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Impact Report for Federal Republic of Germany

value balancing alliance

Financial Market Chapter

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Introduction

Understanding the societal impact of public policy in economic sectors is vital for fostering growth while achieving transition and other policy goals. To this end, the present report offers key insights into the performance of specific sectors.

This document presents impact statements for Federal Republic of Germany's NACE sectors.[1] The tables show the *direct impact* of companies' own operations as well as the *upstream impact* along their supply chains.[2] Positive or negative impact values are quantified in monetary terms and divided by each sector's macroeconomic output. These '*Impact Intensities*' (expressed in EUR of impact per EUR of output) enable comparability across countries, sectors, and companies. The output part of the formula is based on a macroeconomic assessment and reflects overall sector turnover volume.

Impact Intensities are provided for each impact driver across four stages of the value chain: Own operations, upstream tier 1, upstream tier 2, and upstream tier 3 to n.[3] Results are shown for specific countries—Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Korea, Spain, Switzerland, Türkiye, the UK, and the USA—as well as a global average.

The tables provide a foundation for 'Type 4' sector-based benchmarks;[4] companies can compare their reported or estimated impact with the table values. To ensure consistency, a company's impact must be monetized using the same value factor and scaled relative to revenue. In this way, company-specific Impact Intensity can be compared within the sector and across multiple sectors.

The comparison spans value chain stages within a company's control (own operations) and beyond (upstream). Impact Intensities are depicted for each upstream stage in the global supply chain, viewed from the perspective of the respective country. These stages are presented in tiers, enabling comparison with a company's global upstream supply chain. Note that these upstream impacts may not necessarily be located in the same country.

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1 Eurostat, NACE Rev. 2. Statistical classification of economic activities in the European Community, https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.pdf.

2 VBA, VBA Impact Statement, 11.2024, https://www.value-balancing.com/_Resources/Persistent/6/b/e/c/6bec726b5e28d5f75e2e5f153db845a3bbb93f2e/VBA_Impact%20Statement_Final.pdf.

3 Tiers represent different levels of suppliers in the supply chain, where 'tier 1' refers to direct suppliers, 'tier 2' to the suppliers of those direct suppliers, and 'tier 3 to n' to all subsequent levels.

4 VBA et al., Valuing Impact Materiality 2025, 2025, https://www.value-balancing.com/en/publications/valuing-impact-materiality-report-1.html.

The values are modeled using input-output modeling, as outlined in the System of National Accounts.[5] WifOR compiles the hybrid multi-regional model based on WIOD, EORA, and EXIOBASE,[6] enhanced by estimates based on *satellite accounts*, as outlined in the System of Environmental-Economic Accounting.[7] The modeled effects are then multiplied by publicly available context-specific value factors[8] to capture their societal impact.[9]

The tables are complemented by bar charts showing each impact driver's effect (in EUR per EUR output) in all the four value chain stages.

Responsibility of States

States have a primary duty to protect human rights and fundamental rights under international law, in accordance with the primacy principle. This obligation extends to preventing human rights abuses by third parties (including businesses) within their jurisdiction. This duty is grounded in legal obligations and reinforced by policy rationales that ensure consistency in enforcement.

Responsibility of Business

Businesses, by contrast, have a responsibility (rather than a duty) to respect human rights. Their role is supportive of state obligations but remains distinct. While international law has yet to fully define the extent of corporate human rights responsibilities, the UNGPs establish that businesses, at minimum, must prevent and address human rights harms linked to their operations. Beyond compliance with legal obligations, involvement in adverse human rights impacts must be prevented or remedied. Human rights due diligence is required for this purpose; this due diligence process includes assessing risks, integrating findings into corporate decision-making, and mitigating or remedying any adverse impacts.

Interplay

The interplay between *state obligations* and *business responsibilities* reflects a layered system of accountability: While states bear legal obligations to regulate corporate behavior, businesses have a practical responsibility to prevent harm. These responsibilities arise in

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5 European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank. 2009. System of National Accounts 2008. New York: United Nations. https://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf.

6 Scholz, Richard; Dorndorf, Tabea; Tesch, Jasmin; Köster, Robert; Croner, Daniel; Kalamov, Zarko; Setzer, Jana. 2025. Impact measurement using WifOR's sustainability footprint method. Methodological report. Version February 2025. WifOR Institute.

7 United Nations, ed. 2014. *System of Environmental-Economic Accounting 2012: Central Framework*. New York, NY: United Nations.

8 WifOR, Value Factors, https://www.wifor.com/en/value-factors/#:~:text=Value%20factors%20convert%20physical%20units,dimensions%20and%20with%20financial%20indicators

9 Scholz, Richard; Albu, Nora; Croner, Daniel; Kalamov, Zarko; Mai, Lukas; Forin, Silvia; Tesch, Jasmin; Dorndorf, Tabea; Setzer, Jana. 2025. WifOR Impact Valuation. Methodological Report. Version February 2025. WifOR Institute.

different forms—whether they cause, contribute to, or are linked to human rights abuses. The nature of corporate involvement in human rights impacts determines their level of responsibility, with leverage and mitigation playing a critical role in addressing violations. Thus, while business responsibilities complement state obligations, they remain distinct and non-parallel, ensuring a balanced but clear accountability framework.

Accountability

While global businesses in the main complement state efforts and uphold responsible practices, international law establishes the primacy of state responsibility. States must create robust legal frameworks to hold businesses accountable, while companies must conduct human rights due diligence to prevent, mitigate, and remediate adverse impacts. Together, these obligations form a layered system, where corporate responsibility reinforces (rather than replaces) state duties to address human rights risks. Impact accounting helps states and businesses alike understand their respective responsibilities in the context of human rights and broader social, environmental, and economic impacts. While companies must assess their roles within supply chains and address potential harms, it is the states that bear the primary responsibility to tackle these issues and implement policies that prevent extensive negative impacts. Regulatory frameworks should go beyond preventing harm. They should empower businesses to generate positive impacts throughout the value chain. Neither states nor businesses may evade their responsibilities. States cannot plead powerlessness given that international treaties and criminal law extend their reach beyond national boundaries. By the same token, businesses cannot excuse harmful actions by pointing to weak state enforcement of human rights protections.

Benchmarks

This document explores the impacts of Germany's economy, focusing on direct and upstream supply chain impacts on the economic, environmental, and social domains. The analysis is based on the NACE classification of economic activities. Positive and negative impact values are quantified in monetary terms per unit of macroeconomic output (hereinafter "*Impact Intensities*"). The tables display these Impact Intensities in EUR per EUR output for each impact driver across five stages of the sector's value chain: own operations, upstream tier 1, upstream tier 2, and upstream tier 3 to n. The output data is derived from a macroeconomic assessment and reflects the turnover of each sector.

Intensities

The tables help identify the domestic economic sectors with the largest impacts across the country-specific value chain serving the German economy. By providing maximum transparency on where significant impacts occur throughout the value chain stages, our analysis enables policymakers and regulators to more effectively manage the impacts. It supports the crafting of regulatory frameworks to mitigate negative and enhance positive impacts.

Sector Intensity Benchmarks

Agriculture, Forestry and Fishing (A)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.21	-0.02	-0.01	-0.01	-0.25
Fair Wages	0.01	-0.16	-0.08	-0.09	-0.32
GHG	-0.12	-0.02	-0.01	-0.02	-0.18
GVA	0.34	0.27	0.16	0.17	0.94
Human Rights	-0.00	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	-0.21	-0.05	-0.02	-0.01	-0.28
Occupational Health & Safety	-0.02	-0.02	-0.01	-0.01	-0.06
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.01	-0.00	-0.00	-0.00	-0.02
Water	-0.01	-0.20	-0.12	-0.09	-0.41

Source: WifOR / VBA, Table for Federal Republic of Germany - Agriculture, Forestry and Fishing (NACE Code A), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Agriculture, Forestry, and Fishing sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts across various categories, particularly in air emissions and land use, with total impact intensities of -0.247298 and -0.282012, respectively. Conversely, the fair wages category shows a notable negative impact intensity of -0.319224, indicating a substantial adverse effect on labor conditions in this sector. Overall, the data highlights a trend of negative environmental and social impacts, overshadowing any positive contributions, such as those related to training, which has a minimal positive impact intensity of 0.009679.

Mining and Quarrying (B)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.02	-0.01	-0.00	-0.01	-0.04
Fair Wages	0.00	-0.03	-0.02	-0.05	-0.09
GHG	-0.05	-0.02	-0.01	-0.01	-0.09
GVA	0.42	0.25	0.13	0.14	0.93
Human Rights	-0.00	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.01	-0.00	-0.01	-0.02
Occupational Health & Safety	-0.00	-0.01	-0.01	-0.01	-0.03
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.02	-0.02

Source: WifOR / VBA, Table for Federal Republic of Germany - Mining and Quarrying (NACE Code B), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Mining and Quarrying sector of the Federal Republic of Germany, the impact intensity table indicates significant negative impacts, particularly in fair wages and greenhouse gas emissions, with total impact intensities of -0.091254 and -0.091614, respectively. Additionally, air emissions contribute a total negative impact intensity of -0.044017, highlighting environmental concerns associated with this sector. While there is a minor positive impact intensity of 0.012675 related to training, it is overshadowed by the overall negative impacts, reflecting challenges in both social and environmental dimensions.

Manufacturing (C)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.01	-0.01	-0.01	-0.04
Fair Wages	0.01	-0.06	-0.04	-0.09	-0.19
GHG	-0.02	-0.02	-0.01	-0.02	-0.08
GVA	0.31	0.27	0.16	0.20	0.95
Human Rights	-0.00	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.01	-0.01	-0.01	-0.02
Occupational Health & Safety	-0.01	-0.01	-0.01	-0.02	-0.05
Ocean Plastic	-0.01	-0.00	-0.00	-0.00	-0.01
Training	0.00	0.00	0.00	0.01	0.02
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.09	-0.04	-0.05	-0.17

Source: WifOR / VBA, Table for Federal Republic of Germany - Manufacturing (NACE Code C), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Manufacturing sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in fair wages and water usage, with total impact intensities of -0.187804 and -0.173955, respectively. Additionally, air emissions and greenhouse gas emissions also contribute to negative impacts, with total intensities of -0.035303 and -0.076495, indicating environmental and social challenges within this sector. While there is a minor positive impact intensity of 0.017480 related to training, it is considerably outweighed by the negative impacts, reflecting a need for improvement in both labor conditions and environmental practices.

Electricity, Gas, Steam and Air Conditioning Supply (D)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.02	-0.01	-0.00	-0.01	-0.04
Fair Wages	0.00	-0.00	-0.01	-0.05	-0.06
GHG	-0.18	-0.04	-0.01	-0.01	-0.24
GVA	0.38	0.28	0.14	0.15	0.96
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.01
Occupational Health & Safety	-0.00	-0.01	-0.00	-0.01	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.02	-0.02

Source: WifOR / VBA, Table for Federal Republic of Germany - Electricity, gas, steam and air conditioning supply (NACE Code D), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Electricity, Gas, Steam, and Air Conditioning Supply sector of the Federal Republic of Germany, the impact intensity table highlights significant negative impacts, particularly in greenhouse gas emissions, which have a total impact intensity of -0.242705, indicating substantial environmental concerns. Additionally, air emissions and fair wages also reflect negative impacts, with total intensities of -0.041748 and -0.057775, respectively, suggesting challenges in both environmental performance and labor conditions. While there is a minor positive impact intensity of 0.014648 related to training, it is overshadowed by the overall negative impacts, emphasizing the need for improvements in sustainability and social responsibility within the sector.

Water Supply; Sewerage, Waste Management and Remediation Activities (E)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.01	-0.00	-0.00	-0.00	-0.02
Fair Wages	0.01	-0.00	-0.01	-0.03	-0.03
GHG	-0.02	-0.02	-0.01	-0.01	-0.05
GVA	0.47	0.25	0.12	0.11	0.96
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.00	-0.00	-0.00	-0.01	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.01	-0.00	-0.00	-0.00	-0.01
Water	-0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Water supply; sewerage, waste management and remediation activities (NACE Code E), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Water Supply; Sewerage, Waste Management, and Remediation Activities sector of the Federal Republic of Germany, the impact intensity table indicates notable negative impacts, particularly in fair wages and greenhouse gas emissions, with total impact intensities of -0.031782 and -0.049143, respectively, highlighting social and environmental challenges. Additionally, air emissions contribute a total negative impact intensity of -0.019310, further emphasizing the sector's environmental footprint. While there is a minor positive impact intensity of 0.014736 related to training, it is significantly outweighed by the negative impacts, suggesting a need for enhanced focus on sustainability and labor conditions within the sector.

Construction (F)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.01	-0.00	-0.01	-0.02
Fair Wages	0.01	-0.01	-0.02	-0.05	-0.07
GHG	-0.00	-0.01	-0.01	-0.01	-0.04
GVA	0.44	0.25	0.13	0.15	0.97
Human Rights	-0.00	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.01	-0.01	-0.01
Occupational Health & Safety	-0.00	-0.01	-0.01	-0.01	-0.03
Ocean Plastic	0.00	-0.01	-0.00	-0.00	-0.01
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.02	-0.02

Source: WifOR / VBA, Table for Federal Republic of Germany - Construction (NACE Code F), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Construction sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in fair wages and water usage, with total impact intensities of -0.066902 and -0.021574, respectively, indicating challenges in labor conditions and resource management. Additionally, air emissions and greenhouse gas emissions also contribute to negative impacts, with total intensities of -0.020050 and -0.038797, highlighting environmental concerns associated with construction activities. While there is a minor positive impact intensity of 0.012550 related to training, it is overshadowed by the overall negative impacts, reflecting a need for improvements in both social responsibility and environmental sustainability within the sector.

Wholesale And Retail Trade; Repair of Motor Vehicles and Motorcycles (G)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.02	-0.00	-0.01	-0.02	-0.02
GHG	-0.00	-0.01	-0.00	-0.01	-0.02
GVA	0.58	0.21	0.09	0.10	0.98
Human Rights	-0.00	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.01	-0.00	-0.00	-0.01	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Wholesale and retail trade; repair of motor vehicles and motorcycles (NACE Code G), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles sector of the Federal Republic of Germany, the impact intensity table indicates notable negative impacts, particularly in fair wages and occupational health and safety, with total impact intensities of -0.018250 and -0.021779, respectively, highlighting concerns regarding labor conditions. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.022602 and -0.010001, reflecting environmental challenges associated with this sector. While there is a minor positive impact intensity of 0.010204 related to training, it is significantly overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within the sector.

Transportation and Storage (H)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.04	-0.01	-0.00	-0.01	-0.07
Fair Wages	0.01	-0.01	-0.01	-0.04	-0.05
GHG	-0.05	-0.01	-0.01	-0.01	-0.08
GVA	0.40	0.24	0.15	0.16	0.95
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.01	-0.01	-0.00	-0.01	-0.03
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.02	-0.02

Source: WifOR / VBA, Table for Federal Republic of Germany - Transportation and storage (NACE Code H), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Transportation and Storage sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in greenhouse gas emissions and air emissions, with total impact intensities of -0.084759 and -0.065064, respectively, indicating serious environmental concerns. Additionally, fair wages and occupational health and safety also reflect negative impacts, with total intensities of -0.053586 and -0.025422, highlighting issues related to labor conditions within the sector. While there is a minor positive impact intensity of 0.012432 associated with training, it is considerably overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability in transportation and storage activities.

Accommodation and Food Service Activities (I)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.01	-0.01	-0.02
Fair Wages	0.01	-0.02	-0.07	-0.07	-0.15
GHG	-0.00	-0.01	-0.01	-0.01	-0.03
GVA	0.47	0.24	0.12	0.13	0.96
Human Rights	-0.01	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.01	-0.01	-0.02
Occupational Health & Safety	-0.02	-0.01	-0.01	-0.01	-0.05
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.03	-0.12	-0.09	-0.24

Source: WifOR / VBA, Table for Federal Republic of Germany - Accommodation and food service activities (NACE Code I), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Accommodation and Food Service Activities sector of the Federal Republic of Germany, the impact intensity table highlights significant negative impacts, particularly in water usage and fair wages, with total impact intensities of -0.241517 and -0.148516, respectively, indicating serious concerns regarding resource management and labor conditions. Additionally, air emissions and occupational health and safety also reflect negative impacts, with total intensities of -0.021255 and -0.047757, further emphasizing the environmental and social challenges faced by this sector. While there is a minor positive impact intensity of 0.011279 related to training, it is substantially outweighed by the overall negative impacts, underscoring the urgent need for improvements in sustainability and social responsibility within the accommodation and food service activities.

Information and Communication (J)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.01	-0.01	-0.01	-0.03	-0.04
GHG	-0.00	-0.00	-0.00	-0.01	-0.01
GVA	0.53	0.25	0.11	0.10	0.99
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.00	-0.00	-0.00	-0.01	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.02
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Information and communication (NACE Code J), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Information and Communication sector of the Federal Republic of Germany, the impact intensity table indicates notable negative impacts, particularly in fair wages and occupational health and safety, with total impact intensities of -0.035542 and -0.015340, respectively, highlighting concerns regarding labor conditions. Additionally, air emissions and greenhouse gas emissions also contribute to negative impacts, with total intensities of -0.006860 and -0.013976, reflecting environmental challenges associated with this sector. While there is a positive impact intensity of 0.019705 related to training, it is relatively minor compared to the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within the information and communication activities.

Financial and Insurance Activities (K)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.00
Fair Wages	0.01	0.00	-0.00	-0.02	-0.02
GHG	-0.00	-0.00	-0.00	-0.01	-0.01
GVA	0.42	0.27	0.13	0.12	0.94
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.00	-0.00	-0.00	-0.00	-0.01
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.02
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Financial and insurance activities (NACE Code K), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Financial and Insurance Activities sector of the Federal Republic of Germany, the impact intensity table reveals notable negative impacts, particularly in fair wages and occupational health and safety, with total impact intensities of -0.017369 and -0.011625, respectively, indicating concerns regarding labor conditions within the sector. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.010953 and -0.004620, reflecting environmental challenges associated with financial operations. While there is a positive impact intensity of 0.016537 related to training, it is overshadowed by the overall negative impacts, highlighting the need for improvements in both social responsibility and environmental sustainability in financial and insurance activities.

Real Estate Activities (L)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.00
Fair Wages	0.00	0.00	-0.00	-0.01	-0.01
GHG	-0.00	-0.00	-0.00	-0.00	-0.01
GVA	0.76	0.12	0.05	0.05	0.98
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.00	-0.00	-0.00	-0.00	-0.01
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	0.00	-0.00	-0.00	-0.00	-0.00

Source: WifOR / VBA, Table for Federal Republic of Germany - Real estate activities (NACE Code L), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Real Estate Activities sector of the Federal Republic of Germany, the impact intensity table indicates notable negative impacts, particularly in fair wages and occupational health and safety, with total impact intensities of -0.010272 and -0.005337, respectively, highlighting concerns regarding labor conditions within the sector. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.006555 and -0.002875, reflecting environmental challenges associated with real estate operations. While there is a positive impact intensity of 0.011093 related to training, it is relatively minor compared to the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability in real estate activities.

Professional, Scientific and Technical Activities (M)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.01	0.00	-0.01	-0.02	-0.02
GHG	-0.00	-0.00	-0.00	-0.01	-0.01
GVA	0.59	0.23	0.09	0.08	0.99
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.01	-0.00	-0.00	-0.00	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.00	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Professional, scientific and technical activities (NACE Code M), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Professional, Scientific and Technical Activities sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in fair wages and occupational health and safety, with total impact intensities of -0.017532 and -0.015982, respectively, indicating concerns regarding labor conditions within this sector. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.012801 and -0.005431, reflecting environmental challenges associated with professional and scientific activities. While there is a minor positive impact intensity of 0.011628 related to training, it is overshadowed by the overall negative impacts, highlighting the need for improvements in both social responsibility and environmental sustainability in professional, scientific, and technical activities.

Administrative and Support Service Activities (N)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.01	-0.00	-0.01	-0.02	-0.01
GHG	-0.00	-0.00	-0.00	-0.00	-0.01
GVA	0.61	0.21	0.09	0.08	0.99
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.01	-0.00	-0.00	-0.00	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Administrative and support service activities (NACE Code N), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Administrative and Support Service Activities sector of the Federal Republic of Germany, the impact intensity table highlights significant negative impacts, particularly in occupational health and safety and fair wages, with total impact intensities of -0.018276 and -0.010711, respectively, indicating concerns regarding labor conditions within this sector. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.011685 and -0.005250, reflecting environmental challenges associated with administrative and support services. While there is a minor positive impact intensity of 0.011182 related to training, it is overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability in administrative and support service activities.

Public Administration and Defense; Compulsory Social Security (O)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.02	-0.01	-0.01	-0.02	-0.02
GHG	-0.00	-0.01	-0.00	-0.01	-0.02
GVA	0.66	0.15	0.07	0.07	0.94
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.03	-0.00	-0.00	-0.00	-0.04
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	0.00	-0.01	-0.01	-0.01	-0.03

Source: WifOR / VBA, Table for Federal Republic of Germany - Public Administration and Defense; compulsory social security (NACE Code O), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Public Administration and Defense; Compulsory Social Security sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in occupational health and safety and water usage, with total impact intensities of -0.039988 and -0.033755, respectively, indicating serious concerns regarding labor conditions and resource management. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.016536 and -0.007739, reflecting environmental challenges associated with public administration activities. While there is a positive impact intensity of 0.010902 related to training, it is overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within this sector.

Education (P)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.00
Fair Wages	0.03	0.00	-0.00	-0.01	0.02
GHG	-0.00	-0.00	-0.00	-0.00	-0.01
GVA	0.77	0.12	0.04	0.04	0.97
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.03	-0.00	-0.00	-0.00	-0.03
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.00	-0.00	-0.00	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Education (NACE Code P), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Education sector of the Federal Republic of Germany, the impact intensity table indicates significant negative impacts, particularly in occupational health and safety and water usage, with total impact intensities of -0.033364 and -0.007697, respectively, highlighting concerns regarding labor conditions and resource management. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.010800 and -0.003300, reflecting environmental challenges associated with educational activities. While there is a positive impact intensity of 0.019134 related to fair wages, it is overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within the education sector.

Human Health and Social Work Activities (Q)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.03	-0.00	-0.02	-0.03	-0.02
GHG	-0.00	-0.00	-0.00	-0.01	-0.02
GVA	0.69	0.14	0.06	0.06	0.96
Human Rights	0.00	-0.00	-0.00	-0.00	-0.00
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.04	-0.00	-0.00	-0.00	-0.05
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	-0.00	-0.01	-0.02	-0.02	-0.05

Source: WifOR / VBA, Table for Federal Republic of Germany - Human health and social work activities (NACE Code Q), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

In the Human Health and Social Work Activities sector of the Federal Republic of Germany, the impact intensity table reveals significant negative impacts, particularly in occupational health and safety and water usage, with total impact intensities of -0.047393 and -0.052690, respectively, indicating serious concerns regarding labor conditions and resource management. Additionally, greenhouse gas emissions and air emissions also contribute to negative impacts, with total intensities of -0.016865 and -0.007562, reflecting environmental challenges associated with health and social services. While there is a positive impact intensity of 0.011556 related to training, it is overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within the health and social work sector.

Arts, Entertainment and Recreation and Other Services and Activities (R&S)

Variable	direct	upstream tier 1	upstream tier 2	upstream rest	Total
Air Emission	-0.00	-0.00	-0.00	-0.00	-0.01
Fair Wages	0.02	-0.00	-0.01	-0.02	-0.00
GHG	-0.01	-0.00	-0.00	-0.00	-0.02
GVA	0.68	0.17	0.06	0.06	0.97
Human Rights	-0.01	-0.00	-0.00	-0.00	-0.01
Invasive Species	-0.00	-0.00	-0.00	-0.00	-0.00
Land Use	0.00	-0.00	-0.00	-0.00	-0.00
Occupational Health & Safety	-0.01	-0.00	-0.00	-0.00	-0.02
Ocean Plastic	0.00	-0.00	-0.00	-0.00	-0.00
Training	0.01	0.00	0.00	0.00	0.01
Waste	-0.00	-0.00	-0.00	-0.00	-0.00
Water	0.00	-0.00	-0.00	-0.01	-0.01

Source: WifOR / VBA, Table for Federal Republic of Germany - Arts, entertainment and recreation and other services and activities (NACE Code R&S), 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025.

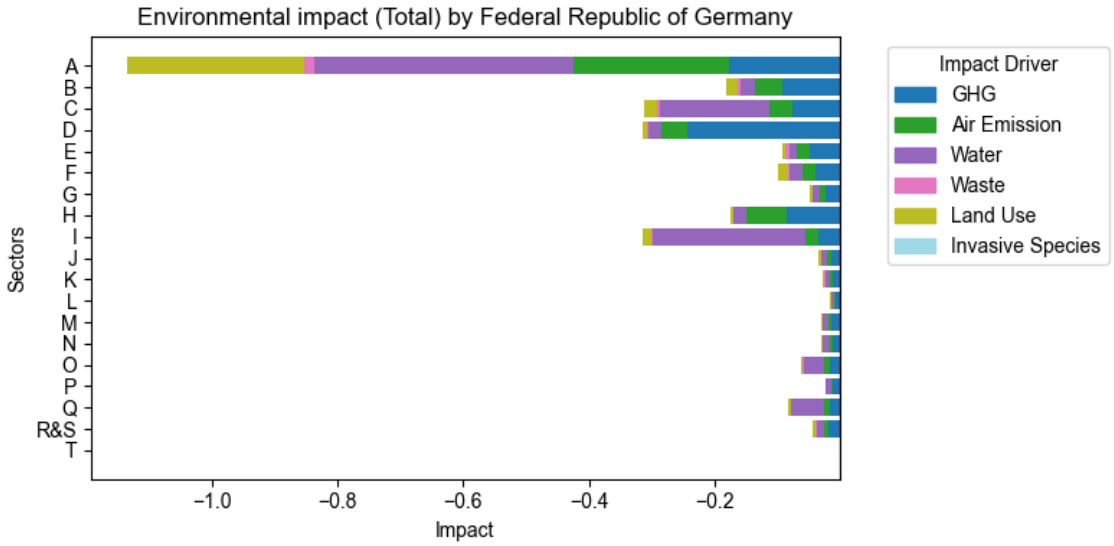
In the Arts, Entertainment and Recreation; Other Services sector of the Federal Republic of Germany, the impact intensity table highlights significant negative impacts, particularly in occupational health and safety and greenhouse gas emissions, with total impact intensities of -0.016801 and -0.018224, respectively, indicating serious concerns regarding labor conditions and environmental performance. Additionally, water usage and air emissions also contribute to negative impacts, with total intensities of -0.012961 and -0.006058, reflecting environmental challenges associated with this sector. While there is a positive impact intensity of 0.011578 related to training, it is overshadowed by the overall negative impacts, underscoring the need for improvements in both social responsibility and environmental sustainability within arts and entertainment activities.

Overview

The overall assessment of the Federal Republic of Germany, based on the Value Balancing Alliance methodology and WifOR's value factors, highlights significant environmental and social challenges across various NACE sectors. Environmental impact intensities reveal that upstream stages of the value chain contribute disproportionately to negative outcomes, particularly in sectors such as Agriculture and Mining, which face substantial burdens from air emissions, greenhouse gases, and water usage. Social impact analyses indicate that fair wages and occupational health and safety are critical areas of concern, especially in upstream supply chains, where labor conditions often deteriorate. Sectors like Arts, Entertainment, and Recreation demonstrate relatively lower negative impacts, suggesting better social practices, while others, such as Agriculture, show pronounced adverse effects. This comprehensive evaluation underscores the necessity for targeted interventions to enhance sustainability and social responsibility throughout the entire value chain in Germany.

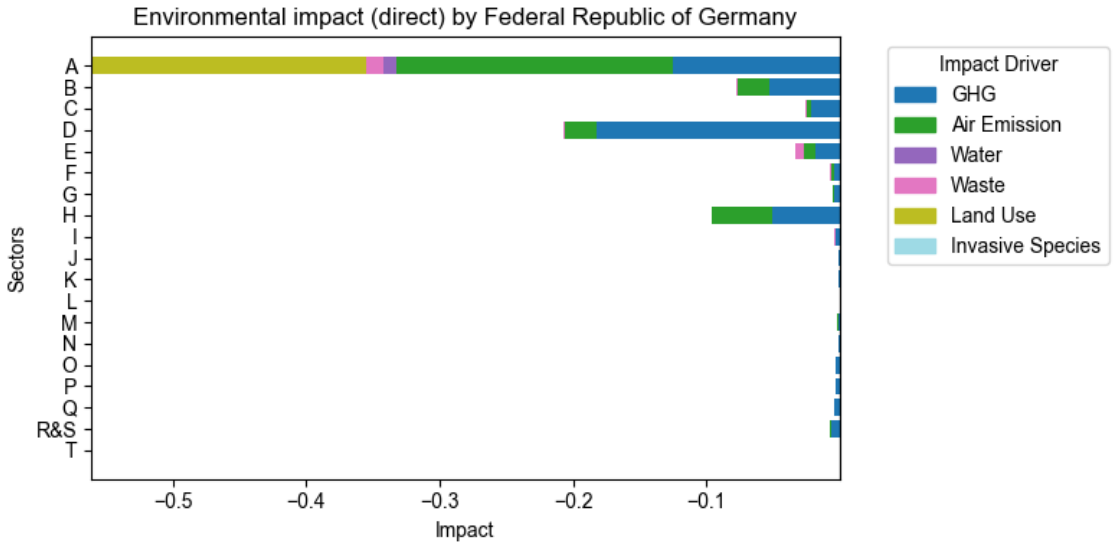
Environmental Impact DEU

Total



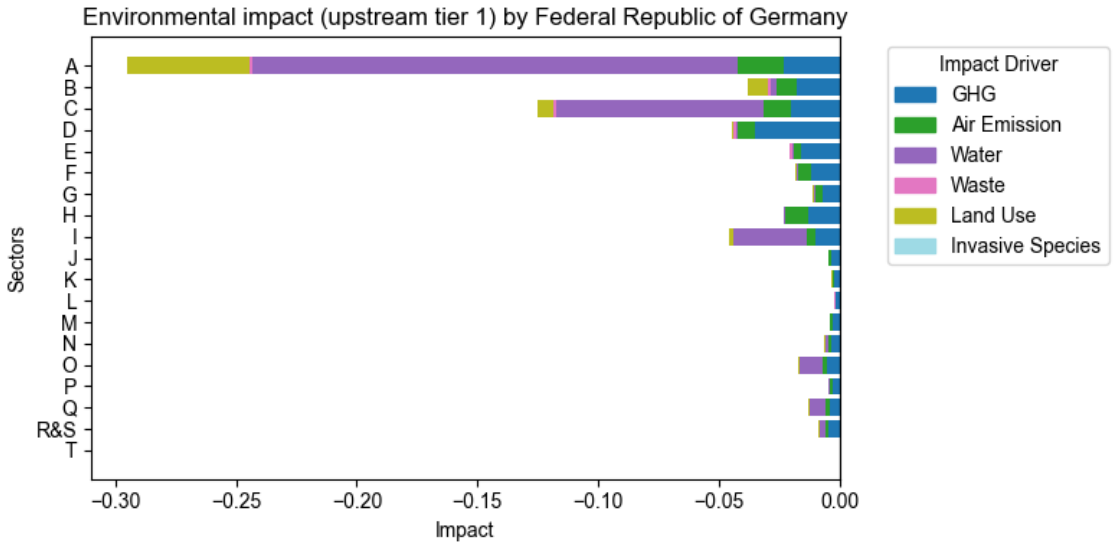
Source: VBA/WifOR, Overview of environmental impact, Total in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

direct



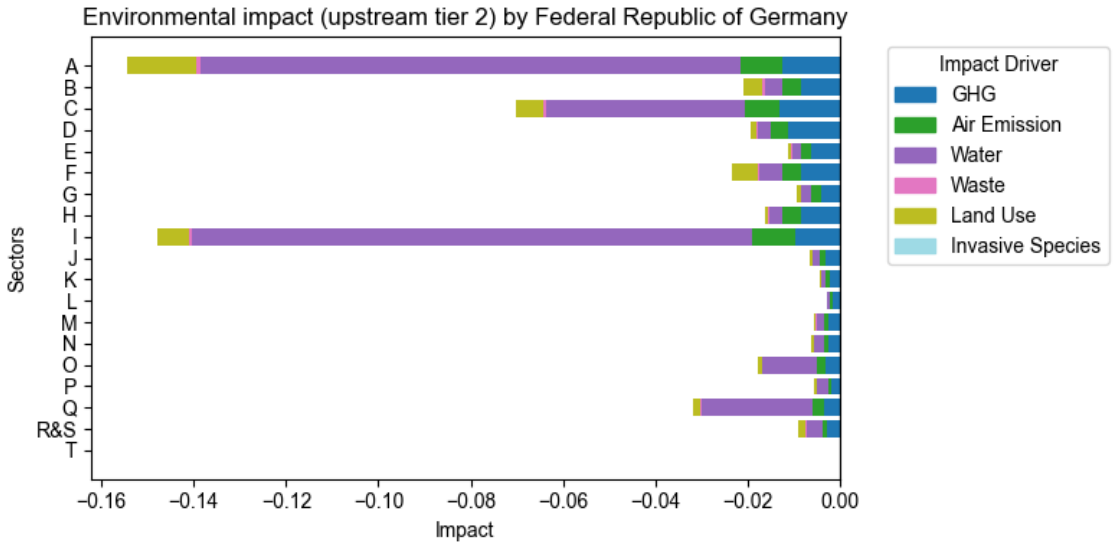
Source: VBA/WifOR, Overview of environmental impact, direct in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream tier 1



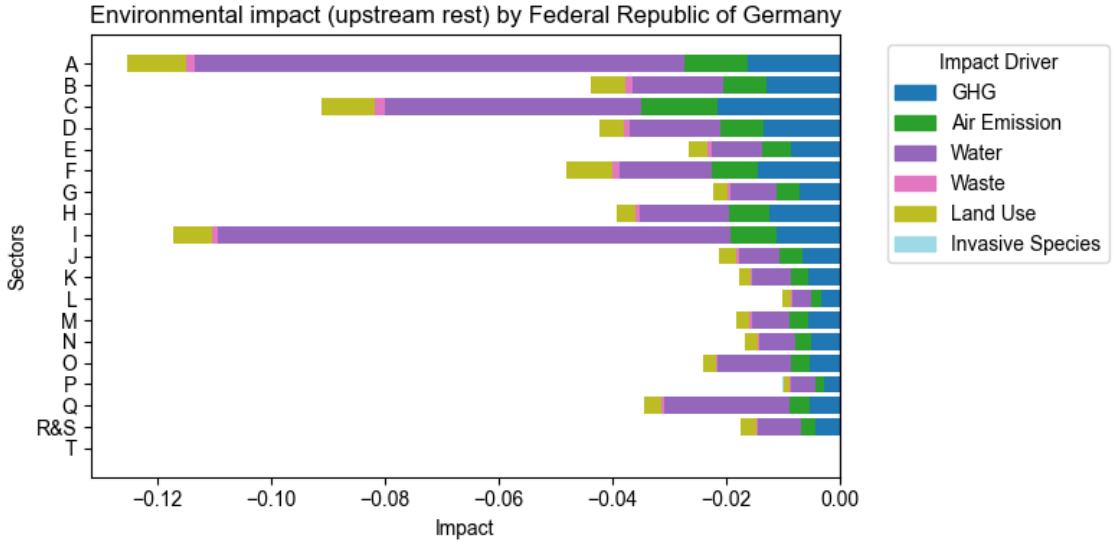
Source: VBA/WifOR, Overview of environmental impact, upstream tier 1 in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream tier 2



Source: VBA/WifOR, Overview of environmental impact, upstream tier 2 in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream rest

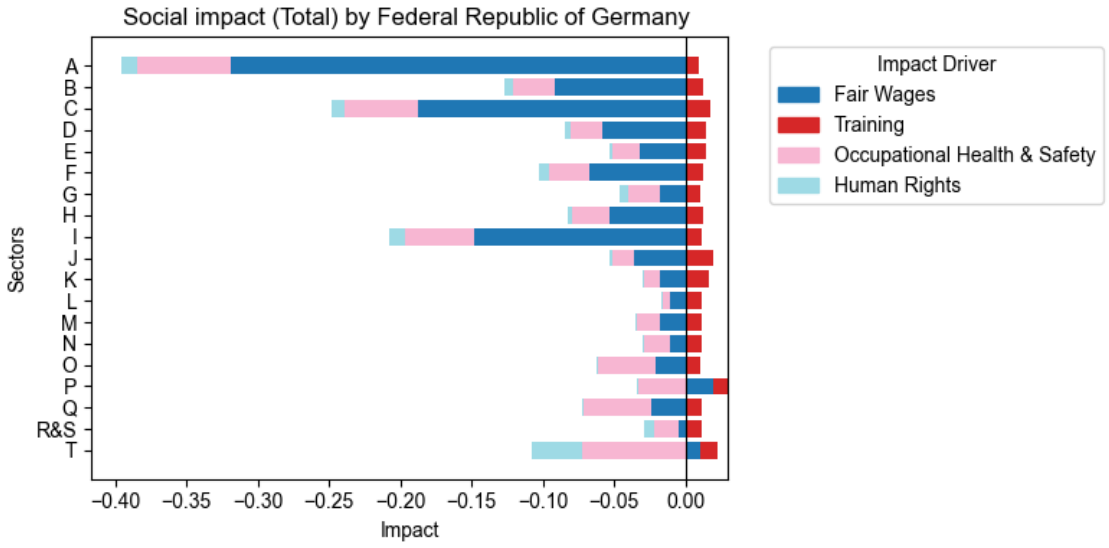


Source: VBA/WifOR, Overview of environmental impact, upstream rest in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

The environmental impact intensities across various NACE sectors in the Federal Republic of Germany reveal significant differences in their contributions to air emissions, greenhouse gases (GHG), water usage, waste, land use, and invasive species at different stages of the value chain. Direct impacts tend to be lower compared to upstream impacts, particularly in upstream tier 1 and tier 2 stages, where the cumulative effects of supply chain activities amplify environmental burdens. For instance, sectors such as "A" (Agriculture) and "B" (Mining) show pronounced negative impacts in upstream stages, indicating that their supply chains contribute significantly to environmental degradation. In contrast, the "R&S" (Arts, Entertainment, and Recreation) sector exhibits relatively lower environmental impacts across all stages, suggesting a lesser environmental footprint. Overall, the upstream stages generally reflect higher environmental impacts, emphasizing the importance of addressing sustainability throughout the entire value chain.

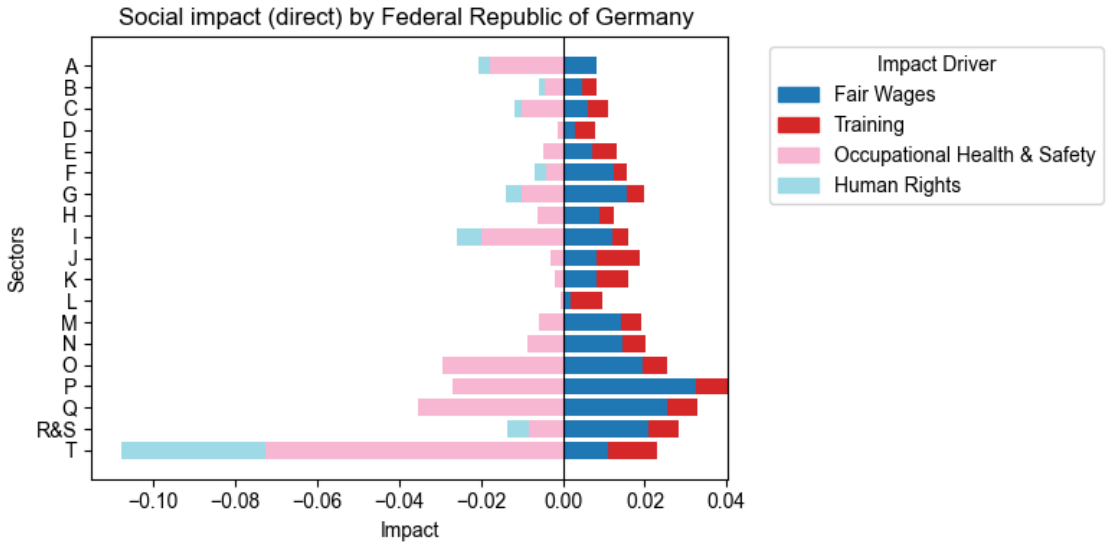
Social Impact DEU

Total



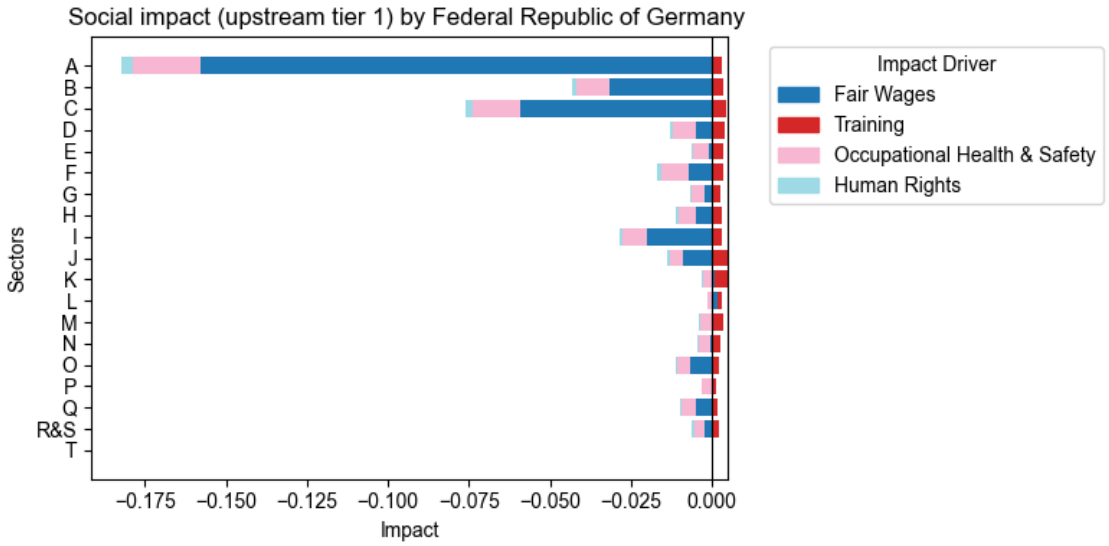
Source: VBA/WifOR, Overview of social impact, Total in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

direct



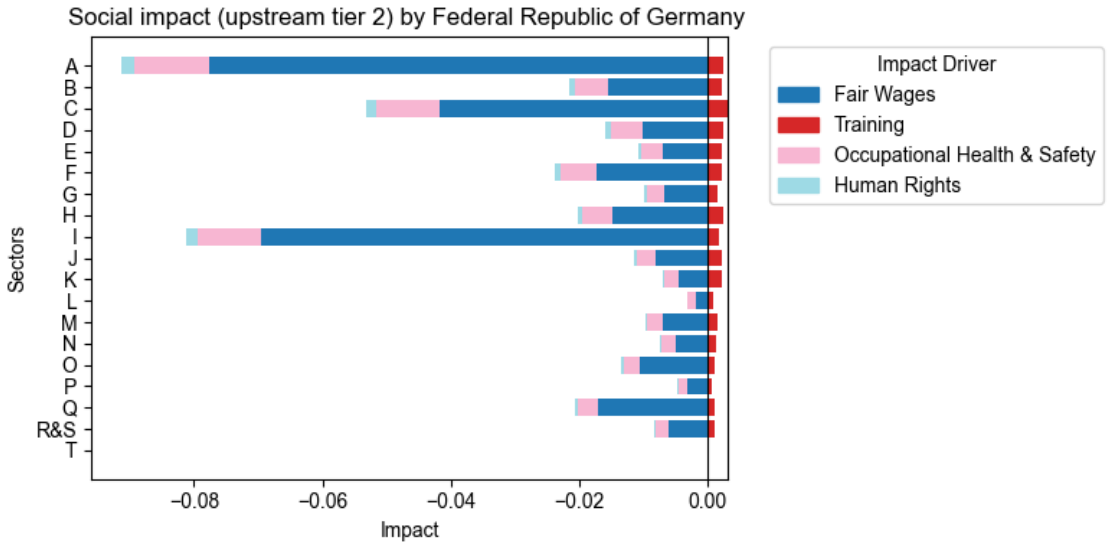
Source: VBA/WifOR, Overview of social impact, direct in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream tier 1



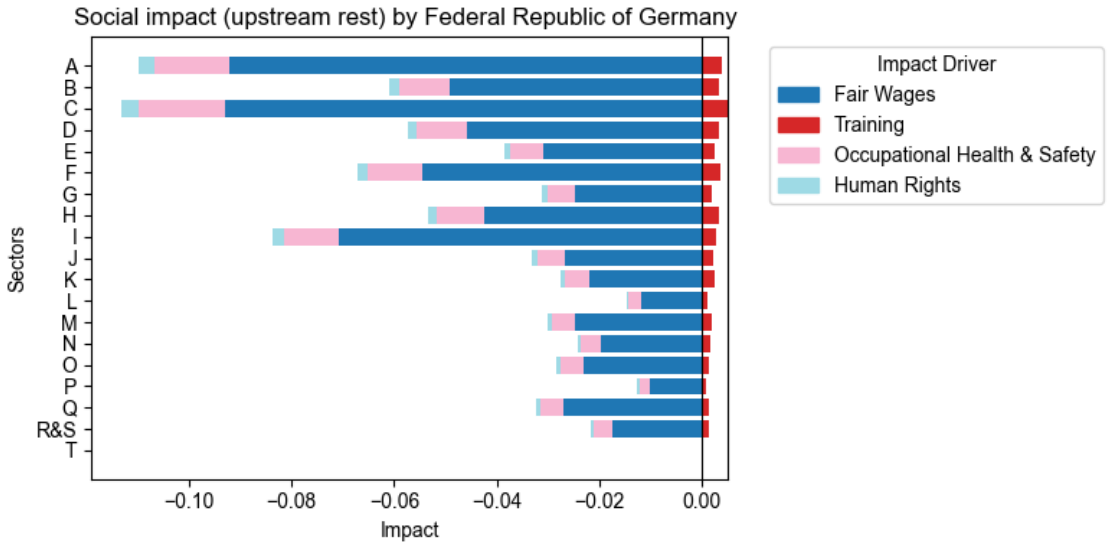
Source: VBA/WifOR, Overview of social impact, upstream tier 1 in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream tier 2



Source: VBA/WifOR, Overview of social impact, upstream tier 2 in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

upstream rest



Source: VBA/WifOR, Overview of social impact, upstream rest in Federal Republic of Germany, 2024, Calculated based on WifOR Institute, WifOR Value Factors, Version February 2025

The analysis of social impact intensities across various NACE sectors in the Federal Republic of Germany, utilizing the VBA and WifOR methodologies, reveals significant variations in the contributions of fair wages, training, occupational health and safety, and human rights across different stages of the value chain. Direct impacts are generally less pronounced compared to upstream impacts, particularly in upstream tier 1 and tier 2 stages, where the cumulative effects of supply chain practices exacerbate social challenges, such as inadequate wages and poor working conditions. Sectors like "A" (Agriculture) and "B" (Mining) exhibit substantial negative impacts in upstream stages, indicating that their supply chains significantly affect labor conditions and social equity. Conversely, the "R&S" (Arts, Entertainment, and Recreation) sector shows relatively lower social impacts across all stages, suggesting a more favorable labor environment. Overall, the findings underscore the importance of addressing social sustainability throughout the entire value chain to mitigate adverse impacts on workers and communities.

Application

Beyond comparing company and sector impacts, the data presented here can support various additional applications. This chapter highlights several such use cases.

Impact benchmarks can help state institutions assess risks, guide investments and funding strategies, inform procurement decisions, enforce compliance, and shape policies that promote human rights protection, environmental sustainability, and economic growth. By applying country-specific and industry-specific impact benchmarks, governments and regulatory bodies can reduce liabilities, such as pollution and labor exploitation, while ensuring fair competition.

Collection of ideas

	Regulation & Compliance	Policy & Economic Planning	Investment & Development Finance	Risk Assessment
Institution	Ministries	Development Institutions	Development Banks	Insurance Entities
Vision of application	Benchmarks could support industry-specific sustainability target setting and provide valuable insights for cost-benefit analyses of regulations	Development institutions could use benchmarks to shape industry-specific sustainability goals like labour protection guidelines	Benchmarks could help guide funding decisions for large projects, ensuring proper risk mitigation, particularly in sectors such as agriculture	Insurers could assess risks using industry benchmarks, helping determine eligibility and pricing for political risk insurance

	Public Procurement & Infrastructure	International Trade & Market Access	Accountability & Consumer Protection	Supply Chain Management
Institution	Public-Private Partnerships	Trade Ministries	Consumer Protection Agencies	Export Credit Agencies
Vision of application	Governments could use country-specific impact benchmarks to compare and select private sector partners (e.g., Infrastructure projects)	Trade ministries could apply sustainability benchmarks to imported goods (e.g., carbon intensity benchmarks for minerals)	Transparency rules could be enforced, requiring companies to disclose their impacts relative to benchmarks to prevent false claims and ensure accountability	Export credit agencies could use environmental and social benchmarks in financing decisions to promote ethical and sustainable supply chains

Figure VBA, Policy Applications, 2025

Impact Intensities represent the average environmental, social, and economic impact per sector output across countries, regions, and globally. They serve as a reference point for assessing an organization's sustainability performance in its own operations and supply chains across industries and geographies. By comparing their performance to sector averages, companies and other organizations can determine whether they meet or exceed benchmarks and set specific targets for improvement.[10]

[10] VBA et al., Valuing Impact Materiality 2025, 2025, www.value-balancing.com.

Beyond internal assessments, Impact Intensities encourage collaboration with suppliers and partners, fostering sustainability improvements across shared supply chains. By identifying high-impact tiers or regions, companies can make informed decisions about production and sourcing. On a global scale, comparing benchmarks across countries highlights regions with critical sustainability challenges, enabling firms to focus efforts where they are most needed. These benchmarks also help organizations anticipate risks beyond production, such as regulatory pressures or resource availability constraints. By revealing industries and countries where unsustainable environmental or social challenges could lead to future restrictions, they support strategic decisions on production, sourcing, resource allocation, and diversification. Additionally, they help companies effectively communicate sustainability achievements across diverse markets.

The benchmarks serve as a key reference for materiality assessments, helping companies prioritize impacts, allocate resources efficiently, and align with stakeholder and sustainability goals. They provide reliable data for transparent reporting, enabling companies to demonstrate their performance to investors, customers, and other stakeholders. This fosters trust, ensures compliance with standards, and enhances corporate reputation.

As sustainability becomes increasingly important and disclosure regulations evolve, assessment and reporting methodologies must keep pace. Impact Intensity benchmarks offer valuable guidance for improving practices, refining sustainability reporting, sharpening decision-making, and optimizing resource allocation. It is important to note that Impact Intensities are monetized using WifOR value factors, and meaningful comparisons require companies to calculate their impacts using the same methodology.

To illustrate how these benchmarks can be applied in practice, consider the following example: In Australia's Consumer Goods sector, an increase of EUR 1000[11] in production results in an average negative impact of EUR 6.98 from greenhouse gas (GHG) emissions within a company's own operations. Direct suppliers contribute another EUR 16.04, while suppliers' suppliers account for EUR 10.20 globally, and the remaining global supply chain adds EUR 15.77. Altogether, the total damage due to GHG emissions across the entire value chain amounts to approximately EUR 49 per EUR 1000 of output. This indicates that the majority of GHG emissions are driven by the upstream supply chain rather than the direct operations of Consumer Goods companies.

A company operating in this sector in Australia can compare these Impact Intensity benchmarks with its own data to evaluate its performance. To calculate its own GHG Impact Intensities, the company must take its environmental data per country and value chain stage, divide it by its output or turnover (own operations in the respective country), and multiply the result with the WifOR value factor:

[11] For ease of interpretation, the numbers in this example are scaled up by 1000. The tables show impact per EUR 1 of output.

$$GHG\ Intensity_{c,v} = \frac{GHG\ emissions_{c,v}}{Output_c} * WifOR\ value\ factor\ for\ GHG\ emissions$$[12]

If the company's calculated GHG Intensity values are lower than the benchmark, this indicates a smaller GHG footprint relative to the sector average. Conversely, higher values suggest a larger-than-average impact.

For a materiality assessment, Impact Intensities at or above the sectoral benchmark can be considered material, signaling areas that may require targeted sustainability measures.

Caveats

Data Accuracy

The input-output model used to calculate the Impact Intensities integrates satellite accounts for various indicators, constructed using multiple data sources. These accounts aim to accurately portray industry effects across all countries based on the best available knowledge and data.[13] However, varying data availability across indicators, countries, and sectors necessitates certain extrapolations and assumptions. WifOR is committed to continuously updating its data to improve accuracy and minimize errors or gaps. As such, the results here represent a snapshot, capturing current impacts as comprehensively as possible. Despite inherent limitations, this dataset remains, to the best of our knowledge, the most detailed, granular, and comprehensive source available for assessing industrial impacts.

Impact Valuation

Impact Valuation advances traditional reporting beyond disclosure of companies' social and environmental effects in disparate units (e.g., GHG emissions in metric tons or occupational accidents in numbers of events). It captures the environmental and social changes caused by these outputs, tracks their broader impact on society, and conveys these effects in monetary terms—a unified metric that enables comparison across a diverse range of indicators.

Various approaches exist to quantify the societal value of indicators. In the present assessment, the indicators were monetized using the WifOR Impact Valuation methodology, with publicly available value factors. WifOR primarily focuses on damage costs to measure impacts. However, this is not feasible for all indicators, as some impact pathways and their consequences remain insufficiently understood. Each indicator therefore follows a specific valuation approach. For example, GHG emissions contribute to climate change regardless of their source and are thus valued using a 'social cost of carbon' approach and a global value factor. By contrast, water consumption is assessed based on economic damage and human

[12] c = country of operation; v = value chain level

[13] Scholz, Richard; Dorndorf, Tabea; Tesch, Jasmin; Köster, Robert; Croner, Daniel; Kalamov, Zarko; Setzer, Jana. 2024. Impact measurement using WifOR's sustainability footprint method. Methodological report. 2024 WifOR Institute.

health impacts, yielding country-specific value factors that reflect local water scarcity. This means water consumption in highly water-stressed regions will generate a disproportionately higher impact, in some cases exceeding that of GHG emissions at global level. Given such methodological idiosyncrasies, comparisons between indicators should be interpreted cautiously, as differing valuation approaches limit direct comparability, especially on a worldwide level.

Double Counting

Impact Valuation carries the risk of *double counting*, as different impact drivers may share the same, or overlapping, impact pathways. This challenge is particularly relevant when analyzing multiple indicators together. For instance, waste incineration releases air pollutants that contribute to respiratory disease and health-related costs—accounted for in the value factor for *Waste*, but also included in the factor for *Air Emission*. Simply subtracting this impact from the waste coefficient would underestimate the true impact of waste, while summing both indicators would lead to double counting.

Economic Impact

Gross Value Added (GVA) is a key metric for assessing a company's economic contribution across value chains. It represents the economic value generated through company operations after deducting the cost of inputs and services used in production. Often, the total GVA across the entire value chain approximately matches the direct output of a company—if a company generates EUR 1,000 in direct output, the total GVA across its supply chain and internal operations typically also equals EUR 1,000. This equivalence is down to the fact that GVA encompasses all value-creation activities, from raw materials production to final goods and services, and is therefore distributed across all stages of the value chain. The distribution varies by industry and location: manufacturing or heavy engineering often rely on extensive supplier networks, resulting in significant upstream GVA contributions, while software development or advanced technology focus on highly integrated operations and tend to generate a substantial proportion of GVA internally.

Netting Impacts

Impact Valuation seeks to enhance transparency, an aim that cannot be achieved if results are overly aggregated. Expressing diverse impacts using a common monetary metric does reduce complexity, but it also risks obscuring critical nuances. And while simplification can be useful, it should not carry the implication that negative impacts can be offset by positive ones.

There are certain cases where netting impacts can be appropriate (e.g., aggregating an indicator across different locations). But practices such as netting across different indicators can lead to *greenwashing* and a misrepresentation of results. This risk is particularly relevant for economic impact (represented by GVA), which has therefore been intentionally excluded from the charts below.

In the current phase of Impact Valuation development, limitations remain, including overlapping indicators (double counting), divergent valuation approaches, and data gaps that hinder a fully comprehensive assessment. Moreover, different impacts affect different groups unevenly, meaning that a positive impact on one group does not necessarily compensate for a negative impact on another (for instance, extra vocational training for managers cannot offset agricultural losses caused by water scarcity).

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