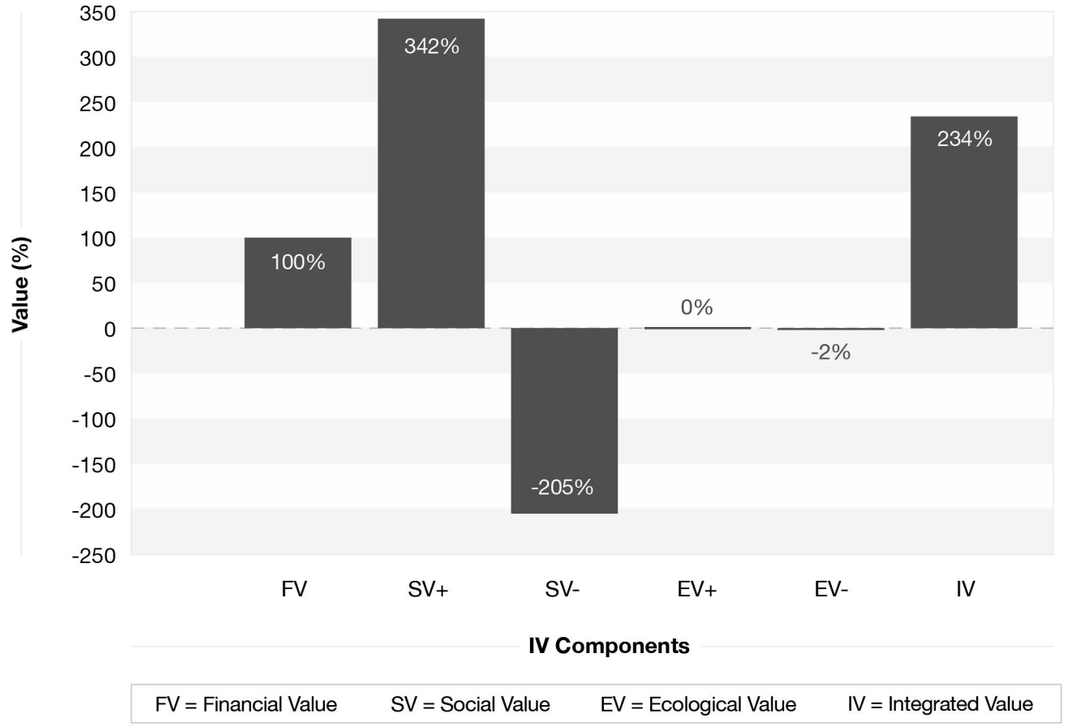
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	153,857 Life Satisfaction Points	2,395 / Life Satisfaction Point[3]	368.56	100%	368.56	**17,087.8**
Input factors: Number of own employees (000): 43.3[4], Glassdoor rating: 3.7.[5] *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.7-3.4) * 1.5 = 3.55 Total increase in life satisfaction points: 3.55 * 43,340 = 153,857				*Explanation*: Employment wellbeing reflects the company's commitment to providing a work environment that enhances employees' overall quality of life and job satisfaction. Operating in different countries and employing more than 43,000 people globally[5], the company supports economic stability and local community growth.		
Corporate taxes	[redacted]		-16.76	100%	-16.76	**-777.2**
Input factors: Corporate taxes 140 mn, net income before taxes: 750 mn, effective corporate tax rate: 17.8% *Calculation*: Value flow: (Effective corporate tax rate - 20%) * (net income before taxes) = (17.8%-20%) * 750 mn = 16.76 mn				*Explanation*: To assess whether Randstad contributes to tax fairness and delivers a positive or negative social value, we examine whether the effective tax rate of Randstad falls below the fair share tax rate range of 20% to 25%.		
Training	Employees: 19.1 mn Talent: 145.9 mn	1 / per euro expense	165.00	Training expenses talent: 23.6% Training expenses employees: 100%	53.56	**2,483.4**
Input factors: - Training expenses talent: €145.9 mn, - Training expenses employees: €19.1 mn[7] *Calculation*: Value flow attributable to company: 145.9 * 23.6% + 19.1 * 100% = 53.56 mn				*Explanation*: Randstad is dedicated to training both its employees and its talent (employed at clients) to reach their maximum potential. The training expenses related to talent training is attributed to Randstad for 23.6%. Training expenses for its employees are 100% assigned to Randstad.		
Underpayment in value chain	Talents: 602.1	4181.6	-2,517.71	23.6%	-594.73	**-27,574.1**
Input factors: - Temporary talent placed: 602,100[8] - Total salary expenses on talent: €19,367,000[9] - Wage gap temporary placements: 13%[10] *Calculation*: Average talent salary: 19,367 / 602.1 = €32,166 Wage gap: 13% * 32,166 = 4181.6 Value flow: 602,100 * 32,166 * 13% = 2,517.71 mn				*Explanation*: Recent academic research has proven that temporary placements on average earn 13% less salary compared to employees with a permanent placement for the same work. As this also applies to Randstad, the number of temporary talent placed in 2023 is multiplied by the average talent salary, of which 13% is assumed to be unequally less paid. 23.6% is attributed to Randstad conforming to the value added as previously described.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Discrimination & inclusion	Employees: 15,210 Life Satisfaction Points Talent: 85,400 Life Satisfaction Points	2,395 / Life Satisfaction Point[11]	Employees: 36.43 Talent: 204.53	Own employees: 100% Talent: 23.6%	84.76	**3,929.8**
Input factors: - Percentage of LHBTIQ+ employees: 9%[12] - LHBTIQ employees: 43,340 * 9% = 3.9 (000)[13] - Life satisfaction points inclusive workplace (7) - standard (3.1) = 3.9[14] - Talent with disability placed: 12.2 (000)[15] - Life satisfaction points increase: 7[16] *Calculation*: Employees: # of employees * 3.9 = 3.9 * 3.9 = 15,210.0 Talent: # of talents * 7 = 12.2 * 7 = 85,400.0 Value flow attributable to company: [15,210 + (23.6% * 85.400)] * 2,395 = 84.76 mn				*Explanation*: Randstad's CEO has been a public advocate of social inclusivity at Randstad, highlighting the benefits of an inclusive workplace. Research has also proven that inclusive workplaces achieve better results and lead to overall better workplace happiness, forming a positive impact on both the employees and the company. Discrimination has been assessed to be positive through the academic research that has quantified the increase in happiness of employees in an inclusive workplace, leading to an annual positive value of 84.76 mn for Randstad.		
Health & Safety	Fatal: employees: 0; talent: 2 Non-fatal: employees 63; talent: 16,800	Fatal: 3,348,316 Non-fatal: 3,946[17]	Employees: -0.25 Talent: -72.99	Own employees: 100%, Talent: 23.6%	-17.49	**-810.9**
Input factors: - 2 fatal injuries talent, - 63 non-fatal injuries employees, - 16.800 non-fatal injuries talent[18] *Calculation*: Value flow attributable to company: 23.6% * 2 * 3,348,416 + (63 + 23.6% * 16,800) * 3,946 = 17.49 mn				*Explanation*: Randstad employs both employees as talent working in different industries. Despite precautions, multiple employees and talent have been injured in activities that are work-related. The only acceptable standard is striving for 0 injuries, especially fatal injuries. For the calculation, 23.6% of the injuries of talent have been assigned to Randstad.		
Cyber Security Breaches	27,232 files per year	132 / file[19]	-3.60	100%	-3.60	**-166.8**
Input factors: - Number of files stolen during cyberattack: 184,000[20] - Chance of data breach within next 2 years: 29.6% of companies[21] *Calculation*: Amount of files stolen yearly: 184,000 * 29.6% / 2 = 27,232 files Value flow attributable to company = 27,232 * 132 = 3.60 mn				*Explanation*: As Randstad is working with sensitive data regarding its employees, cyber security breaches can have substantial consequences. For the calculation, a reported data breach in 2019 is taken as a benchmark, which is multiplied by the likelihood of a new attack, assuming the same number of files to be stolen.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 58.2 Scope 3: 174.9 Kilo tons CO2eq	206 / ton CO2eq[22]	-48.02	Scope 1 + 2: 100% Scope 3: 23.6%	-20.54	**-301.3**
Calculation: - Scope 1 + 2: 58.2 - Scope 3: 174.9[23] Value flow attributable to the company: [(scope 1+2) + 23.6%* scope 3] * shadow price = (58.2 + 23.6%*174.9)*0.206 = 20.54 mn				*Explanation*: Randstad is committed to decreasing GHG emissions to become more sustainable for the future. However, in 2023 total GHG emissions have increased, contradicting this commitment. This is explained by Randstad as improved data capture, while its new methodology excludes f.e. hotel stays[24]. Overall, GHG emissions are estimated using Randstad's self-reported data.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	14.3	
Positive SV	48.8	1.05
Negative SV	-29.3	-0.63
Positive EV	0.0	0.00
Negative EV	-0.3	-0.02
IV (integrated value)	**33.4**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	3.42
Existential Risk ratio	Negative externalities/FV	2.08
Futureproofing Ratio	IV/FV	2.34

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Products and services that enable low income people	Randstad offers talent training to reach their potential and enable low income people to become more competitive in the labour market. However, due to lack of data on the specific training and added value, it was not quantified.
Business Ethics	There was not sufficient data to either positively or negatively confirm the business ethics of Randstad. Therefore, this material issue is also not quantified.

1. *Annual Report 2023*, Randstad, 2024.
2. *Long-Term Value*, Schoenmaker & Schramade, 2025.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Annual Report 2023*, Randstad, 2024.
5. Werken bij Randstad, Glassdoor, 2024.
6. *Annual Report 2023*, Randstad, 2024.
7. *Annual Report 2023*, Randstad, 2024.
8. *Annual Report 2023*, Randstad, 2024.
9. *Annual Report 2023*, Randstad, 2024.
10. *Labor market dualism and the heterogeneous wage gap for temporary employment: a multilevel study across 30 countries*, Fauser & Gebel, 2023.
11. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
12. *Global survey finds 9% of adults identify as LGBTQ*, Moreau, 2023.
13. *Annual Report 2023*, Randstad, 2024.
14. Handboek Impactmeten Netwerkorganisaties, Impact Institute (2020)
15. *Annual Report 2023*, Randstad, 2024.
16. Handboek Impactmeten Netwerkorganisaties, Impact Institute (2020)
17. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
18. *Annual Report 2023*, Randstad, 2024.
19. *Cost of a Data Breach Report*, IBM, 2020.
20. *Largest global staffing agency Randstad hit by Egregor ransomware*, Abrams, 2020.
21. *Cost of a Data Breach Report*, IBM, 2020.
22. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
23. *Annual Report 2023*, Randstad, 2024.
24. *Annual Report 2023*, Randstad, 2024.

RELX

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	RELX
INTEGRATED VALUE	€103.5 bn
FUTUREPROOFING RATIO	1.51
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€35.82
SHARES OUTSTANDING (ultimo 2023)	1,881.5 mn
NET DEBT	€1.3 bn
FV (stock price * shares outstanding + net debt)	€68.7 bn

To calculate the Integrated Value of RELX, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			1,022.50	50%	511.25	**23,703.5**
Input factors: Sales: 10,500[1] mn, price elasticity: 0.31[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.31)*0.5]/0.31 = 16.62[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 10,500 / (0.31 * 16.62) * 0.5 = 1022.50				*Explanation*: Given RELX's high-value, proprietary content and the industry standard of charging significant subscription fees, consumer surplus is positive but has a potentially limited impact. Overall, the market is quite inelastic, with a big consumer surplus. The standard attribution factor of 50% is applied, as RELX has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	151.48	2,395[4]	362.85	100%	362.85	**16,823.3**
Input factors: number of employees (000): 36.5, glassdoor rating: 4.1[5]. *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.1-3.4) * 1.5 = 4.15 Total increase in life satisfaction points: 4.15 * 36,500 = 151,48				*Explanation*: RELX is committed to supporting the physical and mental well-being of its employees through resources like the well-being hub, which includes free access to the Headspace app, fitness classes, and training courses. Employee assistance programs offer 24/7 counseling for both employees and their families. This comprehensive support contributes to RELX's positive work environment, reflected in a low turnover rate of 11.9% in 2023.		
Corporate taxes			0	100%	0	**0**
Input factors: Effective Tax Rate 22.2%[6] *Calculation*: The effective corporate tax rate is 22.2%, which lies between the 20% - 25% fair tax rate. For this reason the value flow on corporate taxes is 0.				*Explanation*: RELX pays a relatively stable level of cash taxes per year in the fair tax rate bracket.		
Training	13.57 mn	1 / per euro expense	13.57	100%	13.57	**629.4**
Input factors: 2023 Training Investment: $15 million[7] *Calculation*: $15 million / 1.105 = €13.57 mn				*Explanation*: RELX places a strong emphasis on training and development as a cornerstone of its employee support strategy. In 2023, RELX invested over $15 million and dedicated more than 506,000 hours to learning and development initiatives, underscoring its commitment to the professional growth and success of its workforce of 36,500 FTE employees. These training programs are regularly updated based on employee feedback and evaluated for their business impact, ensuring they remain relevant and effective.		
Impact on Local Communities			26.12	50%	13.06	**605.4**
Input factors: Community involvement is primarily measured through the amount of in-kind donations. In 2023, the total market value (cash, in-kind and time donations) of RELX's community involvement reached £23.4M.[8] *Calculation*: £23.4 million * 1.116[9] = €26.12 mn				*Explanation*: Community involvement is a key material factor for RELX as it fosters strong relationships with stakeholders, enhances corporate reputation, and contributes to local development, aligning with the company's commitment to social responsibility and sustainable long-term value. RELX is committed to a high degree of community involvement through RELX's community program, RELX Cares, which promotes employee volunteering and societal impact, focusing on education for disadvantaged youth. Other highlights include the Recognising Those Who Care Awards, RELX Cares Month, and various global activities such as mentoring students, supporting local food banks, and preparing care packages. We measure community involvement by the amount of money donated and find this to have a positive impact.		

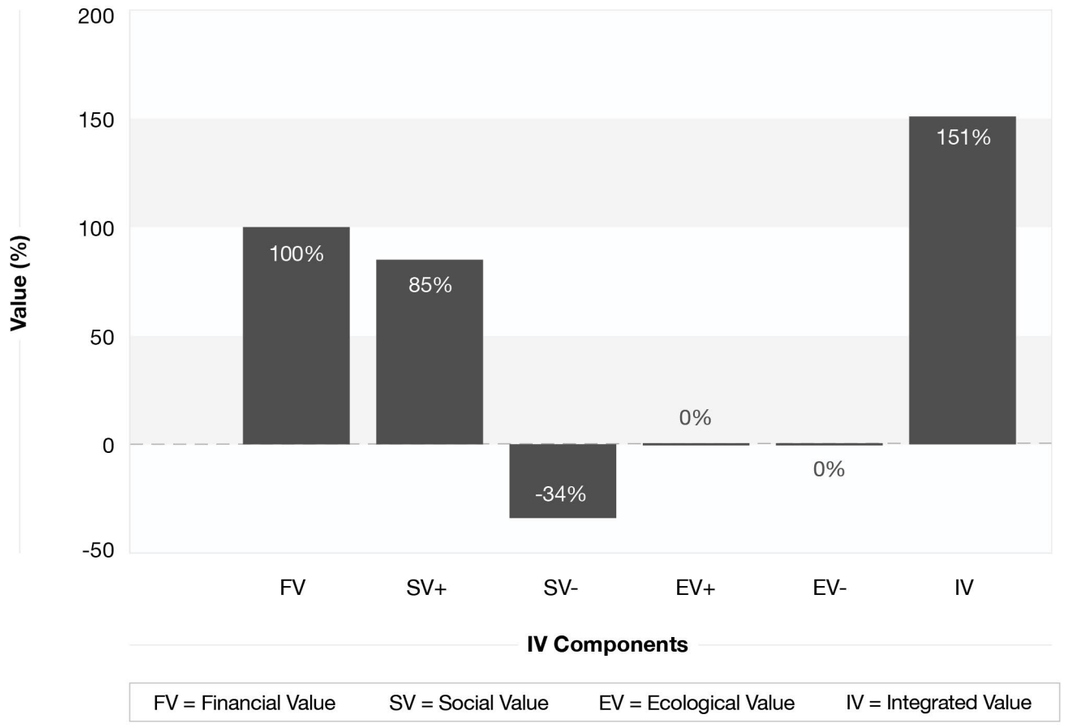
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Information Dissemination	630.00	2,250	1,417.50	25%	354.38	**16,430.1**
Input factors: To quantify Information Dissemination, we use the number of research articles published in 2023. A total of 630,000 articles was published. An attribution factor of 25% was chosen as RELX helps disseminate knowledge to the public but is not directly responsible for the creation of the said knowledge. *Calculation*: The monetary value of a scientific publication can be priced at €2,250[11], which the authors arrive at by interpreting the price of articles as their expected total future value of publishing. As most of RELX's information sharing occurs through the publication of scientific articles, we use this number as a shadow price to quantify the information factor. Value flow = 630,000 * 2,250 = 1,417.50 mn				*Explanation*: RELX contributes to society through knowledge sharing and the advancement of science. In particular, the company provides data-driven insights and research across science, law, business, and health care. Through its publishing company Elsevier, LexisNexis, and its exhibitions business, RELX distributes accessible and reliable information to various organizations, professionals, and the public. This fosters innovation and knowledge sharing. Furthermore, the firm promotes education and helps solve global challenges. As such the company positively contributes to society at large.		
Cybersecurity Breaches + Data Privacy	290.35	1,729[17]	-502.02	100%	-502.02	**-23,275.2**
Input factors: To quantify the impact of data privacy breaches, the average number of victims per cyberattack in the US is determined by dividing the total number of victims by the number of cyberattacks. In 2023, there were 2,365[12] cyberattacks worldwide, affecting 343,338,964 individuals, resulting in an average of 145,175 victims per attack. For RELX, this figure is contextualised by considering the average number of data breaches they experienced annually over 2019-2021. Assuming two such breaches per year, RELX's data privacy issues affected an estimated 290,350 victims annually. In the UK, a typical data leak involving basic personal information (name, phone number, and address) can result in compensation ranging from £1,000 to £2,000. The midpoint of £1,500, converted to €1,729, is used as the shadow price. *Calculation*: Value flow = # of victims * shadow price = 290,350 * 1,729 = 502.02 mn				*Explanation*: As a research and consulting services company, RELX has an extensive set of data privacy regulations and initiatives in place to protect its customers from fraud and to foster a secure environment for transactions and benefits. As such, controversies pertaining to data privacy – especially those related to data breaches - do not only potentially incur internal costs such as regulatory fines and IT infrastructure overhaul, but also external costs that relate to the compensation owed to consumers as a result of privacy loss. In this regard, RELX has historically performed negatively given that the company has been the subject of multiple data privacy-related controversies in the past decades, with an average of two occurrences per year over the period from 2019 to 2021.[13]		

ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 40.9, Scope 3: 17.0	206[14]	-11.92	Scope 1 + 2: 100% , Scope 3: 50.0%	-10.19	**-149.6**
Input factors: Scope 1 + 2 : 40.9 Scope 3: 17.0[15] *Calculation*: Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (40.9 + 50%*17)*206 = 10.19 mn				*Explanation*: Although RELX, as a service provider, does not operate in a carbon-intensive sector, it still contributes to greenhouse gas emissions. Particularly, its Exhibitions business is the company's most carbon-intensive segment. RELX reports Scope 1, 2 and 3 greenhouse gas emissions, all of which have generally decreased since 2010. However, there has been a recent upwards trend in Scope 3 emissions as business travel resumed after the COVID-19 pandemic. RELX launched a net-zero carbon initiative achieving net zero by 2040, aligning with the 1.5C Paris Agreement goal.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	68.7	
Positive SV	58.2	1.26
Negative SV	-23.3	-0.50
Positive EV	0.0	0.00
Negative EV	-0.1	-0.01
IV (integrated value)	**103.5**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.85
Existential Risk ratio	Negative externalities/FV	0.34
Futureproofing Ratio	IV/FV	1.51

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & Inclusion	Gender diversity and inclusion are essential focuses for RELX. The company has progressed in improving gender representation and fostering an inclusive workplace culture. Further analysis would help clarify the effects of these initiatives on various stakeholder groups. We are currently developing methods to accurately measure these impacts.
Business Ethics	Business ethics are paramount for RELX, as ethical conduct is crucial in maintaining trust with clients, employees, and partners. It is essential to explore areas such as transparent business practices, fair dealings, and integrity in operations to ensure that the company adheres to its ethical commitments. We are currently developing methods to accurately measure these impacts.

1. RELX Annual Report 2023
2. Long-Term Value Site
3. Ibid.
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor Relx
6. RELX Annual Report 2023
7. RELX Annual Report 2023
8. RELX Annual Report 2023
9. 1.116 = GBP to EUR Exchange Rate
10. RELX Annual Report 2023
11. Rousseau, et al. (2020). The monetary value of a scientific publication.
12. Forbes, 2024.
13. LSEG Workspace 2024
14. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (USD to EUR Exchange rate of 1.105)
15. RELX Annual Report 2023

Shell

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Shell
INTEGRATED VALUE	-€493.3 bn
FUTUREPROOFING RATIO	-2.07
AEX FUTUREPROOF INDEX CLASSIFICATION	Laggard

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€29.8
SHARES OUTSTANDING (ultimo 2023)	6,486
NET DEBT	€44.8
FV (stock price * shares outstanding + net debt)	€238.1

To calculate the Integrated Value of Shell, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			27,031.5	32.8%	8,855.12	**410,555.5**
Input factors: Sales: €286,500[1] mn, price elasticity: 0.6[2] *Calculation*: Correction Factor = 1 + [(10 − *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.6)*0.5]/0.6 = 8.83[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 286,500/(0.6*8.83) *0.5 = 27,031.5 mn				*Explanation*: Consumer surplus is the difference between the price charged by Shell and the price the customers are willing to pay. Shell is a leader in the energy sector, driving innovation in areas such as cleaner fuels, renewable energy, and advanced technologies. By providing reliable, high-quality energy products and services at competitive prices, Shell delivers energy security meeting the evolving needs of businesses and consumers worldwide.The attribution factor of 32.8% is based on the added value of Shell: (Revenue - Cost of Purchases) / Revenue.		

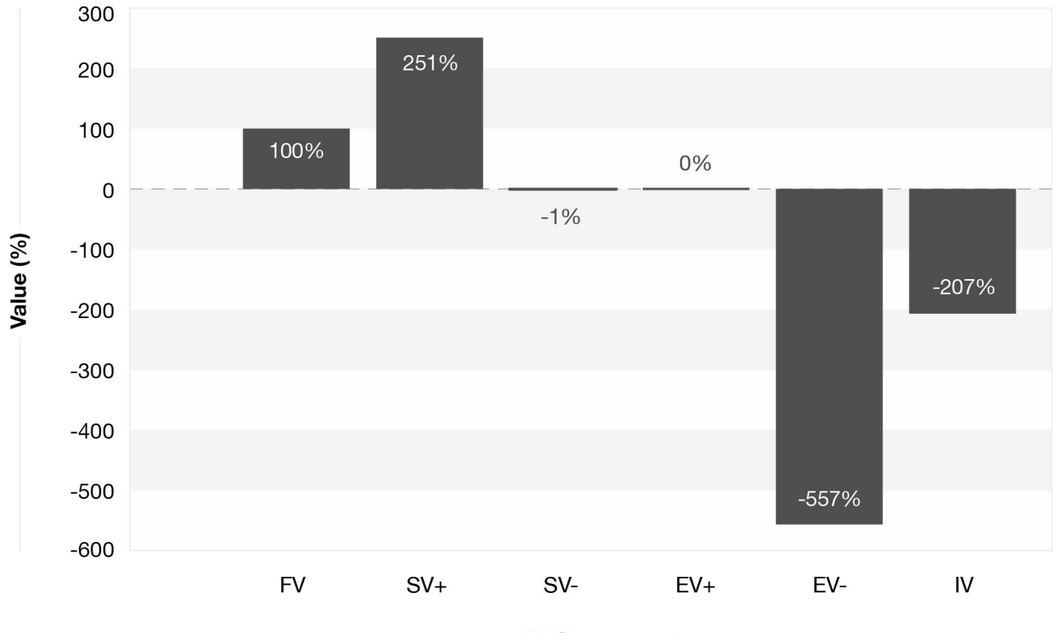
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	412,000 Life Satisfaction Points	2,395[27]	986.94	100%	986.94	**45,757.9**
Input factors: number of employees (000): 103[4], Glassdoor rating: 4.0[5]. *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4-3.4) * 1.5 = 4 Total increase in life satisfaction points: 4 * 103(000) = 412,000"				*Explanation*: Within Shell's contribution to employment, Shell invests in employee development, offering training, wellness programs, and career growth opportunities. These initiatives contribute to more opportunities, higher job satisfaction and engagement, and can therefore be seen as having a positive impact. These efforts directly contribute to economic stability and community development in the regions where Shell operates.		
Corporate taxes			2,952.67	100%	2,952.67	**136,896.5**
Input factors: Corporate taxes 11,760 mn, net income before taxes: 29,530 mn, effective corporate tax rate: 35.0%[6] *Calculation*: (Effective corporate tax rate - 25%) * (net income before taxes) = (35.0%-25%) * 29,530 = 2,952.67 mn				*Explanation*: The social contribution of corporate taxation relates to a company paying its fair share, defined in the range of 20% to 25%[7] of taxable profit. Corporate taxes represent the company's financial contribution to public goods, such as infrastructure, healthcare, and education. Shell reported an effective corporate tax rate of 35.0%, which is above the fair share range, thus Shell contributed positively to society via taxes.		
Training	295 days (in thousands)	215[8] / day	63.43	100%	63.43	**2,940.6**
Input factors: 295,000 days of training[9] *Calculation*: Value flow: number of training days * shadow price = 295 * 215 = 63.43 mn				*Explanation*: Employee training delivers significant societal value by enhancing workforce capabilities, boosting efficiency, and promoting economic advancement. Shell emphasises the growth of its employees through a variety of development programs centred on innovation, energy solutions, and leadership. This focus highlights the company's dedication to building employee proficiency, advancing careers, and achieving operational excellence.		
Health & Safety (workers)	Fatal accidents: 12 (employees) 5 (contractors) Non-fatal accidents: 197	Fatal: 3,348,416 Non-fatal: 3,946[27]	-57.70	Own employees: 100%, Contractors: 32.8%	-46.44	**-2,153.3**
Input factors:[10] Serious injuries and fatalities: 12 Fatalities at contractors: 5 Attribution factor for fatalities: 32% Total Recordable Case Frequency/million: 1.1 *Calculation*: Number of hours worked: 103,000 * 1840 = 189.52 million Total incidents recorded: 1.1 * 189.52 = 209 Non-fatal incidents: 209 - 12 = 197 Value Flow = incidents * shadow price = 17 * 3,348,416 + 197 * 3,946 = 57.70 mn				*Explanation*: Shell has a strong safety policy with a report on workplace incident reductions and improved safety training. They remain proactive in the investigation and closure of incidents with oversight committees. However, some media channels have pointed out major accidents in certain operating regions, thus bringing into question the real strength of Shell's risk mitigation, especially in high-risk areas such as offshore drilling sites.[11]		
Impact on local communities (local cohesion, health effects, other effects)			116.1	32.8%	38.04	**1,763.5**
Input factors: Investment into communities: €116.1 million[12] *Calculation*: Value flow: investment = 116.1 mn				*Explanation*: Shell supports education, entrepreneurship and skill building through a $128.3 million investment. These initiatives reached over 145,000 participants.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 57,000.0, Scope 3: 1,147,000.0	206[13] / ton CO2eq	-248,024.00	Scope 1 + 2: 100%, Scope 3 (own operations): 32.8%	-89,296.93	**-1,310,338.8**
Input factors: Scope 1 + 2: 57,000 kTon Scope 3: 1,147,000 kTon[14] *Calculation*: Value Flow: (57,000 + 1,147,000) * 1000 * 206 = 248,024.0 mn Value Flow Attributable to Shell: [(scope 1+2) + 32.8%* scope 3] * shadow price = (57,000 + 32.8% * 1,147,000) * 206 = 89,296.93 mn				*Explanation*: Shell's oil and gas operations significantly contribute to greenhouse gas emissions (GHG). Shell has pledged to reach net-zero emissions by 2050 through both its operations and emissions contributed by products it sells (which is around 90% of emissions reported), in line with the Paris Agreement. This goal applies to Scope 1 and Scope 2 emissions of Shell, being direct and indirect GHG reported from Shell's operation control and assets under operational control. Shell aims to reduce emissions in scopes 1 and 2 by 50% by 2030[15] and aims to reduce scope 3 emissions (customer emissions related to the use of Shell oil products) by 15–20% by 2030. Due to the nature of Shells' business and activities, we consider GHG to be their most material and critical factor. Though Shell has been investing in renewable sources, it has not reached its established goal of net-zero emissions as emissions remain high. Nonetheless, GHG emissions are one of the most prominent causations of global warming and thus we need to account for it in calculating the integrated value. The estimated value of Shell's carbon burden of €1,310.3 bn exceeds its market capitalisation of €193.3 bn.		
Air Pollution	VOC = 36,000,000 kg, NOx = 88,000,000 kg, SOx = 31,000,000 kg, Ozone-depleting emissions (HCFCs): 2,000 kg	VOC: 1.76 / kg[17] NOx: 1.67 / kg[18] SOx: 6.35 / kg[19] HCFC: 61.99 / kg[20]	-406.96	100%	-406.96	**-9,689.5**
Input factors: - VOC = 36,000,000 kg - NOx = 88,000,000 kg - SOx = 31,000,000 kg - HCFCs = 2,000 kg[21] *Calculation*: Value flow: pollution * shadow price = 36*1.76 + 88*1.67 + 31*6.35 + 2*61.99 = 406.96 mn				*Explanation*: Air quality remains a core focus within Shell's environmental standards, reflecting the company's commitment to sustainable operations. Shell adheres to both its rigorous internal standards and the regulations set by local authorities to effectively manage airborne pollutants generated during oil and gas production and processing. This includes stringent control over emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and volatile organic compounds (VOCs). These compounds pose significant threats to both human health and the environment. Nitrogen oxides contribute to the formation of ground-level ozone and fine particulate matter (PM 2.5), exacerbating respiratory and cardiovascular diseases, while also driving harmful photochemical smog. Sulfur oxides, another major air pollutant, can lead to acid rain, which damages ecosystems, corrodes infrastructure, and depletes soil fertility. VOCs, on the other hand, are key precursors to smog and fine particulates, and prolonged exposure to them has been linked to chronic health issues, including cancer and developmental disorders.		

Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
Land use / biodiversity loss	21,792.00	3,294.12[22]	-71.79	100%	-€71.79	**-1,709.2**
Input factors: Deforestation: 292 hectares New projects initiated since 2021: 43 Average hectare per new project (assumption): 500 MSA-loss: 1[23] *Calculation*: Total quantity: 292 + 43 * 500 = 21,792 hectares Value flow = hectares * MSA * shadow price = 21,792 * 1 * 3294.14 = 71.79 mn				*Explanation*: Biodiversity is a critical material issue for Shell due to its extensive operations in areas rich in biodiversity, such as critical habitats and forested regions. Shell recognizes the significant impact its oil and gas exploration, extraction, and related activities have on ecosystems. Despite commitments such as integrating biodiversity standards through its Safety Environment and Asset Management (SEAM) framework and targeting net-zero deforestation for new activities, Shell's actual progress remains limited. For instance, only 2% of Shell's social investment spending in 2023 was allocated to biodiversity efforts. This is very low considering the scale of its environmental impact. Furthermore, ongoing issues such as oil spills and habitat degradation in sensitive regions, including the Niger Delta, emphasise the detrimental effects of Shell's operations. While Shell has made some attempts to mitigate its biodiversity impact, its activities continue to disrupt ecosystems through deforestation, land use change, and environmental contamination.[24]		
Water usage	162 million of cubic meters of freshwater used in m3	1.41 / cubic meter[25]	-228.71	100%	-228.71	**-5,445.4**
Input factors: Total water usage 2023: 162 million m3[26] *Calculation*: Value flow attributable = water usage * shadow price = 162 * 1.41 = 228.71 million				*Explanation*: Shell's overall intake of fresh water increased to 162 million cubic metres in 2023 compared with 148 million cubic metres in 2022. Shell's extraction and refining operations utilise water can lead to resource strain, especially in water- scarce regions. While they introduced water management initiatives to reduce its freshwater use, increase in recycling, and promote more efficient water use in its operations, the usage can exacerbate water scarcity issues. This negatively impacts local communities, agriculture, and ecosystems reliant on limited water supplies and overall global water supplies, classifying water as a finite resource.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	238.1	
Positive SV	597.9	12.90
Negative SV	-2.2	-0.05
Positive EV	0.0	0.00
Negative EV	-1,327.2	-90.00
IV (integrated value)	**-493.3**	



FV = Financial Value	SV = Social Value	EV = Ecological Value	IV = Integrated Value

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	2.51
Existential Risk ratio	Negative externalities/FV	5.58
Futureproofing Ratio	IV/FV	-2.07

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Human rights breaches	Even though Shell reports on the number of breaches and dismissals, current literature regarding this matter is unfortunately not comprehensive enough to fully quantify such a matter. Though with the growing importance of sustainability, in future AEX Futureproof indices, it will eventually be incorporated.
Health & Safety (local residence)	Even though we have some indication of the number of oil spills which could harm the health of local residents, current literature is unfortunately not comprehensive enough to fully quantify the long-term negative health effects of such oil spills. Though with the growing importance of sustainability, in future AEX Futureproof indices, it will eventually be incorporated.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Scarce materials	Shell is using scarce materials. However, due to the specific nature of the materials being used and the absence of an appropriate shadow price, the material factor of scarce materials is not quantified.

1. Shell Annual Report 2023
2. Long-Term Value Site
3. *Ibid*.
4. Shell Annual Report 2023
5. Glassdoor, “Shell Reviews”, 2024
6. Shell Annual Report 2023
7. Annex Integrated Value Methodology Notes
8. Annex: Integrated Value Methodology Notes - Note 8
9. Shell Annual Report 2023
10. Shell Annual Report 2023
11. Adams, 2023
12. Shell Annual Report 2023
13. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
14. Shell Annual Report 2023
15. Shell Annual Report 2023
16. Shell Annual Report 2023
17. *Handboek Milieuprijzen 2023*, CE DELFT, 2023.
18. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
19. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
20. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
21. Shell Annual Report 2023
22. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
23. Shell Annual Report 2023
24. Shell Annual Report 2023
25. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
26. Shell Annual Report 2023
27. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024 (Exchange rate of 1.105)

Universal Music Group

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	UMG (Universal Music Group)
INTEGRATED VALUE	€85.1 bn
FUTUREPROOFING RATIO	1.73
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€25.81
SHARES OUTSTANDING (ultimo 2023)	1,819 mn
NET DEBT	€2.2 bn
FV (stock price * shares outstanding + net debt)	€49.2 bn

To calculate the Integrated Value of Universal Music Group, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			1,009.09	50%	504.55	**23,392.6**
Input factors: Sales: 11,100[1] mn, price elasticity: 1.00[2] *Calculation*: Correction Factor = 1 + [(10 − *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1)*0.5]/1 = 5.5[3] Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 11,100/ (1 * 5.5) * 0.5 = 1,009.09 mn				*Explanation*: UMG reaches its end consumers indirectly through streaming platforms and merchandise distributors rather than directly interacting with them. This impacts its control over consumer experiences and pricing structures, relying on partners like Spotify or merchandise resellers. This positive surplus aligns with UMG's broader goal of making music accessible and impactful, even though the direct pricing and interaction strategies are managed via intermediaries The standard attribution factor of 50% is applied, as UMG has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	36.53	2395[4]	87.51	100%	87.51	**4,057.1**
Input factors: number of employees (000): 10.3, Glassdoor rating: 3.7[5]. *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.7-3.4) * 1.5 = 3.55 Total increase in life satisfaction points: 3.55 * 10,290 = 36.53 (000) Value flow = # of life satisfaction points * shadow price = 36.53 * 2395 = 87.51 mn				*Explanation*: With 10,290 employees at the end of 2023, employees are a massive stakeholder for UMG.[6] The company mentions this materiality as one of the four main materialities. UMG claims to be committed to creating a healthy and positive workplace and tries to accomplish this through physical health, mental health, and other assistance programs among other things. Because of the big commitment to employee wellbeing, we consider this effect to be positive.		
Corporate taxes			27.75	100%	27.75	**1,286.6**
Input factors: corporate taxes (mn): 460; net income before taxes: 1721; effective corporate tax rate: 26.6%[7] 1,6% above the fair share of 20%-25%.[8] *Calculation*: 1.6% * 1721 = 27.75 mn				*Explanation*: UMG is committed to responsible tax practices through transparent financial reporting. The company adheres to the local tax laws in every region in which it operates, and it maintains transparency in its tax reporting by disclosing its effective tax rate and profit before taxes in its financial statements.		
Training	12.71 (000)	215[9]	2.73	100%	2.73	**126.7**
Input factors: 100,000 Hours of Training[10] *Calculation*: 100,000 / 8 (hours in 1 workday) = 12,710 Days of Training Value flow: 12.71 * 215 = 2.73 mn				*Explanation*: Universal Music Group (UMG) places a strong emphasis on training and development, offering a wide array of digital and in-person learning opportunities. These programs are designed to retain top talent and promote career growth within the company. In 2023, UMG expanded its Learning Management Software (LMS) across most of its global territories. This software serves as a centralized platform for upskilling and reskilling, and it allows for the incorporation of region-specific learning content by various territories. Throughout 2023, UMG delivered over 100,000 hours of training and provided more than 500 different courses to its employees, highlighting the company's commitment to fostering a productive and knowledgeable workforce.		
Underpayment in the Value Chain	5,152	7%	-360.64	50%	-180.32	**-8360.3**
Input factors: Average percentage of music value captured by artist in 2017: 12% Assumption to have increased to 13% in 2023 Fair pay percentage: 20%[12] Artist pay in 2023: €5.152 bn[13] *Calculation*: Underpayment: 13% - 20% = 7% Value flow: 7% * 5.152 = 360.64 mn				*Explanation*: Large music labels such as UMG have a lot of artists and influence in the musical industry. Typically, these labels are assigned to a significant part of the income from the artists' music, leaving a relatively small portion to the artist. Labels tend to be assigned to a larger part of the revenue than would be expected, with 20% for the artist as the baseline. Any percentage under 20% is assessed to be underpayment. 50% of the underpayment is assigned to UMG due to not only UMG being responsible, but the music industry as a whole.		

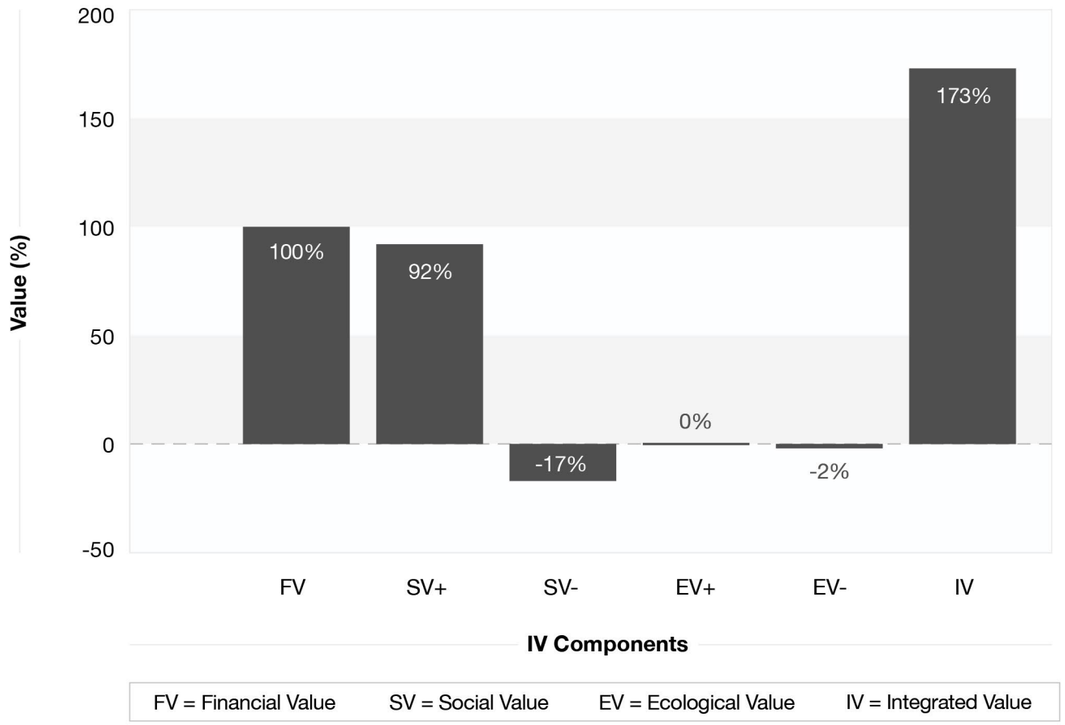
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health Effects on Consumers	35 mn hours	20[14]	700.00	50%	350.00	**16227.3**
Input factors: No. of playback hours per week per person: 20.7[15, 16] 52 weeks (1 year) Global Population: 8.1bn[17] UMG Market Share: 31.8%[18] % Population affected by mental Disorders: 12.5%[19] Percentage of hours listening to music for the main purpose of music therapy[20]: American Music Therapy Association helped 2 million people through music therapy in 2021. This represents approximately 0.025% of the population. Correction factor based on 71% of respondents to IFPI study indicating music is important for mental health: 4[21] Effectiveness of 1 hour of music listening compared to actual therapy: According to the American Psychological Association, treatment for mental disorders typically requires 15-20 sessions, with each session lasting about an hour, for 50% of patients to experience recovery. Based on these findings, it is estimated that 50 hours of music listening equates to the therapeutic benefits of one hour of conventional therapy. This assumption leads to an estimated efficiency rate of 2% for each hour of music listening[22] *Calculation hours*: No. of playback hours per week per person (20.7) * 52 weeks (1 year) * Global Population (8.1B) * UMG Market Share (31.8%) * 12.5% (% Population affected by mental Disorders) * 0.025% (Percentage of hours listening to music for the main purpose of music therapy) * 4 (Correction Factor) * 2% (Effectiveness of one hour of music listening compared to actual therapy) Total hours of playback of UMG's Music for 2023 for therapeutic purposes playback of UMG's = 35.0 mn hours Average hourly rate for therapy: 20[23] *Calculation*: Value flow = hours for therapy * shadow price = 35 mn * €20 = 700 mn				*Explanation*: Listening to music offers numerous benefits, including stress reduction by lowering cortisol levels, mood enhancement through the release of dopamine, cognitive improvement by enhancing memory and attention, facilitating emotional expression, and fostering social connections that contribute positively to mental health and well-being.[24]		
Cybersecurity Breaches + Data Privacy	0.37	3,529,412[25] / cyber incident	-1.32	100%	-1.32	**-61.3**
Input factors: - Estimated KPN annual data breaches: 0.14 - UMG EV (FV): €49.2 bn - KPN EV (FV): €18.4 bn Pro rata estimation of UMG based on KPN. *Calculation*: Value flow: UMG EV / KPN EV * KPN data breaches * shadow price = 49.2 / 18.4 * 0.14 * 3,529,412 = 1.32 mn				*Explanation*: UMG prioritizes cybersecurity and privacy to meet complex regulatory requirements and uphold trust across its global operations Their Global Security Office (GSO) leads a comprehensive cybersecurity program that includes continuous training, policy development, and strict compliance monitoring, supported by tools for proactive threat detection and response. Since no data on UMG or the music industry was available, we applied the value of KPN pro rata to UMG, based on the companies' Enterprise Value (EV).		

ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2: 7.6, Scope 3: 469.6	206[26]	-98.3	Scope 1 + 2 : 100% , Scope 3 (own operations): 50.0%	-50.01	**-733.9**
Input factors: Scope 1 + 2: 7.6 Scope 3: 469.6[27] *Calculation*: Total value flow: 7.6 * 206 + 469.6 * 206 = -98.3 mn				*Explanation*: Greenhouse gas emissions are a primary environmental concern for UMG, given the energy-intensive nature of digital music streaming, music production infrastructure, and the continued use of physical media like CDs and vinyl records. The business also relies on technological infrastructure that is energy-dependent to support music recording. UMG lists such items under 'Purchased Goods and Services' as well as 'Capital Goods' which together make up 65% of total operational emissions. The company's shift toward digital has reduced physical media's environmental impact but created a carbon-intensive infrastructure that is reliant on streaming platforms. Although some streaming services use renewable energy, a standardised approach across platforms remains a challenge as UMG states that they do not 'have any agreements with suppliers to use bio-based sources of fuel in the production of our purchased goods and services".		
Waste	1.02 (In Thousands)	298[28] / tonne	-0.30	100%	-0.30	**-7.3**
Calculation: Net professional WEEE produced: 4 Net non-hazardous waste: 1,015 Net merchandise scrap waste: 3 Net hazardous waste: 1 Total Net Waste Generated = 4+1,015+3+1=1,023[29] --- The reported data shows waste is categorised into four items, namely professional WEEE (Waste Electrical and Electronic Equipment), non-hazardous waste, merchandise scrap, and hazardous waste (excluding WEEE). In this sense, UMG reports 1,908 metric tonnes of waste produced in 2023 and a total recycled amount of 885 metric tonnes with a net waste produced of 1,023 metric tonnes.				*Explanation*: Another environmental material impact is waste generation that is less prominent within UMG's operations compared to GHG emissions, as the music industry is shifting towards more digital products and the business model of UMG is gradually limiting physical goods. However, the physical product line, which includes vinyl records, CDs, and audio hardware, continues to have a considerable impact on the environment where such productions generate waste through unsustainable material production, packaging, live-event wastes, shipping wastes, and the unsustainable use of textiles for merchandise.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	49.2	
Positive SV	45.1	0.97
Negative SV	-8.4	-0.18
Positive EV	0.0	0.00
Negative EV	-0.7	-0.05
IV (integrated value)	**85.1**	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.92
Existential Risk ratio	Negative externalities/FV	0.19
Futureproofing Ratio	IV/FV	1.73

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & Inclusion	Gender diversity and inclusion are critical areas for Universal Music Group. The company has made strides in enhancing gender representation and cultivating an inclusive workplace environment. A deeper analysis could provide a clearer understanding of how these efforts impact different stakeholder groups. Currently, we are still developing methods to effectively measure these impacts.
Information Dissemination	Universal Music Group has demonstrated an overall positive impact through its extensive dissemination of information, as most of the artists they have signed propagate positive messages through their music. Despite these beneficial influences, we have not yet established a robust method to quantify this impact effectively.
Business Ethics	Business ethics are a critical concern for Universal Music Group, as ethical conduct is essential to maintain trust with artists, employees, and stakeholders. It is vital to examine areas such as fair contracting, equitable treatment of artists, and transparency in operations to ensure the company upholds its ethical standards. However, we are still in the process of developing a reliable method to measure these ethical practices effectively.

1. UMG Annual Report 2023
2. Long-Term Value Site
3. Long-Term Value Site
4. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
5. Glassdoor Rating UMG, 2024
6. UMG Annual Report 2023
7. UMG Annual Report 2023
8. Annex Integrated Value Methodology
9. Annex: Integrated Value Methodology Notes - Note 8
10. UMG Annual Report 2023
11. *"Putting the Band Back Together"*, Citigroup, 2018
12. *"Music Royalties"* Aulart, 2020
13. UMG Annual Report 2023
14. Glassdoor, 2024
15. UMG Annual Report 2023
16. *"Engaging with Music"*, IFPI, 2023
17. Worldometer, 2024
18. *"Record companies market share"*, Statista, 2024
19. *"WHO special initiative for mental health"*, World Health Organization, 2024
20. *"Workforce analysis"*, American Music Therapy Association, 2021
21. *"Engaging with Music"*, IFPI, 2023
22. *"How long will it take for treatment to work?"*, American Psychological Association, 2017
23. Glassdoor, 2024
24. *"How Listening to Music Can Have Psychological Benefits"*, Cherry, 2024
25. *Cost of a Data Breach Report 2024*, IBM, 2024. (Exchange rate 1.105)
26. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (USD to EUR Exchange rate of 1.105)
27. *UMG Annual Report 2023*
28. *Monetary valuation of unsorted waste: A shadow price approach*, Sala-Garrido et al., 2023.
29. UMG Annual Report 2023

Unilever

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Unilever
INTEGRATED VALUE	€45.8 bn
FUTUREPROOFING RATIO	0.34
AEX FUTUREPROOF INDEX CLASSIFICATION	Lower-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€43.86
SHARES OUTSTANDING (ultimo 2023)	2,516.6
NET DEBT	€23.9 bn
FV (stock price * shares outstanding + net debt)	€134.3 bn

To calculate the Integrated Value of Unilever, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			5,283.69	50%	2,641.84	**122,485.5**
Input factors: Sales: 59,600[1] mn, price elasticity: 1.28[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-1.28)*0.5]/1.28 = 4.4. Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 59,600 / (1.28 * 4.4) * 0.5= 5,283.69 mn.				*Explanation*: Consumer surplus is the difference between a customer's willingness to pay and the product's price. A surplus results when the price that consumers pay is less than their willingness to pay. Unilevers' products are used daily by 3.4bn people, are of high quality, safety, and environmental standards, and undergo a strict quality assurance process. The standard attribution factor of 50% is applied, as Unilever has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

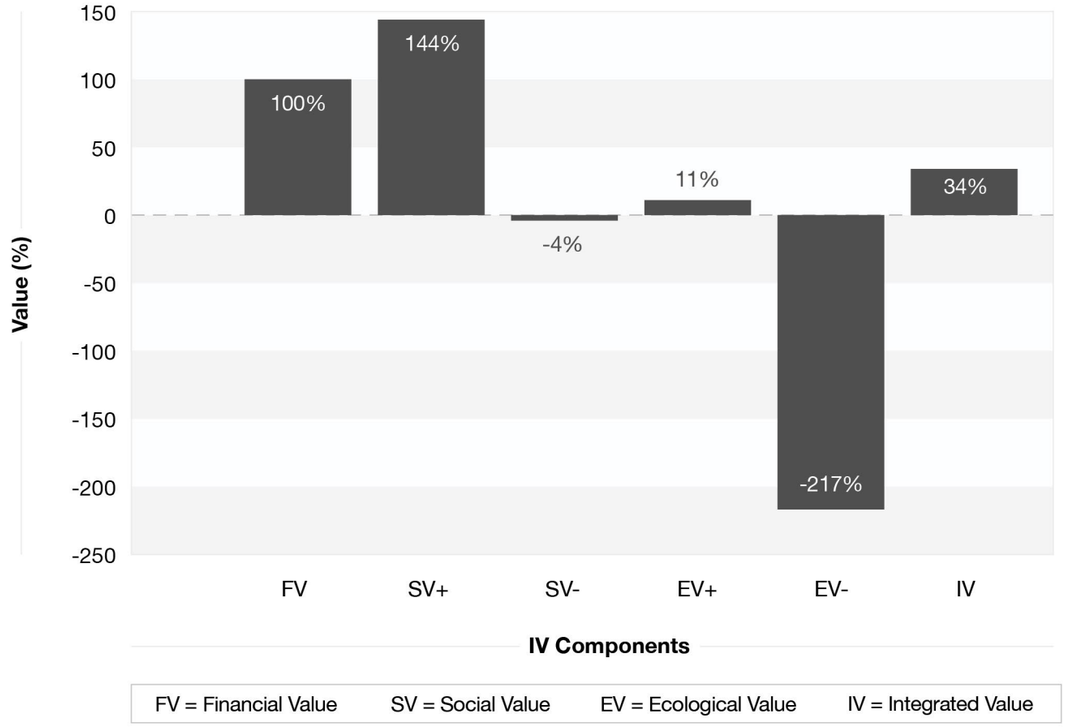
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	531,200 Life Satisfaction Points	2,395[3] / Life Satisfaction Point	1,272.48	100%	1,272.48	**58,996.6**
Input factors: number of employees (000): 128.0[4], Glassdoor rating: 4.1[5]. *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (4.1-3.4) * 1.5 = 4.15 Total increase in life satisfaction points: 4.15 * 128,000 = 531,20				*Explanation*: Employee well-being refers to the overall state of employees at the company. Unilever has a high engagement score of 84% in an internal survey, indicating that the company can generate a high value for its employees.		
Corporate taxes			0	100%	0	**0**
Input factors: corporate taxes: 2,200 mn, effective corporate tax rate: 23.5%.[6] *Calculation*: The effective corporate tax rate is 23.5%, which lies between the 20% - 25% fair tax rate. For this reason the value flow on corporate taxes is 0.				*Explanation*: This factor refers to the amount of taxes a company pays in relation to its net profit and whether its taxes paid fall within what is considered a "fair share tax rate range."		
Training	137.37 Days (in thousands)	215[7] / day	29.53	100%	29.53	**1,369.3**
Input factors: - DSM training days: 27,500[8] - Unilever EV (FV): €134.3 bn[9] - DSM EV (FV): €26.9 bn[10] Pro rata estimation of Unilever based on DSM. *Calculation*: Value flow attributable to company: Unilever EV / DSM EV * DSM training days * shadow price = 27.5 * 134.3 / 26.9 * 215 / 1000 = 29.53 mn				*Explanation*: Employee training offers significant societal benefits by enhancing workforce skills, boosting productivity, and fostering economic growth. Unilever demonstrates its commitment to employee development through a variety of training programs. As there is not sufficient data on the amount of training days Unilever offers, pro rata estimation based on DSM is conducted.		
Human Rights Breaches	Input factors: Medium-severe: 90 Most-severe: 20	Medium-severe: 88,959 / case Most-severe: 161,991 / case[11]	-11.25	50%	-5.62	**-260.7**
Input factors: Medium-severe breaches: 90, Most-severe breaches: 20.[12] *Calculation*: Value flow attributable to company: (90 * 88,959) + (20 * 161,991) = 11.25 mn				*Explanation*: Cases of unethical labor practices occur in the supply chains of consumer goods companies, especially in the context of palm oil, soya, cocoa, and other raw materials used in the production process. Even though Unilever is committed to eradicating modern slavery in its supply chain, cases still do occur.		
Underpayment in Value Chain	285,500 FTEs working for non-audited suppliers	750 / FTE working for non-audited suppliers	-213.75	50%	-106.88	**-4,955.1**
Input factors: - Amount of suppliers Unilever: 57,000[13] - 90% of suppliers audited by PwC as confirming to Unilever's fair wage policy[14] - Amount of FTEs per supplier (assumption): 50[15] - Shadow price: 750[16] *Calculation*: We calculate the amount of FTEs working for non-audited suppliers by: amount of suppliers * percentage of suppliers non-audited * amount of FTEs per supplier = 57,100*(100%-90%)*50 = 285,500 FTEs working for non-audited suppliers Value flow: 285,000 * 750 = 213.75 mn				*Explanation*: Unethical labour practices across the supply chain include the underpayment of workers. Unilever is working together with its suppliers to provide a living wage for all workers across the supply chain.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Health & Safety (employees)	Fatal: employees: 0; Contractors: 1 Non-fatal: employees 115.5, contractors: -	Fatal: 3,348,416 Non-fatal: 3,946[17]	-3.80	Own employees: 100%, Contractors: 50%	-2.13	**-98.8**
Input factors: - Amount of weeks worked per year: 48[18] - Amount of hours worked per week: 40 - Number of own employees: 128,000[19] - Non-fatal accident rate per million hours worked 0.47[20] - Fatal incidents own employees: 0[21] - Fatal incidents contractors: 1[22] - Non-fatal incidents contractors: 0[23] *Calculation*: First, calculate the amount of hours worked yearly by either an employee or a contractor by (amount of weeks worked per year * amount of hours worked per week) = 48*40 = 1,920 workable hours per year for an FTE. Second, calculate the millions of hours worked by own employees: 128,000*1,920 = 145.8 mn hours worked. Third, calculate the number of non-fatal accidents for own employees by (accident rate * million hours worked) = 0.47*145.8 = 115.5 non-fatal accidents Value flow attributable to company = 50% * 1 * 3,348,416 + 115.5 * 3,946 = 2.13 mn				*Explanation*: Even though Unilever is committed to providing employee training regarding safety and health, incidents do happen.		
Impact on local communities (local cohesion, health effects, other effects)	1,000,000 up-skilled individuals	431.15[24] / up-skilled individual	431.15	50%	215.58	**9,994.8**
Input factors: - 1,000,000 upskilled individuals in 2023 - Shadow price: 431.15 *Calculation*: Unilever announced its pledge to help prepare 10 million young individuals to enter the job market by 2030 by providing them with essential skills. Considering this pledge was made in 2021, and assuming a linear distribution, Unilever helped equip around 1 million people with essential skills in 2023. However, Unilever is not the sole entity that contributed to this impact. They work together with several partners, including multinational corporations (e.g., Microsoft and LinkedIn) and social ventures (e.g. Enactus Brazil and Shujaaz Inc). Hence, 50% of the upskilled individuals can be directly attributed to Unilever. Value flow: 1,000,000*431.15 = 431.15 mn[25]				*Explanation*: Unilever works with other companies and governments around the world to create employment skills in people from 15 to 24 years old. In South Africa, they helped create the youth employability program, which has helped almost 400,000 young people identify their purpose and develop their professional skills. In Brazil, Unilever aims to skill up 1 million young people over the next five years in collaboration with Enactus. In Kenya, Unilever plans to launch a multi-platform campaign aimed at training and onboarding at least 10,000 young individuals into the retail sector together with social venture network Shujaaz Inc. All these programs and campaigns can be summarized by the following quote from Unilever: “we will help equip 10 million young people with essential skills to prepare them for job opportunities, by 2030”.		

ENVIRONMENTAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
GHG emissions	Scope 1 + 2 : 730.0 Kilo tons, Scope 3: 99,200 Kilo tons CO2eq.	206 / ton CO2eq[26]	-20,608.56	Scope 1 + 2 : 100% Scope 3 50.0%	-10,385.71	**-152,399.4**
Input factors: Scope 1 + 2: 730.0 Scope 3: 99,200[26] *Calculation*: Value flow attributable to company: (730 + 50% * 99,200) * 0.206 = 10,385.71 mn				*Explanation*: In 2023, Unilever reported Scope 1 and Scope 2 GHG emissions of 0.73 million tons of CO_2, with total emissions, including Scope 3, amounting to 99.93 million tons CO_2eq. Unilever is committed to achieving net-zero emissions across its value chain by 2039, but the scale of its operations means that these emissions continue to pose environmental challenges. Hence, we assess Unilever's' performance on GHG emissions as negative.		
Air Pollution	1,473,000 kg NOx[28]	NOx: 1.67 / kg[29]	-2.45	100%	-2.45	**-58.4**
Input factors: - NOx: 1,473,000 kg *Calculation*: Value flow attributable to company: 1.67 * 1,473,000 = 2.45 mn				*Explanation*: The company’s manufacturing process creates air pollution due to energy use. Hence, we assess Unilever’s air pollution performance to be negative.		
Waste	642,160 Tons of virgin plastic produced	4,951 / ton of virgin plastic produced[30]	-3,179.17	100%	-3,179.17	**-75,694.6**
Input factors: 642,160 Tons of virgin plastic produced[31] *Calculation*: Value flow attributable to company: 642,160 * 4,951 = 3,179.17 mn				*Explanation*: The company generates a large amount of virgin plastic, for instance, in 2022, 698,000 tonnes. Plastic waste is a material environmental concern across all of Unilever’s divisions. Unilever has set ambitious targets to tackle plastic waste, including making all plastic packaging reusable, recyclable or compostable and cutting virgin plastic use by 50% by 2025. As of 2023, the company has increased recycled plastic content to 22% and reduced virgin plastic use by 18%. However, only 53% of its packaging meets recyclability or reusability standards, falling short of its 100% goal.		
Land use / biodiversity loss	4,000,000 ha	3,294.12[32]/ ha	-5,270.59	50%	-2,635.29	**-62,745.1**
Input factors: - MSA: 0.4[33] - Unilever hectares deteriorated: 4,000,000[34] *Calculation*: Value flow: 0.4 * 3,294.12 * 4,000,000 = 5,270.59 mn				*Explanation*: Land use/biodiversity loss is a material factor for Unilever because the company depends on natural resources like palm oil, soy, and cocoa, which are directly impacted by unsustainable land practices. Biodiversity loss can disrupt ecosystem services such as pollination and water regulation, threatening the resilience of Unilever's supply chain. Additionally, consumers and regulators increasingly demand sustainable practices, making biodiversity preservation critical for maintaining trust and meeting compliance standards.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Water Usage	13.80 mn cubic meters	1.41[35] / cubic meter	-19.48	100%	-19.48	**-463.9**
Input factors: 13.80 mn cubic meters of water used[36] *Calculation*: Value flow: 13.80 * 1.41 = 19.48 mn				*Explanation*: The company consumes large amounts of water to produce its products, of which approximately 50% come from water-distressed areas. The company addresses these issues in its water stewardship program, which aims to mitigate risks associated with water.		
Land Restoration	200,000 ha	3,294.12[37]/ ha	658.82	50%	329.41	**15,272.7**
Input factors: - 200,000 ha reforested[38] together with suppliers - MSA: 1.0[39] *Calculation*: Value flow: 1.0 * 3,294.12 * 200,000 = 658.82 mn				*Explanation*: Unilever engages in reforestation initiatives. For example, in its "Climate Transition Action Plan", the company pledges to reforest areas of over 200,000 hectares with their suppliers. Given these projects are completed together with their suppliers, we will use a 50% attribution factor.		



Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	134.3	
Positive SV	192.8	4.16
Negative SV	-5.3	-0.11
Positive EV	15.3	0.33
Negative EV	-291.4	-16.22
IV (integrated value)	**45.8**	

Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	1.55
Existential Risk ratio	Negative externalities/FV	2.21
Futureproofing Ratio	IV/FV	0.34

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & Inclusion	Gender diversity and inclusion are key focuses for Unilever. The company has achieved significant progress in improving gender representation and cultivating an inclusive workplace culture. Further investigation would help to illuminate the impact of these initiatives on various stakeholder groups. Currently, we are still in the process of developing reliable methods to measure these impacts effectively.
Health Effects on Consumers	Unilever has a significant impact on consumer health through its diverse portfolio of food, personal care, and home care products. The company is committed to enhancing the health and well-being of its consumers by reformulating products to reduce sodium, sugars, trans fats, and calories where possible. This is part of Unilever's Sustainable Living Plan, which aims to help billions of people improve their health and well-being. Unilever also actively promotes better nutrition through its brands and products. For instance, they have initiatives to fortify foods with essential nutrients that are commonly deficient in various populations, such as adding iron to cooking products in regions with high rates of anemia. Currently, we are still in the process of developing reliable methods to measure these impacts effectively. We encourage Unilever to improve their reporting on health effects.
Harmful Business Ethics	Business ethics are of paramount importance to Unilever, as the company recognises that ethical conduct is essential for maintaining trust with consumers, employees, and shareholders. It is crucial to rigorously assess areas such as supply chain transparency, fair trade practices, and anti-corruption measures to ensure Unilever upholds its strong ethical commitments. Currently, we are still in the process of developing reliable methods to measure these impacts effectively.
ENVIRONMENTAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Soil Pollution	Unilever impacts soil pollution primarily through its agricultural sourcing practices. The company supports sustainable farming methods that minimize the use of harmful chemicals and pesticides, which are significant contributors to soil degradation. Unilever's commitment to sourcing sustainably grown ingredients helps to prevent soil pollution and promotes soil health. This includes advocating for organic farming practices and the use of natural fertilizers which help maintain soil fertility and reduce contamination. Currently, we are still in the process of developing reliable methods to measure these impacts effectively.
Water Pollution	Unilever addresses water pollution through its comprehensive water stewardship programs. The company focuses on reducing water contamination by improving the environmental performance of their manufacturing processes. This includes reducing the discharge of organic materials and harmful substances into water bodies. Unilever also works with its suppliers to ensure that wastewater treatment is a standard practice before discharge, thereby reducing the impact on aquatic ecosystems. Currently, we are still in the process of developing reliable methods to measure these impacts effectively.
Waste Management & Recycling	Unilever plays a proactive role in waste management and recycling, particularly through its packaging innovations and waste reduction strategies. The company has committed to making all of its plastic packaging reusable, recyclable, or compostable by 2025. By reducing the amount of single-use plastic and introducing more sustainable materials, Unilever aims to lessen its environmental footprint and encourage a circular economy. Additionally, Unilever invests in global initiatives to improve waste collection and recycling infrastructures, particularly in developing markets where such systems are not yet robust. We encourage Unilever to improve reporting with evidence-based numbers, which allows for external monitoring and measurement.

1. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
2. *Long-Run Patterns of Demand: The Expenditure System of the CDES Indirect Utility Function - Theory and Applications*, Jensen & de Boer, 2006.
3. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
4. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
5. *Werken bij Unilever*, Glassdoor, 2024.
6. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
7. Annex: Integrated Value Methodology Notes - Note 8
8. *2023 Integrated Annual Report*, DSM Firmenich, 2024.
9. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
10. *2023 Integrated Annual Report*, DSM Firmenich, 2024.
11. *Unilever Modern Slavery Statement*, Unilever, 2024.
12. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
13. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
14. *PwC's Independent Limited Assurance Report 2023*, PwC, 2024.
15. This is a (conservative) assumption we make based on the fact that Unilever works with above medium-sized to large-sized suppliers.
16. Schoenmaker and Schramade (2023), Corporate Finance for Long-Term Value, Chapter 18.
17. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
18. *Op hoeveel vakantiedagen heb ik recht?*, Ministerie van Algemene Zaken, 2023.
19. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
20. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
21. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
22. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
23. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
24. Annex: Integrated Value Methodology Notes - Note 8
25. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
26. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
27. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
28. *Additional voluntary environmental disclosure - Climate*, Unilever, 2024.
29. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
30. Annex: Integrated Value Methodology Notes - Note 8
31. *Uncovered: Unilever's complicity in the plastics crisis and its power to solve it*, Greenpeace, 2023.
32. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
33. The Mean Species Abundance (MSA) is assumed to be 0.4.
34. *Unilever Annual Report and Accounts 2023*, Unilever, 2024.
35. Impact-Weighted Accounts Framework (IWAF), Impact Economy Foundation, 2024. (Exchange rate of 1.105)
36. *Additional voluntary environmental disclosure - Water stewardship*, Unilever, 2024.
37. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (Exchange rate of 1.105)
38. *Unilever Climate Transition Action Plan updated 2024*, Unilever, 2024.
39. The Mean Species Abundance (MSA) is assumed to be 1.0.

Wolters Kluwer

INTEGRATED VALUE OVERVIEW	
COMPANY NAME	Wolters Kluwer
INTEGRATED VALUE	€59.4 bn
FUTUREPROOFING RATIO	1.38
AEX FUTUREPROOF INDEX CLASSIFICATION	Upper-middle

FINANCIAL VALUE	
STOCK PRICE (ultimo 2023)	€128.05
SHARES OUTSTANDING (ultimo 2023)	248.5
NET DEBT	€11.2 bn
FV (stock price * shares outstanding + net debt)	€43.0 bn

To calculate the Integrated Value of Wolters Kluwer, we analysed the social and environmental issues. Please find an overview of the values, calculations, and explanations below:

SOCIAL ISSUES

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Consumer wellbeing			541.61	50%	270.81	**12,555.5**
Input factors: Sales: 5600[1] mn, price elasticity: 0.31.[2] *Calculation*: Correction Factor = 1 + [(10 – *price elasticity*) * *partial factor*]/*price elasticity* = 1+[(10-0.31)*0.5]/0.31 =16.62. Corrected consumer surplus = *sales* / (*price elasticity* * *correction factor*) * 0.5 = 5,600 / (0.31 * 16.62) * 0.5 = 541.61 mn				*Explanation*: Given Wolters Kluwer's high-value, proprietary content and the industry standard of charging significant subscription fees, consumer surplus is positive but has a potentially limited impact. Overall, the market is quite inelastic, with a big consumer surplus. The standard attribution factor of 50% is applied, as Wolters Kluwer has a primary responsibility in its value chain (measured as a company's value added share of more than 50% of sales).		

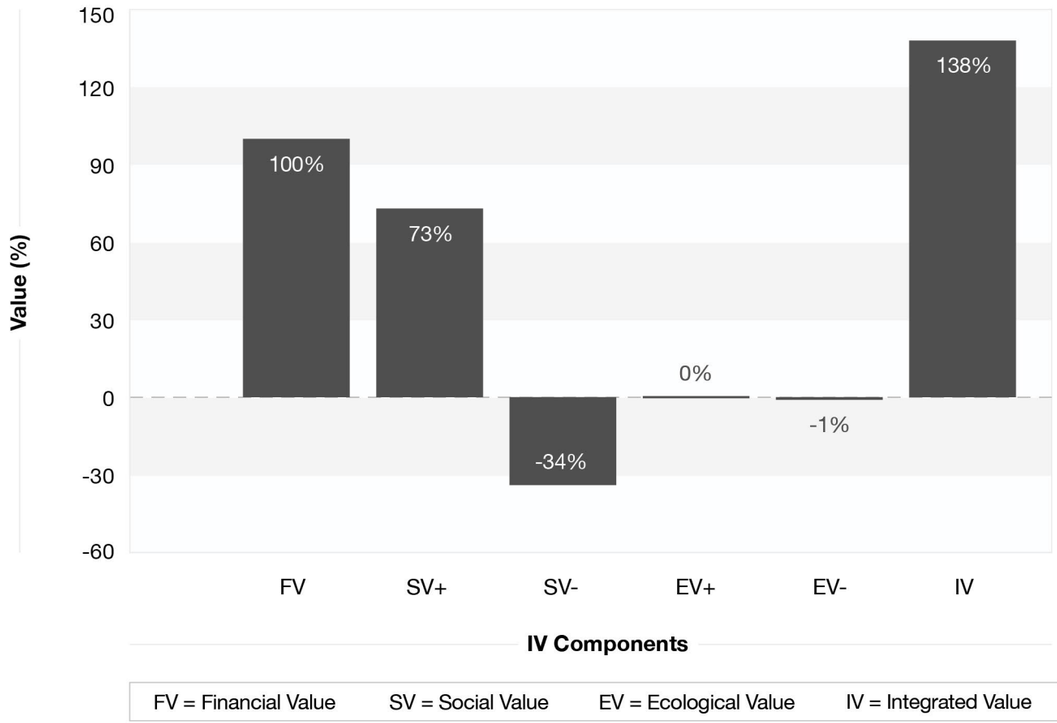
Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Employment wellbeing	72.89	2,395[9]	174.6	100%	174.6	**8,095.3**
Input factors: number of employees (000): 21.4[1], Glassdoor rating: 3.6[4]. *Calculation*: Employee life satisfaction points increase: 3.1 + (Glassdoor rating - 3.4) * 1.5 = 3.1 + (3.6-3.4) * 1.5 = 3.4 Total increase in life satisfaction points: 3.4 * 21400 = 72,89				*Explanation*: Through initiatives like the Employee Assistance Program (EAP), fitness and mindfulness resources, and financial planning tools, Wolters Kluwer supports a balanced and fulfilling work experience, enhancing employees' personal development while aligning with the company's organisational objectives.		
Corporate taxes			0	100%	0	**0**
Input factors: Effective corporate tax rate is 22.5%[1] *Calculation*: The effective corporate tax rate is 22.5%, which lies between the 20% - 25% fair tax rate. For this reason the value flow on corporate taxes is 0.				*Explanation*: Corporate taxes stand out as a positive material factor for Wolters Kluwer, underlining the company's contribution to social value. By fulfilling the tax obligations, Wolters Kluwer not only complies with legal standards but also demonstrates a commitment to the communities where it operates. Wolters Kluwer's commitment to tax transparency aligns with the ESG goals. By adopting responsible tax practices, the company can enhance its reputation and appeal to investors and stakeholders who value corporate responsibility.		
Training	13.40 Days (in Thousands)	215[5]	2.88	100%	2.88	**133.6**
Input factors: 5 Hours per Employee; 21,438 employees[6] *Calculation*: Days of training = 5 Hours per Employee * 21,438 employees / 8 Hours (Work Day) = 13.40 Value flow = # of training days * shadow price = 13.4 * 215 = 2.88 mn				*Explanation*: Wolters Kluwer actively invests in the training and development of its employees, with 97% of its employees completing training that broadens their skillset (excluding mandatory compliance training). Overall, these initiatives have resulted in increased readiness to fill internal vacancies, integrated learning platforms in the daily activities of workers, and a global "growth" campaign.		
Impact On Local Communities			16.34	50%	8.16	**378.5**
Input factors: As Wolters Kluwer did not provide information, we applied the Pro Rata Value Adjusted method from RELX due to their considerable similarities (operations heavily focus on developing sophisticated data analytics and software platforms, powered by extensive databases). RELX Value Flow 26.12 FV RELX = 68.7[7] FV Wolters Kluwer = 43.0 *Calculation*: Value Flow RELX / FV Relx * FV Wolters Kluwer 26.12 / 68.7 * 43.0 = 16.34				*Explanation*: Wolters Kluwer is committed to philanthropy and making significant contributions to local communities. The company focuses on leveraging its resources and expertise to address social challenges and promote sustainable development. Wolters Kluwer's philanthropic efforts are characterised by substantial investments in educational programs, health initiatives, and local economic development projects. The company's approach to community involvement includes partnerships with nonprofits, educational institutions, and other organizations that work directly on the ground. These collaborations aim to amplify the impact of their efforts, reaching more individuals and communities in need. Wolters Kluwer also encourages employee participation in its community programs, offering volunteer opportunities and matching gifts to increase the collective impact of their contributions.		

Material issue	Quantity (Q) (2023)	Shadow Price (SP) (€) (2023)	Value Flow (€ mn) (2023) (=Q*P)	Attribution factor	Value Flow (€ mn) Attributable to the company (2023)	Sum of PV (€ mn)
Information Dissemination	394.32	2,250	887.22	25%	221.55	**10,271.8**
Input factors: PRO RATA FROM RELX RELX number of articles = 630.000 FV RELX = 68.7 FV Wolters Kluwer = 43.0 The monetary value of a scientific publication is priced at €2,250[8] *Calculation*: Number of articles RELX / FV RELX * FV Wolters Kluwer 630.00 / 68.7 * 43.0 = 394.32 Value flows = number of articles * shadow price = 394.32 * 2,250 = 887.22 mn				*Explanation*: Wolters Kluwer's provides high-quality information and services that generate a positive externality, benefiting not only their customers but also society. The company's specialised information helps decision-making in critical sectors such as law, healthcare, and finance, improving outcomes for individuals, businesses, and governments. By enhancing knowledge and enabling better decision-making, Wolters Kluwer contributes to increased productivity, efficiency, and overall societal well-being.		
Cybersecurity Breaches + Data Privacy	181.73	1,729	-313.85	100%	-313.85	**-14,551.2**
Input factors: PRO RATA FROM RELX RELX victims 290,350 victims annually FV RELX = 68.7 FV Wolters Kluwer = 43.0 Shadow price = €1,729 *Calculation*: Number of victims RELX / FV RELX * FV Wolters Kluwer 290.35 / 68.7 * 43.0 = 181.73 Value flow = # of victims * shadow price = 181,733 * 1,729 = 313.85 mn				*Explanation*: Wolters Kluwer has been transitioning from a publisher to an information services company. With specialities in various sectors, their products and services have gone through a significant digitalization transformation. Most of their products and services now consist of providing information, software solutions and services in the health and information & communications sector. Along with this transition comes the increased risk of data breaches and cyberattacks. This means that the company's operations, its customers and other downstream value chain stakeholders run the risk of their data privacy being impaired.		

ENVIRONMENTAL ISSUES						
Material issue	**Quantity (Q) (2023)**	**Shadow Price (SP) (€) (2023)**	**Value Flow (€ mn) (2023) (=Q*P)**	**Attribution factor**	**Value Flow (€ mn) Attributable to the company (2023)**	**Sum of PV (€ mn)**
GHG emissions	Scope 1 + 2: 11.1 Scope 3: 285.6	206[9]	-61.12	Scope 1 + 2: 100% Scope 3: 50.0%	-31.75	**-465.9**
Input factors: Scope 1 + 2: 11.1 Scope 3: 285.6[10] *Calculation*: Value flow attributable to the company: [(scope 1+2) + 50%* scope 3] * shadow price = (11.1 + 50% * 285.6) * 206 = 31.75 mn				*Explanation*: Greenhouse gas emissions are an important material factor for Wolters Kluwer. Although Wolters Kluwer is not an emission-intensive company, it has quite a large negative impact on its activities coming from the supply chain. To actively address these negative impacts, Wolters Kluwer has set the goal to reduce scope 1 and scope 2 emissions by 50% by 2030, and scope 3 emissions by 30% by 2030 where 2019 can be considered the base year. The emissions coming from the supply chain contribute the largest part to the total emissions of Wolters Kluwer, approximately 80%. Within the supply chain emissions, suppliers emission contributes to the largest share of the emissions. Until now, the number of emissions coming from suppliers has been calculated via an industry average. Wolters Kluwer is setting up initiatives to further engage with suppliers to obtain more specific data to get a more accurate outlook on the actual emission. This initiative shows that Wolters Kluwer is working on a more reliable and reflective overview of the true impact of their supply chain which is the first step in reducing the overall greenhouse gas emissions.		

Integrated Value is the sum of the Financial Value (FV), Social Value (SV), and Environmental Value (EV). Please find our calculations below:

INTEGRATED VALUE (IV)		
IV calculation (equal weights)	**Value (bn)**	**2023 Value flows (bn)**
FV (enterprise value)	43.0	
Positive SV	31.4	0.68
Negative SV	-14.6	-0.31
Positive EV	0	0.00
Negative EV	-0.5	-0.03
IV (integrated value)	59.4	



Futureproofing ratio is the Existential Opportunity ratio - the Existential Risk ratio + 1. Please find our calculations below:

FUTUREPROOFING RATIO (IV/FV)		
Existential Opportunity ratio	Positive externalities/FV	0.73
Existential Risk ratio	Negative externalities/FV	0.35
Futureproofing Ratio	IV/FV	1.38

For certain social and environmental issues, we were unable to find credible sources at this time. Below is an overview of these issues, along with our assessment of their materiality. In future editions of the AEX Futureproof Index, we will revisit these topics and aim to include them once reliable information becomes available.

MISSING ISSUES	
SOCIAL ISSUES	
FACTOR	MATERIALITY ESTIMATE
Discrimination & Inclusion	Gender diversity and inclusion are vital priorities for Wolters Kluwer. The company has made significant strides in enhancing gender representation and promoting an inclusive workplace environment. A more detailed analysis could provide deeper insights into how these efforts are impacting different stakeholder groups. Currently, we are still developing effective methods to measure these impacts.
Business Ethics	Business ethics are a fundamental concern for Wolters Kluwer, as maintaining ethical practices is essential to building and sustaining trust with clients, employees, and the wider community. It is crucial to examine areas such as transparent operations, fair dealings, and compliance to ensure the company meets its ethical standards. Currently, we are still developing effective methods to measure these impacts.

1. Wolters Kluwer 2023 Annual Report
2. Long-Term Value Site
3. Ibid.
4. *Wolters Kluwer Reviews*, Glassdoor
5. Annex: Integrated Value Methodology Notes - Note 8
6. Wolters Kluwer Annual Report 2023
7. RELX Final Report 2025
8. Rousseau, et al. (2020). The monetary value of a scientific publication.
9. *Impact-Weighted Accounts Framework (IWAF)*, Impact Economy Foundation, 2024. (USD to EUR Exchange rate of 1.105)
10. Wolters Kluwer Annual Report 2023

Annex: Integrated Value Methodology Notes

Notes on Integrated Value Methodology

The integrated value calculations have been prepared in accordance with the Impact-Weighted Accounts Framework (IWAF) of the Impact Economy Foundation (IEF, 2014), ensuring consistency and reliability.

The numbers are presented consolidated, combining the performance and impact of the parent company and its subsidiaries as a single entity, with intercompany transactions eliminated.

The policies related to calculating integrated value are explained in the notes below.

Note 1: Attribution

Impact can be directly or indirectly attributed to companies. The Impact-Weighted Accounts Framework (IEF, 2014) is followed for attributing impact.

IWAF distinguishes three attribution categories
1. Predominantly internal effects: 100% attribution to the company.
2. External effects with primary responsibility to company: 50% attribution to company.
3. External effects without a primary responsibility: attributed over the value chain.

Internal vs external effects
Following IWAF, we distinguish between internal and external effects to determine attribution. Carbon emissions are used as an example. Scope 1 and 2 are internal effects and fully attributed to the company. Scope 3 emissions are external effects happening in the value chain (up- or downstream). Other examples of external effects are consumer wellbeing, obesity, health effects of consumers, and pollution.

Sometimes, the effects can be split. For Health & Safety, there is a split between injuries to employees (100% attribution) and injuries at contractors (X% attributed). For employment wellbeing, own employees (100% attribution) and employees at suppliers (X% attributed). The overall quantity is thus a combination: 100%*own employees/injuries + X%*employees/injuries at suppliers.

Table 6: Example Companies and Their Attribution Categories

Company	Sales	Costs	Share of Value Added	Attribution Category	Page AR 2023
Company A	18,169	4,626	74.6%	2	...
Company B	88,649	61,174	31.0%	3	...
Company C	59,604	25,084	57.9%	2	...

Primary vs non-primary companies
Attribution category 2 (primary companies) versus attribution category 3 companies (non-primary companies) can be calculated on the basis of value added. The share of value added is [(sales, gross revenue or turnover) – (costs of goods/product/materials used/sold)] divided by [sales]. If a company's value added is more than 50% of sales, then it is a primary company (category 2). If it is less than 50%, it is not a primary company (category 3). The costs of goods/products/materials used/sold can be derived from the breakdown of sales and costs by nature in the annual report (AR).

So, Company A and Company C are attribution category 2, and therefore, get 50% of Scope 3 emissions (consumer wellbeing, etc) attributed, while Company B is an attribution category 3 company and gets 31% of Scope 3 emissions (consumer wellbeing, etc).

Financials
Financials (banks and insurers) follow a different regime for attribution (PCAF, 2022). When financial institutions finance clients, they facilitate these clients to pursue their activities, with related impacts. The GHG Protocol lists financed emissions (both loans and assets under management) under scope 3 category 15 (investments). PCAF (2022) takes 100% of the scope 1 and 2 emissions of clients as scope 3 emissions of the financial institution. We take the view that financiers are also responsible for facilitating the usage of a client's products (client scope 3 emissions) and apply 50% to client scope 3 emissions. We also include other external social and environmental effects of clients. We call this Step F1 total external effects.

Step F1: calculation of external effects
- Scope 1 + 2 emissions of clients: 100%.
- Scope 3 emissions of clients: 50%.
- Other S+E issues: 100%.

The next step is to calculate a bank's or an insurer's share in these external effects of client i. This Step F2 is called financed effects (PCAF, 2022).

Step F2: calculation of financed effects

$$Financed\ effects = \sum_i \frac{Outstanding\ amount_i}{Total\ equity+debt_i} * external\ effects_i$$

PCAF (2022) attributes these financed effects pro rata to financials; this leads to double counting (effects are included at the client and pro rata at its financiers). We apply the IWAF attribution category 3 method, which measures the value added of the financial in the value chain of the client (IEF, 2024). The value added is reflected in the interest rate or dividend paid. Bank interest rates for commercial clients typically range from 4% to 8%. Taking the average, we apply a 6% attribution factor to financed effects.

Step F3: attribution to financials (banks and insurers)

$$6\% * financed\ effects$$

Summing up, the attribution factor for external effects financed by banks and insurers is:

$$6\% * \sum_i \frac{Outstanding\ amount_i}{Total\ equity+debt_i}$$

Note 2: Valuation - updated guidelines for calculating positive social value

Chapter 5 and 11 of Corporate Finance for Long-Term Value (CFLTV) (Schoenmaker and Schramade, 2023) contain the guidelines for valuation. We provide here an update on calculating social and environmental value. Positive social value is based on wellbeing economics, where assumptions and extra data (e.g., price elasticity; employment satisfaction points) are needed to perform the analysis and calculations.

The guidelines for calculating negative social and environmental value remain the same as provided in Chapter 5 of CFLTV. These negative values are based on the cost of restoration, which is reflected by shadow prices.

Overview

1. **Consumer surplus:** consumer surplus is partly related to a company's market power. We provide a correction factor for market power, as market power-related consumer surplus should not accrue to a company's integrated value. We also provide data on price elasticity for several industries ('Research on the price elasticity of demand for AEX Companies', n.d.).
2. **The wellbeing of employees:** employee satisfaction is based on a European Social Survey and measured by the Impact Institute. These are average figures. Depending on a company's employment rating, the average can be corrected upward or downward.
3. **Corporate tax:** corporate taxes are no longer included as a positive social value, as the government is also delivering public goods (financed by corporate taxes). The social contribution (negative or positive) relates to a company paying its fair share, defined in the range of 20% to 25% of taxable profit.
4. **Health effects:** health effects are measured in quality-adjusted life years (QALY). This remains the same as in Chapter 5. Unless in the three-step approach (societal cost, total volume, and volume sold of the company) in Note 4 (method 2 for estimation of externalities) and Note 5 (the alcohol example).

1. Consumer surplus

The benefits of a company's market power are not included in the company's integrated valuation, as market power can come at the expense of consumers through higher prices or lower-quality products. We include a correction factor for market power in calculating the consumer surplus.

Equation 5.7 in Chapter 5 (CFLTV) calculates the consumer surplus as follows:

$$consumer\ surplus = \frac{\Delta Q \cdot P}{price\ elasticity} \cdot \frac{1}{2} = \frac{sales}{price\ elasticity} \cdot \frac{1}{2}$$

The competitiveness of a product market is measured by price elasticity. So, the correction factor is applied to price elasticity:

$$consumer\ surplus = \frac{sales}{price\ elasticity * correction\ factor} \cdot \frac{1}{2}$$

We derive the correction factor as follows. Full competition is characterised by a price elasticity of infinity. This means that consumers go directly to one of its competitors when a company increases its price (ceteris paribus). Full market power is reflected in a very low price elasticity close to zero. This means that when a company increases its price, consumers tend to stay (unless they cannot afford the product or don't find it worthwhile anymore) because there are no competitors where consumers can go. We only make a partial correction for market power, as companies still provide goods for which consumers are prepared to pay more (i.e., these goods are wanted by consumers).

We make two assumptions for the correction factor:

1. A market is very competitive at a price elasticity of 10 (so we correct from an elasticity of 10).
2. The partial factor is 0.5 (so we only correct half of the market power).

$$correction\ factor = 1 + \frac{(10\text{-}price\ elasticity) * partial\ factor}{price\ elasticity}$$

Let's illustrate the corrected consumer surplus with an example. A company has sales of 100 and a price elasticity of 2.

$$consumer\ surplus = \frac{sales}{price\ elasticity} \cdot \frac{1}{2} = \frac{100}{2} \cdot \frac{1}{2} = 25$$

$$correction\ factor = \frac{(10\text{-}price\ elasticity) * partial\ factor}{price\ elasticity} = 1 + \frac{(10\text{-}2) * 0.5}{2} = 3$$

$$corrected\ consumer\ surplus = \frac{sales}{price\ elasticity * correction\ factor} \cdot \frac{1}{2} = \frac{100}{2*3} \cdot \frac{1}{2} = 8.3$$

So, the corrected consumer surplus of 8.3 is one-third of the uncorrected consumer surplus of 25. Two-thirds (16.7) of the consumer surplus is not assigned to the company because of undue market power.

Default setting: If no data on a company's price elasticity is available, the price elasticity of a 'similar' or 'adjacent' sector can be taken. Alternatively, the default setting is a price elasticity of 1.

2. Employment wellbeing

Employment wellbeing measures the change in life satisfaction (alongside the financial impact of the salary received) compared to somebody without a job. Employment wellbeing is measured as an average for all employees of a company and is based on a European Social Survey. It is thus applicable to European companies and can be used for employees in developed countries. For employees in developing countries, a lower shadow price may apply (as the cost of living in these countries is lower).

Table 7: Employee Life Satisfaction Data from European Social Survey (Impact Institute, 2020)

Indicator	Unit	Value
The average increase in life satisfaction due to work	Life satisfaction points (0-100)	3.1
Average increase in life satisfaction per unit of employee satisfaction	Life satisfaction points / employee satisfaction points	1.5
Average employee satisfaction	Employee satisfaction points (1-5)	3.4

Glassdoor provides employee ratings of companies. Glassdoor uses a scale from 1 to 5. Most ratings vary between 2 and 4.8, with an average of 3.4. We use the following formula to translate Glassdoor ratings (X) into the employee satisfaction scale.

$$\textit{life satisfaction points} = 3.1 + \textit{(Glassdoor X-3.4)}*1.5$$

Let's illustrate employment wellbeing with an example. The company has 20,000 employees (in Europe) and a Glassdoor rating of 2.9.

Calculation:
- From IWAF (IEF, 2024), we know that one life satisfaction point is $ 2647, which is € 2395 (=$ 2647/1.105).
- The Glassdoor rating translates into a deviation of -0.75 = (2.9-3.4) * 1.5. The company's employee satisfaction is 0.75 life satisfaction points below average.
- Total employment wellbeing = 20,000 * (3.1-0.75) * € 2395 = € 112.6 million.

Default setting: Other sources are company employment satisfaction surveys or Indeed. If no data on a company's employment wellbeing are available, the default setting is 3.1 life satisfaction points.

3. Corporate taxes
In the earlier approach in Chapter 5 (Corporate Finance for Long-Term Value, Schoenmaker and Schramade, 2023), corporate taxes are seen as a positive contribution to society. This is correct, but companies also use the 'stability' and the 'infrastructure' (e.g., legal system, education system, energy system, transport system) provided by the government. Corporate taxes are raised by the government to cover (in combination with other taxes) the costs of these public goods.

The social contribution—negative or positive—relates to a company paying its fair share. We define the fair share to be in the range of 20% to 25% of taxable profit (profit after deduction of interest payments and depreciation of fixed assets, but before corporate taxes). The shortfall is negative social value if the company pays less than 20%. If the company pays more than 25%, the excess has positive social value.

We take taxable profit (= net income before taxes) at the consolidated company level. While companies can split their net income into two categories—attributable to shareholders and to other parties— we take the consolidated company net income (before tax). The effective corporate tax rate (ETR) of companies is calculated as an average over the last two to three years.

Let's illustrate the tax contribution with an example. A company has a taxable net income of € 200 and pays € 30 in corporate taxes.

Calculation:
The corporate tax rate is 30/200=15%. This is 5% below the lower threshold of 20%. The negative social value related to corporate taxes is 5% * € 200 = € 10.

Note 3: Biodiversity loss

The calculation of the land occupation impact on biodiversity is complicated. We take the example of a steel company. To do so, the following data is needed:
- The number of hectares of land that the company occupies.
- What type of land would that be if it were nature. In a first estimate, this is set to Tropical Forest if it mainly operates around the equator.
- Whether there is any biodiversity left when the company uses the land. In a first estimate, it is assumed this is not the case (but, for instance, by an agriculture company, this could be the case). In other words, the MSA loss can initially be set to 1.
- The time scale of the analysis. If the analysis covers the effects of biodiversity in one year, we use one year. This makes sense if biodiversity loss is compared to other effects of one year, e.g., a company's carbon emissions of one year or its profits of one year.

The formula is:

Land Occupation impact = Area occupied (Tropical forest) [in hectares] * MSA-loss [in MSA points]* Time considered [in years] * Shadow price [in $/ (MSA-points * ha * yr)]

For instance, if AM occupies 1,000 ha of grassland for one year with a MSA-loss of 1, the formula becomes

Land Occupation impact = 1,000 ha * 1 MSA point * 1 year * 3,640 $/ (MSA-points * ha * yr) = 3,640,000 $. This is € 3.29 (=$3.64/1.105) million.

For industrial companies like steel companies, the impact of land occupation is typically relatively small compared to, for example, their carbon emissions.

Note 4: Estimation of externalities

In some cases, standardised quantities and/or shadow prices are not available for material externalities. Examples are the effects of tobacco, alcohol, obesity, and social media (privacy and psychological effects). These cases require some further analysis. We apply two methods for making estimations in a structured way.

Method 1 – when shadow prices and standard units are available (e.g., life satisfaction points, quality-adjusted life years (QALYs))

1. Estimate societal cost based on academic studies;
2. Translate societal cost into standard units for which shadow prices are available.

Method 2 – when shadow prices and standard units are not available
1. Estimate societal cost based on academic studies;
2. Translate societal cost into cost per unit product (e.g. liter alcohol) or market share;
3. Estimate company share of societal cost based on market share or production of that company.
4. Attribute impact to the company.

The working of method two is explained for the impact of alcohol in Note 5 and the impact of cyber security in Note 6.

Note 5: Example: the hidden costs of alcohol consumption.

As mentioned in Note 4, in some cases, quantities and/or shadow prices are not available for material externalities. In the case of a company selling alcohol, we can estimate the societal costs of alcohol consumption attributable to this company with the following steps:

1. Estimate societal cost based on academic studies;
2. Translate societal cost into unit product (e.g., liter alcohol) or market share;
3. Estimate company share based on market share or production of that company;
4. Attribute impact to the company.

In the analysis, we make some substantiated assumptions. The effects of alcohol consumption for example company A, is illustrated below:

1. First, we estimate the societal cost based on academic studies. As company A sells its products worldwide, we will consider the global societal costs. Next to added healthcare costs, alcohol consumption can lead to productivity losses, a rise in accidents, and increased rates of crime. As no worldwide number on the societal costs is available, we will look at both the US and the Netherlands and extrapolate these results. In the US, the annual costs of alcohol misuse are estimated at $249 billion /1.105 ≈ €225.34 billion (National Institute on Alcohol Abuse and Alcoholism, 2024). In the Netherlands, annual societal costs of alcohol use amount to around €4.2 billion (Rijksinstituut voor Volksgezondheid en Milieu, 2019).

2. In the US, on average 8.7 litres of pure alcohol is consumed per person (15+ years old) per year (World Population Review, 2024). The US has approximately 336 million inhabitants (U.S. Department of Commerce, 2024). Assuming a homogenous distribution between the ages of 0 and 80, this means there are around ((80-15)/80) * 336 million = 273 million inhabitants over 15 years old in the US. Therefore, a total of approximately 273 million * 8.7 liters = 2.375 billion liters of pure alcohol is consumed in the US each year. Since we know this amounts to approximately €225.34 billion in societal costs, we can say that alcohol has societal costs of around €225.34 billion / 2.375 billion liters ≈ €94.88 per liter of pure alcohol. Since beer contains around 5% alcohol, this would translate to €94.88 * 0.05 ≈ €4.75 per liter of beer. We make this assumption since there seems to be little evidence that the type of alcohol consumed matters for health outcomes (Estruch and Hendriks, 2022).
   In the Netherlands, the average person over 15 years old consumes, on average 8.5 liters of pure alcohol per year (Trimbos Instituut, 2023). The Netherlands has approximately 18 million inhabitants, which converts into ((80-15)/80) * 18 million ≈ 14.63 million inhabitants over 15 years old (Centraal Bureau voor de Statistiek, 2025). Therefore, a total of approximately 14.64 million * 8.5 ≈ 124.31 million liters of pure alcohol is consumed in the Netherlands each year. This means alcohol use in the Netherlands has an approximate societal cost of €4.2 billion / 124.31 million liters = €33.78 per liter of pure alcohol, which equals around €33.78 * 0.05 = €1.69 per liter of beer.

3. In 2023, the consolidated beer volume of company A was 200 million hectolitres, or 20 billion liters, with a geographical distribution of Americas (33%), Europe (33%), Rest of the World (33%). America has the highest societal cost at €4.75 per liter of beer (due to high healthcare costs), the Netherlands' figures (€1.69 per liter) are representative for Europe, and for the rest of the world, we can take 50% of the Netherlands figures (€0.85 per liter). The calculation is then as follows: Americas 20 billion liters * 33.3% * €4.75 per liter; Europe 20 billion liters * 33.3% * €1.69 per liter; rest of world 20 billion liters * 33.3% * €0.85 per liter amounting to a total of €48.6 bn of societal costs.

4. Binge drinking contributes around three-quarters to the total societal costs of alcohol consumption (Gloppen et al., 2022). Since company A strongly advertises responsible drinking, we take a conservative approach by not attributing the societal costs of binge drinking. Hence, we apply a correction factor of 0.25 (i.e., only 25% of the effects of alcohol are taken into account). After doing this, our estimates amount to a total of €12.15 bn. Company A is selling its beer through different channels (e.g., supermarkets and bars). As the primary company in the value channel (see Note 1), 50% of the impact can be attributed to Company A, amounting to €6.08 bn of societal costs.

Note 6: Cybersecurity

Protecting personal data is a fundamental right guaranteed by the Charter of Fundamental Rights of the European Union (European Banking Authority, n.d.). Failing to do so can lead to significant negative consequences. IBM (2023) estimates the average cost of a data breach in 2023 to be $4.45 mn/1.105 ≈ €4.03 mn. Specifically, IBM specifies the following costs of a data breach per industry:
- Financials: $5.90 mn/1.105 ≈ €5.34 mn
- Communications: $3.90 mn/1.105 ≈ €3.53 mn
- Health care: $10.93 mn/1.105 ≈ €9.89 mn

Some companies explicitly report on the number of data breaches. For other companies, it is necessary to estimate the risk of a data breach based on available evidence that provides insights into their risk profile and past occurrences. If that information is also unavailable, we apply the value of other companies in similar industries pro rata to arrive at a value for cybersecurity.

Note 7: Product responsibility and safety issues

Companies can be held responsible when a product is not safe. The financial part of the lawsuits is reflected in the company's financial value. The impact on customers can be estimated under product responsibility and safety. Such problems cannot be extrapolated to the future. We propose to calculate the impact on customer safety in 2023, which is then reflected in the company's social value flow for 2023. The settlement of lawsuits should not be deducted, as this is incorporated into the company's financial value. As it might be unclear at the end of 2023 to what extent the problems with customer safety are resolved, the product safety estimates for the consecutive years might be adjusted downward.

Note 8: Shadow prices for plastics, training and upskilled individuals

The shadow prices from Impact Economy Foundation (IEF, 2024) and from CE Delft (CE Delft, 2023) are used to monetise social and environmental impact.

We add three shadow prices.

1. Plastic pollution is a novel planetary boundary with a large overshoot (Richardson et al., 2023). Only 12.4% of plastic is currently recycled in the EU (Our World in Data, 2024a). The shadow price is a weighted average of €5,605 per ton for plastic pollution (Dalberg and WWF, 2021) and €330 per ton for recycled plastic (CE Delft, 2023). This results in a shadow price of €4,951 per ton (=87.6%*€5,605 + 12.4%*€330) for plastic.
2. The value of training is monetised as €1 per €1 investment in training. In several cases, companies only provide training hours or days. Relx (2023, p.58) provides full information: $15 million for 506.000 training hours. 506,000 hours translates into 63,250 days (=506.000/8). The cost per day is $237 per day (=$15mn/63,250). This results in a shadow price for training of €215 per day (=$237/1.105).
3. UNESCO (2023) finds that an increase in skill leads to wage gains of 28%. This is typically done for low-income countries and lower-middle-income countries. Our World in Data (2024b) defines low-income countries are defined as countries where the average person earns up to $1,145 (average $572.5) and lower-middle-income countries where the average person earns between $1,146 and $4,515 (average $2,830.5). Taking the average of two groups gives: ($572.5+$2,830.5)/2 = $1,701.5. Converting this to euros using an exchange rate of 1.105, and multiplying by 28%, results in a shadow price of €431.15.

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Colophon

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Acknowledgments
A special thank you to the team of analysts that made this work both possible and better than anticipated through their hard work, dedication, and enthusiasm: Hein Gijsbers, Lisa Glorie, Noè Ominici, Razvan Ene, Sara Ługowska, and Wick van Meurs. In addition, almost 400 master's students from Rotterdam School of Management's Master of Science in Finance & Investments program contributed to the initial report via their assignment "Beating the AEX Index."

The integrated value methodology employed in this report builds on the Impact-Weighted Accounts Framework incubated by the Impact Economy Foundation in partnership with the Impact-Weighted Accounts Initiative from Harvard Business School, Singapore Management University, Rotterdam School of Management, and Impact Institute. We would like to thank Reinier de Adelhart Toorop of Impact Institute and Rotterdam School of Management and Marta Szymanowska of Rotterdam School of Management for reviewing the integrated value methodology in this report.

Thank you, Professor Abe de Jong of Rijksuniversiteit Groningen, Pauline van der Meer Mohr of the Monitoring Committee Corporate Governance, Professor Barbara Baarsma of the University of Amsterdam, Professor Arnoud Boot of the University of Amsterdam, Karin van Baardwijk of Robeco, Janneke Hermes of Gasunie, Marcel Andriga of PME Pension Fund for your contributions. We would also like to thank the design team at ftrprf for curating the aesthetic profile of the AEX Futureproof Index and the look and feel of this report.

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