



KEY IMPACT CATEGORIES & MONETARY VALUATION FACTORS

June 2024

KEY IMPACT CATEGORIES AND MONETARY VALUATION FACTORS

June 2024

About the Impact-Weighted Accounts Framework

The Impact-Weighted Accounts Framework (IWAF) represents an innovative approach designed to redefine value in organisations, from a focus on maximizing financial value to optimizing societal impact. IWAF provides the key concepts, requirements, and guidance for organisations to quantitatively assess their impact: how they create or detract value for all stakeholders.

IWAF values the impact of an enterprise across six distinct capitals—financial, manufactured, intellectual, human, social, and natural—throughout the entire value chain. By measuring and evaluating these impacts in monetary terms, IWAF provides a harmonised, standardised impact language, thereby facilitating trade-offs as well as the integration of impact information at the core of strategic decision-making. The focus of IWAF extends beyond mere assessment and reporting; it actively facilitates effective impact management. This framework thereby ensures that all key stakeholders can comprehend and steer on the full spectrum of a company's impacts.

Therefore, adopting IWAF is a critical step for any organisation aiming to evolve into an impact enterprise. This guidance steers enterprises towards a future where every decision is impact-driven, crucial for cultivating an Impact Economy in which work, innovation and entrepreneurship is used as effectively as possible towards resolving our societal issues and creating well-being for all.

Developing the Impact-Weighted Accounts Framework

IWAF is incubated by the Impact Economy Foundation (IEF) together with thought leaders and leading practitioners in an inclusive and scientific manner. The IWAF is being developed in partnership with the Impact-Weighted Accounts Project from Harvard Business School, Singapore Management University, Rotterdam School of Management and Impact Institute.



**Harvard
Business
School**



Impact-Weighted Accounts Framework								
	Context		Framework	Support				
Documents								
Content	Measuring value creation beyond profit	Conceptual foundations for IWAs	Definitions, principles and requirements Presentation of IWAs	Summary of the key arguments for IWAs and their key properties	Step-by-step guide to compile IWAs	Frequently asked questions, including on comparison of IWAF and the impact field	Guide for impact management with IWAF	Monetisation factors and impact categories
Audience	<i>Companies wanting to report beyond profit</i> <i>Investors wanting to understand long-term value creation</i> <i>Policy makers</i> <i>Impact experts</i>	<i>Companies and Investors considering using the IWAF</i> <i>Policy makers</i> <i>Impact experts</i>	<i>Companies planning to use the IWAF</i> <i>Investors planning to use the IWAF for decisions</i> <i>Policy makers</i> <i>Impact experts</i>	<i>Companies planning to use the IWAF</i> <i>Investors planning to use the IWAF for decisions</i> <i>Policy makers</i> <i>Impact experts</i>	<i>Companies applying the IWAF</i> <i>Companies wanting to know what it takes to apply the IWAF</i>	<i>Companies possibly triggered to use the IWAF</i> <i>Policy makers curious for the added value of the IWAF</i> <i>Impact experts working on other impact methodologies</i>	<i>Companies wanting to know what it takes to apply the IWAF for</i> <i>Investors planning to use the IWAF for decisions using impact management</i>	<i>Companies applying the IWAF</i> <i>Companies wanting to know what it takes to apply the IWAF</i>

Figure 1: An overview of the documents in the Impact-Weighted Accounts Framework. This document is the Monetisation Factors and Impact Categories document.

Authors and Acknowledgments

This draft has been prepared by the IWAF working group: Reinier de Adelhart Toorop¹, T Robert Zochowski III², Eszter Vitorino Fuleky³, Liang Hao⁴, Willem Schramade⁵, and Valerius Vandru Hartanto¹, together with Bart van Veen¹. The draft was developed under auspices of the IEF Board and with advice from the IEF Academic Council.

The working group would like to thank Charles Evers⁶, David Fernandez⁴, Teresa Fogelberg⁶, Adrian de Groot Ruiz^{1,6}, Mijntje Lückers-Rovers^{7,8}, Karen Maas^{8,9}, Sander Onderstal^{8,10}, Leen Paape^{8,11}, George Serafeim^{2,8}, Dirk Schoenmaker^{5,8}, Janis Teo Ruimin⁴, Arnold Tucker^{8,13}, Loes Verdonk¹, Dick de Waard^{8,14}, and Herman Mulder⁶, for their contributions.

In addition, we would like to thank all experts that have provided input to the earlier Expert Consultation Draft.

Suggested citation: IEF. (2024). *Standardised list of impacts categories and Monetisation factor list*. Impact Economy Foundation. Available at

<https://impacteeconomyfoundation.org/impactweightedaccountsframework/impact-categories-and-monetisation-factors/>



This work is licensed under a [CC BY-ND 4.0](https://creativecommons.org/licenses/by-nd/4.0/) license.

Cover image by Jakub Kriz

1) Impact Institute, 2) Harvard Business School, 3) Kempen Capital Management, 4) Singapore Management University, 5) Rotterdam School of Management, 6) Impact Economy Foundation (Board), 7) Tilburg University, 8) Impact Economy Foundation (Academic Council), 10) Open University and EUR, 11) Nyenrode University, 12) University of Amsterdam, 13) Leiden University, 14) Groningen University.

Introduction

This document provides the Standardised list of impacts categories (1.1) and the list of Monetisation factors (1.2). The Standardised list of impact categories is also provided in the [Guidance on the steps for compiling Impact-Weighted Accounts](#) (Appendix A). The list of monetisation factors is also provided in the [Guidance on the steps for compiling Impact-Weighted Accounts](#) (Appendix F).

1.1 Standardised list of impacts categories

The set of impacts that are material to the organisation and thus appear in the IWAs depends on the type of business activity of that organisation. Table A.1 provides the standard list of impact categories that are relevant to many types of organisations. It is suggested that these impact categories should always be included in IWAs if these are material to the organisation. Note that this list is not exhaustive.

The list specifies the type of capital and the stakeholders with which an impact category is associated. When using a different classification of stakeholder groups, the organisation should modify the list accordingly. The list also provides the possible valences for the accounts in the impact categories. Note that the valence of financial capital impacts is defined from the stakeholder external to the organisation in scope. In addition, the list indicates whether an impact is typically an input or an output and whether it is associated with rights. The link to input or output refers to the direct impact of an organisations' activity and not the indirect impact generated in its valued chain. This means for example, that Contribution to/ Limitation of Climate Change is associated with the output 'GHG emissions' related to the organisation's activity but does not reflect the climate change impact from emissions generated in the value chain for products/services that the activity has as input. The relation between output of a value chain partner / input of the organisation in scope is reflected in the impact pathway to indirect impact (see paragraph 5.2.13 of the [Conceptual Framework for Impact-Weighted Accounts](#)).

Often, the activities of your organisation lead to value transformation or value transfer. You should always consider the output impact when considering the related input impact. An overview of which input and output impacts belong together ("mirror-impacts") can be found below:



Input Impact	Output impact	Stakeholder
Payment from clients	Client value of products / services	Clients
Value of input materials	Payments to suppliers	Suppliers
Time invested by employees	Salaries	Employees
	Additionally: Value to employees arising from training and experience, Wellbeing of employment	
Cost of capital	Profit	Organisation and investors

Furthermore, be aware that for the following 'contribution/limitation to' impacts no netting of the 'contribution to' and the 'limitation of' impacts should occur:

- Contribution to / limitation of climate change
- Contribution to / limitation of pollution
- Contribution to / limitation of availability of scarce natural resources
- Contribution to / limitation of poverty
- Contribution to / limitation of human rights violations

Table 1.: Key impact categories

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Profit	Profit made by organisation	Financial	Organisation; Investors	Output	Positive	No	1
Salaries	Remuneration and other comprehensive benefits paid to employees by the organisation	Financial	Employees	Output	Positive	No	1
Interest payments	Interest payments to an organisation's lenders and bond holders	Financial	Organisation; Investors	Output	Positive	No	1
Taxes	Taxes paid to the government by the organisation	Financial	Governments, local communities and other	Output	Positive	No	1
Payments to suppliers	Payments to suppliers by the organisation	Financial	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	1
Payments from clients	Payments from clients to the organisation	Financial	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Input	Negative	No	1
Cost of capital	The cost of the capital that is provided to the organisation by equity holders, bond holders and others	Financial	Investors	Input	Negative	No	1
Change in fixed assets	A change in the fixed assets of the organisation	Manufactured	Organisation; Investors	Output	Positive or Negative	No	1



Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
	(e.g., due to new investments, divestments or depreciation)						
Client value of products	Value to clients of products sold by the organisation	Manufactured	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Client value of services	Value to clients of services sold by the organisation	Financial / Manufactured / Intellectual / Human	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Value of input materials	Value of input materials supplied by suppliers to the organisation	Manufactured	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Input	Negative	No	1
Creation of intellectual capital	Creation of intellectual capital such as new knowledge and technology by the organisation	Intellectual	Organisation; Investors	Output	Positive	No	1
Wellbeing of employment	Additional wellbeing experienced by employees resulting from their employment at the organisation	Human	Employees Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Value to employees arising from training and experience	Increase in skills and associated Human Capital of employees arising from their employment at the organisation	Human	Employees Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Effects on human health	Various effects on human health associated with the operations and products of the organisation	Human	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain) Governments, local communities and other; (End-)Consumers	Output	Positive or Negative	Yes	2 or 3 ¹
Occupational health and safety incidents	The effects of occupational health and safety incidents that occurred during the operations of the organisation or in the value chain.	Human	Employees Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Negative	Yes	2
Time invested by employees	The value of time invested by employees to work for the organisation	Human	Employees	Input	Negative	No	1

¹ Category 2 if the effects on health/emissions/... can directly be attributed to one organization, category 3 if not (e.g., if they occur in the consumer use phase).



Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Contribution to / limitation of climate change	Emission or absorption of greenhouse gasses (GHG) during the operations of the organisation	Natural ²	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of pollution	Emission or absorption of pollutants to or in air, soil and water during the operations of the organisation	Natural ⁸	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of availability of scarce natural resources	The effects of increasing or decreasing scarcity of natural resources resulting from the operations of the organisation	Natural ⁸	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of poverty	The effects of increased or decreased poverty resulting from the operations of the organisation	Social	Employees; Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain); Governments, local communities and other	Output	Negative or positive	Yes	2 or 3

² All negative natural capital impacts also (indirectly) lead to negative effects on human health (Human Capital) and human economic activity (Financial Capital). As these effects are in first order (directly) on the environment, these impacts are classified as Natural Capital. In the context of Life-Cycle Assessments, these effects are reflected as midpoint indicators rather than endpoint indicators.

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Contribution to / limitation of human rights violations	(Indirect) contribution to human rights violations, or preventing others from engaging in this	Social	Employees; Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain); Governments, local communities and other	Output	Negative or positive	Yes	2 or 3



1.2 Monetisation factor list

Table 2: Monetisation Factor List

Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Profit	Financial	Net profit/loss of the organisation		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another. [11]	No
Salaries	Financial	Salaries to employees		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another.	No
Interest payments	Financial	Interests paid to each applicable stakeholder		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No

Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Taxes	Financial	Taxes	Income tax	Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [50].	No
			Other tax	Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [50].	
Payments to suppliers	Financial	Payments to suppliers		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Payments from clients	Financial	Payments from clients		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No



Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Cost of capital	Financial	Cost of capital		Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Change in fixed assets	Manufactured	Change in fixed assets		Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Client value of products	Manufactured	Client value of products		Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Client value of services	Manufactured / Intellectual / Human	Client value of services		Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing.	No

Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	
Value of input materials	Manufactured	Value of input materials		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Creation of intellectual capital	Intellectual	Creation of intellectual capital		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Wellbeing of employment	Human	Wellbeing effect per one additional point of life satisfaction		Life satisfaction point (scale 0-100)	2,647 Int.\$ / life satisfaction point (scale 0-100)	The value of wellbeing is based on two studies on the valuation of wellbeing [90], [91]. A value of wellbeing was derived from both articles, each of which was adjusted for inflation and purchasing power parity. These values are based on a reduction in wellbeing value resulting from unemployment [50] and an increase in wellbeing value resulting from education [11]. These two values were weighted equally to arrive at the final life satisfaction.	No



Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Value to employees from training and experience	Human	Creation human capital for each applicable stakeholder			Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Occupational health & safety incidents	Human	Non-fatal occupational incidents	Insured occupational incidents	non-fatal	# Incidents	4,360 Int.\$/incident	A combination of compensation, prevention and retribution costs. The compensation cost represents the average cost of medical expenses for occupational injuries not covered by the employer, estimated from Dutch data and adapted to other countries using value transfer [92], the value of health loss (measured in Disability-adjusted Life Years [DALY]) loss in the case of non-fatal incidents, and the Value of Statistical Life (VSL) in the cause of fatal incidents, as a compensation to the family of the victim [93]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution costs represent a penalty for the cases in which workers perform their duties in conditions that violate Health and Safety regulations, which is based on the weighted average of penalties from various countries to express a global penalty.	Yes
			Uninsured occupational incidents	non-fatal	# Incidents	4,550 Int.\$/incident		
		Fatal occupational incidents			# Incidents	3,700,000 Int.\$/incident		
		Occupational injuries with breach of H&S standards			# Incidents	6,150 Int.\$/incident		
		Work performed in violation of H&S standards			# FTE	2,780 Int.\$/FTE		
		Labour force to be audited for H&S			# FTE	9.47 Int.\$/FTE		
Time invested by employees	Human	Time invested by employees			Already valued	monetary 1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar	No

Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
							of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	
Effects on Human Health	Human	Effects on human health ³			DALY	119,000 Int.\$/DALY	A compensation cost that expresses the Value of Statistical Life (VSL) based on a meta-analysis of the VSL from 92 willingness-to-pay studies, conducted by the OECD.	Yes
Contribution to / limitation of climate change	Natural	GHG emissions			kg CO2-eq	0.236 Int.\$/kgCO2 eq	A restoration cost that expresses the abatement cost for achieving the policy targets of reducing GHG emissions to meet the <i>2-degree target</i> as set in the Paris Agreement, based on a meta-study of 62 marginal abatement cost estimates [94].	Yes
Contribution to / limitation of pollution: Air pollution	Natural	Toxic emissions to air	Human toxicity		DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes
			Terrestrial ecotoxicity		kg 1,4-DB emitted to industrial soil eq	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the	

³ Other impacts such as pollution and child labour are also associated with human health through their footprint sub-indicators but are valued separately from Effects on Human Health.



Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Freshwater ecotoxicity		kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq	environment, looking at ecosystems damage. Ecosystem's damage is valued by looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the Economics of Ecosystems and Biodiversity (TEEB) database [95]. ReCiPe (2016) endpoint characterisation factors for ecotoxicity to the respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g., it is not specified where the damage occurs, only the size of the damage).	
			Marine Ecotoxicity		kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq		
		Nitrogen deposition NH3	Animal Husbandry (in stables)		kg NH3 eq	18.90 Int.\$/kg NH3 eq	A marginal cost of the abatement measures needed to reach the regulatory target of nitrogen deposition in nature areas. Types and magnitude of emissions that contribute to nitrogen deposition in the Netherlands are based on van der Maas [96]. The costs to prevent the deposition of 1 mol of Nitrogen per hectare per year from NH3 emissions coming from animal husbandry (in stables) are derived from Van der Born et al. [97]. Adjusted values for nitrogen deposition in other European countries are	
			Use of manure		kg NH3 eq	12.10 Int.\$/kg NH3 eq		
			Other sources		kg NH3 eq	10.60 Int.\$/kg NH3 eq		

Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
							provided based on the Product Environmental Footprint (PEF) characterisation factors and data on the average accumulate exceedance per hectare [98].	
Nitrogen deposition NOx		Use of machines and vehicles			kg NOx eq	1.84 Int.\$/kg NOx eq	A marginal cost of the abatement measures needed to reach the regulatory target of nitrogen deposition in nature areas. Types and magnitude of emissions that contribute to nitrogen deposition in the Netherlands are based on Van der Maas [96]. The costs to prevent the deposition of 1 mol of Nitrogen per hectare per year from NOx emissions coming from use of agricultural machines and vehicles are derived from Van der Born et al. [97]. Adjusted values for nitrogen deposition in other European countries are provided based on PEF characterisation factors and data on the average accumulate exceedance per hectare [98].	
						kg NOx eq		
Particulate matter (PM) formation					kg PM2.5 eq	78.50 Int.\$/kg PM2.5 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage (morbidity—i.e., sickness and disease and premature mortality). The endpoint valuation of human health is based on a valuation of a DALY (Disability Adjusted Life Year). ReCiPe 2016 endpoint characterisation factors for PM formation are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	



Impact	Capital	Footprint Indicator	Footprint indicator	sub- Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
		Photochemical oxidant formation (POF)	Photochemical oxidant formation (POF): human health damage	kg NOx eq	0.114 Int.\$/kg NOx eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage (morbidity—i.e., sickness and disease and premature mortality) and ecosystems damage. Ecosystem's damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. The endpoint valuation of human health is based on valuation of a DALY. ReCiPe 2016 endpoint characterisation factors for POF are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	
		Photochemical oxidant formation (POF): ecosystem damage	Photochemical oxidant formation (POF): ecosystem damage	kg NOx eq	4.27 Int.\$/kg NOx eq		
		Acidification		kg SO2 eq	7.02 Int.\$/kg SO2 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage. Ecosystem damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the	

Impact	Capital	Footprint Indicator	Footprint indicator	sub- Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for acidification are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	
		Ozone layer depleting emissions		kg CFC-11 eq	68.50 Int.\$/kg CFC-11 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage (morbidity—i.e., sickness and disease and premature mortality). The endpoint valuation of human health is based on valuation of a DALY. The global ReCiPe 2016 endpoint characterisation factor for Ozone layer depleting emissions is used to derive the monetisation factor [36]. The monetisation factor for ozone layer depleting emissions also includes the cost of damage to agricultural crops, taken from CE Delft [52]. The cost of damage to agricultural crops represents average damage costs for ozone depletion for an average emission source in the Netherlands. Although the damage could be different in different geographies, for example because of different thickness of the ozone layer, at present the value is used without adjustments for different countries due to the lack of an appropriate coefficient for regional adjustments.	



Impact	Capital	Footprint Indicator	Footprint indicator	sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Contribution to / limitation of pollution: Water pollution	Natural	Toxic emissions to water	Human toxicity		DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes
				Terrestrial ecotoxicity	kg 1,4-DB emitted to industrial soil eq, for example	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil, for example	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage.	
				Freshwater ecotoxicity	kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq	Ecosystem's damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for ecotoxicity to the respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g, it is not specified where the damage occurs, only the size of the damage).	
				Marine Ecotoxicity	kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq		
				Freshwater eutrophication	kg P eq to freshwater	304 Int.\$/kg P eq to freshwater	A combination of restoration and compensation costs based on a literature review on the costs of eutrophication. Restoration costs express average	

Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
							abatement costs for bringing nutrient levels to a regulatory target, for the impacts that are reversible. Compensation costs express other damage (economic damage, damage to human health and biodiversity loss), for residual impacts after restoration has taken place. Country-specific factors can be derived based on water basin-level risk of eutrophication.	
		Marine eutrophication			kg N eq to marine water	2110 Int.\$/kg N eq to marine water	A combination of restoration and compensation costs based on a literature review on the costs of eutrophication. Restoration costs express average abatement costs for bringing nutrient levels to a regulatory target, for the impacts that are reversible. Compensation costs express other damage (economic damage, damage to human health and biodiversity loss), for residual impacts after restoration has taken place.	
Contribution to / limitation of pollution: Soil pollution	Natural	Toxic emissions to soil	Human toxicity		DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes
			Terrestrial ecotoxicity		kg 1,4-DB emitted to industrial soil eq	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage. Ecosystem damage is valued looking at the value of ecosystem services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem	
			Freshwater ecotoxicity		kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq		



Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Marine Ecotoxicity		kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq	damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for ecotoxicity to the respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g., it is not specified where the damage occurs, only the size of the damage).	
Contribution to / limitation of pollution: Soil degradation	Natural	Soil organic carbon (SOC) loss			kg SOC loss	0.0450 Int.\$/kg SOC loss	A compensation cost that expresses the damage cost for the chemical, physical, biological and ecological decline of soil resulting from loss of soil organic carbon, based on a study on the shadow prices of soil quality by TNO and Wageningen University [99].	Yes
					kg soil loss	0.0331 Int.\$/kg soil loss	A compensation cost that expresses the cost of soil erosion based on an extensive review on the costs of soil erosion by the FAO (2014) [100]. The costs include on-site damage such as loss of nutrients, reduced harvests and reduced value of the land and off-site damage such as the silting up of waterways, flooding and repairing public and private property.	
					kg soil loss	0.0259 Int.\$/kg soil loss		

Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor		Explanation	Rights dimension (Yes/No)
		Soil compaction			corrected tonne kilometer (tkm)	0.830	Int.\$ / corrected tonne kilometer (tkm)	<p>A damage cost based on lost future crop yields. Other off-site costs such as flooding, water pollution and increased GHG emissions, associated with subsoil compaction, are not included in the monetisation factor. The damage cost from soil compaction is calculated based on the average gross revenue of crop production lost resulting from irreversible subsoil compaction. This is quantified as the present value future crop yield losses (over 100 years) that are due to one year of machinery use. Average yearly loss (%) of crop yield per corrected tkm per ha over 100 years of production is provided in Stoessel et al. (2018), with country- and region-specific factors [101]. Average value of annual gross production per hectare (in euro/ha) is estimated from data collected from FAOSTAT for all crops produced in each country [102]. Since the average yearly loss is given for 100 years of production, future crop production losses (0.12 EUR/corrected tkm) are discounted to determine the present value, with a discount rate equal to 3% [103] and summed over 100 years.</p> <p><i>Values represent a European average, rather than a global one.</i></p>	
Contribution to / limitation of availability	Natural	Land occupation	Tropical forest	Mean Abundance	Species (MSA)*ha*yr	3,170	Int.\$/ (MSA*ha*yr)	A compensation cost that expresses the opportunity cost of land occupation based on the value of ecosystem services for main biomes based on a meta-analysis from	Yes



Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
scarce natural resources: Land occupation			Other forest	Mean	Species Abundance	1,510 Int.\$/(MSA*ha*yr)	TEEB [95]. Country-specific factors can be derived based on biome cover per country.	
			Woodland/shrubland	Mean	Species Abundance	2,050 Int.\$/(MSA*ha*yr)		
			Grassland/savannah	Mean	Species Abundance	3,640 Int.\$/(MSA*ha*yr)		
			Inland wetland	Mean	Species Abundance	22,300 Int.\$/(MSA*ha*yr)		
			Coastal wetland	Mean	Species Abundance	16,400 Int.\$/(MSA*ha*yr)		
Contribution to / limitation of availability of scarce natural resources: Land transformation	Natural	Land transformation	Tropical forest	Mean	Species Abundance	4,350 Int.\$/(MSA*ha)	A restoration cost that expresses the average cost of ecosystem restoration projects in different biomes based on a review of case studies [104]. Costs include capital investment and maintenance of the restoration project.	Yes
			Other forest	Mean	Species Abundance	3,020 Int.\$/(MSA*ha)		
			Woodland/shrubland	Mean	Species Abundance	1,250 Int.\$/(MSA*ha)		
			Grassland/savannah	Mean	Species Abundance	328 Int.\$/(MSA*ha)		

Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Inland wetland		Mean Species Abundance (MSA)*ha	41,600 Int.\$/(MSA*ha)		
			Coastal wetland		Mean Species Abundance (MSA)*ha	3,630 Int.\$/(MSA*ha)		
Contribution to / limitation of availability of scarce natural resources: Fossil fuels	Natural	Fossil fuel depletion			kg oil eq	0.540 Int.\$/kg oil eq	A compensation cost that expresses the future loss of economic welfare resulting from increased extraction costs of fossil fuels in the future [36].	Yes
Contribution to / limitation of availability of scarce natural resources: (Other) non-renewable materials	Natural	(Other) non-renewable material depletion			kg Cu eq	0.273 Int.\$/kg Cu eq	A compensation cost that expresses the future loss of economic welfare resulting from increased extraction costs of non-renewable materials in the future [36].	Yes
Contribution to / limitation of availability of scarce natural resources: Water	Natural	Scarce blue water use			m ³	1.560 Int.\$/m ³	A restoration cost that expresses the annualised cost of desalination, including the cost of operation and maintenance, electrical and thermal energy, as well as the cost of covering and repaying initial capital and operational costs of desalination [105].	Yes
Contribution to / limitation of poverty:	Social	Wage gap of workers earning below minimum wage			Already monetary valued	1.59 Int.\$/Int.\$	A combination of compensation, prevention and retribution costs [51]. The compensation cost expresses the gap to a decent living wage, as well as the interest	Yes



Impact	Capital	Footprint Indicator	Footprint indicator	sub-	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Underpayment in the value chain		Wage gap of workers earning above minimum wage but below decent living wage			Already valued	monetary Int.\$/Int.\$	rate. The prevention cost expresses the cost of generic auditing setup to prevent future instances. The retribution cost represents a penalty for the wage gap that is below the legal minimum wage, based on the weighted average of penalties from various countries to express a global penalty.	
		Labour force to be audited for insufficient wages			# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of poverty: Insufficient income	Social	Income gap			Already valued	monetary Int.\$/Int.\$	A compensation cost that represents the restitution for the income gap.	Yes
Contribution to / limitation of human rights violations: Child labour	Social	Underage workers	Workers below minimum age for light work (12 or 13) involved in non-hazardous economic work		# child FTE	14,400 Int.\$/child FTE	A combination of restoration, compensation, prevention and retribution costs. The restoration cost expresses the costs of providing quality education for children not attending school and the costs of implementing additional components of reintegration programmes for children involved in hazardous child labour [106]. The compensation cost expresses the loss of future earnings when a child is prevented from attending school during youth [36], [107], [108]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution cost represents a penalty for instances of child labour based on the weighted average of penalties from various countries to express a global penalty.	Yes
			Underage workers above minimum age for light work and below minimum age (12 or 14 or 13 or 15) involved in non-hazardous non-		# child FTE	3,470 Int.\$/child FTE		

Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			light economic work				
			Underage workers below age (12 or 13) involved in hazardous work	# child FTE	36,600 Int.\$/child FTE		
			Workers above minimum age (14 or 15) and below 18 involved in hazardous work	# FTE	15,900 Int.\$/FTE		
			Underage workers who are not attending school	# children	26,400 Int.\$/children		
			Labour force to be audited for child labour	# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Forced labour	Social		Forced workers (least severe)	# FTE	18,000 Int.\$/FTE	A combination of restoration, compensation, prevention and retribution costs. The restoration cost expresses the restitution of past economic losses of forced workers in debt bondage, as well as other costs for reintegration [109], [110]. The compensation cost expresses the cost of lost health valued using DALY for forced workers victims of abuse [93]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution cost represents a penalty for instances of forced labour based on the weighted	Yes
			Forced workers (medium severe)	# FTE	98,300 Int.\$/FTE		
			Forced workers (most severe)	# FTE	179,000 Int.\$/FTE		
			Forced workers who are in debt bondage	# FTE	19,900 Int.\$/FTE		
			Forced workers who are victims of abuse	# FTE	43,000 Int.\$/FTE		



Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
		Labour force to be audited for forced labour		# FTE	9.47 Int.\$/FTE	average of penalties from various countries to express a global penalty. Restoration, retribution and compensation costs for harassment may also be included if abuse exists in the specific case.	
Contribution to / limitation of human rights violations: Discrimination	Social	Female workers without provision for maternity leave		# FTE	2,560 Int.\$/FTE	A combination of restoration, prevention and retribution costs. The restoration cost represents the restitution of wage lost due to denied maternity leave, gender discrimination and unequal opportunities. The prevention cost expresses the cost of generic auditing setup to prevent future instances of discrimination. The retribution cost represents a penalty for the violation of denied maternity leave and a penalty proportional to the size of the wage gap from discrimination, based on the weighted average of penalties from various countries to express a global penalty.	Yes
		Value of denied maternity leave		Already monetary valued	1.09 Int.\$/Int.\$		
		Wage gap from gender discrimination		Already monetary valued	1.09 Int.\$/Int.\$		
		Wage gap from unequal opportunities		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for discrimination		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Lack of social security	Social	Workers without legal social security		# FTE	3,400 Int.\$/FTE	A combination of compensation, prevention and retribution costs. The compensation cost represents the restitution of the denied paid leave. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty for the workers without social security, in the case of a legal requirement by law, based on the weighted average of penalties from various countries to express a global penalty.	Yes
		Value of denied paid leave		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for insufficient social security		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of	Social	Workers performing illegal overtime		# FTE	160 Int.\$/FTE	A combination of compensation, prevention and retribution costs. The compensation cost represents the	Yes

Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
human rights violations: Excessive and underpaid overtime		Workers performing underpaid overtime			# FTE	160 Int.\$/FTE	wage gap due to underpaid overtime. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty cost for overtime work above the maximum legal limit or paid under legal requirements based on the weighted average of penalties from various countries to express a global penalty.	
		Overtime pay gap			Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for illegal overtime			# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Occurrence of harassment	Social	Workers who experienced harassment	Workers who experienced physical non-sexual harassment	Workers who non-	# workers	34,500	A combination of restoration, compensation, prevention and retribution costs. The restoration cost represents average medical costs for injuries, anxiety, depression and post-traumatic stress disorder resulting from workplace harassment estimated for the Netherlands and adapted to other countries using value transfer [92], [111], [112]. The compensation cost represents the cost of loss of future wellbeing resulting from long-term mental health impact of victims of harassment. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty for instances of physical non-sexual and sexual harassment based on the weighted average of penalties from various countries to express a global penalty.	Yes
					Int.\$/worker			
					# workers	37,300		
					Int.\$/worker			
					# workers	67,300		
Int.\$/worker								
# workers	77,900							
Int.\$/worker								
# workers	89,700							
Int.\$/worker								
# workers								



Impact	Capital	Footprint Indicator	Footprint indicator	sub-Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
		Labour force to be audited for harassment		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Lack of freedom of association	Social	Instances of denied freedom of association		# violations	551 Int.\$/violation	A combination of prevention and retribution costs. The prevention cost expresses the cost of generic auditing setup to prevent future instances. The retribution cost expresses a penalty for denied freedom of association based on a review of penalties from five different legal systems and adjusted based on the square root of the corresponding countries' population to express a global penalty. Restoration and compensation are not included so as not to double count the impact of freedom of association with the other social impacts.	Yes
		Labour force to be audited for denied freedom of association		# FTE	9.47 Int.\$/FTE		



About the Impact Economy Foundation

The Impact Economy Foundation accelerates the transition towards the Impact Economy, an economy that harnesses the power of markets, entrepreneurship and innovation for the common good. In the Impact Economy, every enterprise is an impact enterprise.

To create this shift, IEF redefines value and success in business and the economy: from maximizing short-term financial gain to optimizing societal value. IEF develops the instruments, movement and incentives for the Impact Economy.

[Impacteconomyfoundation.org](https://www.impacteconomyfoundation.org)

This work is licensed under a [CC BY-ND 4.0](https://creativecommons.org/licenses/by-nd/4.0/) license.
© Impact Economy Foundation