

# MONETISATION FACTORS FOR TRUE PRICING

Version 2020.1



True Price™



# MONETISATION FACTORS FOR TRUE PRICING

*Version 2020.1– March 2020*

Authored by True Price Foundation

## About True Price

True Price is a social enterprise with the mission of making sustainable products that are affordable to all a reality, by enabling consumers to see and voluntarily pay the true price of products they buy.

We envision a world where all products are sold for a “true price”. If a product is sold for a true price, then no damage is done to people or to nature, and that product is fully sustainable. If all products were sold for a true price, then the global economy would be sustainable.

True Price was founded in 2012 and has subsequently developed into a world-leading expert in methods and tools to measure and monetise societal impact. It has calculated the true price of dozens of products around the world and has seen a growing appreciation of the concept among companies, governments and consumers. Now in 2020, we feel that the time is right to focus on realising true pricing, a system where consumers and businesses can see, improve and voluntarily pay the true price of their products.

For more information visit: [www.trueprice.org](http://www.trueprice.org).

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2020 True Price Foundation

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*Version 2020.1 – March 2020*

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Version log

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## Foreword

Every individual, present and future, deserves a fulfilling life with dignity. We are now at a historic moment when we can actually make this a reality.

Throughout most of history there was too little wealth—and food, water, medicine—to support everyone to live a dignified life. But our modern economy has succeeded in generating sufficient material wealth to, *in principle*, feed, house and care for everyone. However, generating material wealth is not enough. For people to actually live with dignity, their rights must be respected: all people should live free of poverty, slavery, harassment and discrimination, and furthermore, the rights of future generations to a healthy natural environment must be respected. Our current economic production and consumption impose involuntary and unrightful costs on those who lack power and voice, such as vulnerable workers, indigenous communities or the yet-to-be-born. For this reason, we now face the multiple crises of the working poor, climate change, deforestation and the looming extinction of many species.

How can we fix our global economy so that we can generate sufficient wealth while respecting the rights of all? We believe the answer lies in true pricing: making products in such a way that the rights of all people are respected by avoiding social and environmental harm as much possible, and by remediating for any harm that could not be not avoided. In this way, rights are respected and markets can match supply and demand based on true prices.

The concept of “internalising externalities” is old. What is new is the understanding that we have to take action, and that the foundation of internalising externalities must be anchored in human rights and not economic efficiency alone. To this end, True Price has published the Principles for True Pricing, which enables the translation of universal rights into measurable targets, and facilitates the translation of the responsibility to restore damage into costs that can be paid.

What is also new is that we now have the technology to make this a reality. Now we can determine the impacts of production and consumption of products, and we can remediate external costs at a local level. Currently, though, the infrastructure has not yet been set up to measure and remediate external costs at a large scale. Still, we can do a good job of estimating impacts, such as carbon emission and underpayment, using (social) life cycle assessment, input–output modelling and other exciting techniques. Similarly, we have the technology to estimate remediation costs and thereby determine the true price of products.

To promote the adoption of true pricing, we will make the open access True Price Monetisation Database (TPMD) available for all. This publication, Monetisation Factors for True Pricing Version 2020.1, is a first step. It is not complete, and it is far from perfect. But, if we wait for perfection, we will be too late.

This publication contains global monetisation factors for ten social and ten environmental impacts. Our intention is later also to publish region- and country-specific factors, as well as factors for all true price impacts.



Finally, we hope to publish a True Price Standard on how to derive and apply these factors and calculate the true price of products.

We hope this publication helps impact professionals to apply true pricing and to engage in a discussion on how to best derive external costs.

If you would like to be involved in the development of the True Price Standard and/or the True Price Monetisation Database, please contact us at [info@trueprice.org](mailto:info@trueprice.org).

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## Abbreviations

1,4-DB eq	1,4-Dichlorobenzene equivalent
CFC11 eq	Trichlorofluoromethane equivalent
CHRB	Corporate Human Rights Benchmark
CO <sub>2</sub> eq	Carbon Dioxide equivalent
Cu eq	Copper equivalent
DALY	Disability Adjusted Life Year
ILO	International Labour Organization
FAO	Food and Agriculture Organization
FTE	Full Time Equivalent
H&S	Health and Safety
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
MSA	Mean Species Abundance
OECD	Organisation for Economic Cooperation and Development
SOC	Soil Organic Carbon
SO <sub>2</sub> eq	Sulfur Dioxide equivalent
TEEB	The Economics of Ecosystems and Biodiversity
TPMD	True Price Monetization Database
TPS	True Price Standard
PM	Particulate Matter
UN	United Nations
UNEP	United Nations Environment Programme
UNICEF	United Nations International Children's Emergency Fund
VSL	Value of a Statistical Life
WHO	World Health Organization
WWF	World Wildlife Fund

# 1. Introduction

## 1.1 Content of this publication

Substantial research has been conducted on monetising externalities. Many publications already exist on the monetisation of various environmental external costs at the product level, often in the context of Life Cycle Assessment. However, there is currently no database that includes monetisation factors for both environmental and social external costs.

Over the past eight years, True Price has developed principles and a methodology to monetise a wide set of social and environmental costs. This publication provides the first open access version of the monetisation factors that True Price developed: its aims are to facilitate the adoption and application of true pricing, fill a gap in the literature and accelerate standardisation.

True Price is working towards a True Pricing Standard (TPS)—consisting of open access principles, methodologies and guidance— and an open access True Price Monetisation Database (TPMD). In doing so, we promote a participatory process by inviting experts, stakeholders and practitioners to provide input and help to make the database and standard scientifically and normatively sound, comprehensive and applicable.

Monetisation factors are estimates of the remediation cost of the social and environmental impacts that must be included to calculate the true price of a product. These impacts are measured by a set of footprint indicators,<sup>1</sup> and every footprint indicator can be converted to a monetary unit using the corresponding monetisation factor. When all footprint indicators are measured and monetised for a product, the true price can be calculated.

This publication is the starting point for the TPMD, providing monetisation factors for ten environmental and ten social true price impacts and their footprint indicators and sub-indicators, along with an explanation of the interpretation and sources. The monetisation factors are all expressed in euros at 2020 price levels. In principle, monetisation factors should be regional, as an impact in one place may be different from the same impact elsewhere. In this publication, an overview of global monetisation factors is provided. Unless otherwise stated, these global monetisation factors represent a global average. True Price aims to share regional/country-specific factors in forthcoming publications.

A brief overview of the method used is given in Section 2. However, this publication does not provide a full explanation of the true pricing methodology or monetisation factors. (For an explanation of the principles and framework used to select the footprint indicators and monetisation factors, refer to the Principles for True Pricing [True Price Foundation, 2020]). However, a full justification is under development. Furthermore, True

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<sup>1</sup> The indicators are comparable to the impact category mid-point and end-point indicators of an LCA.



Price is working with partners to develop methodologies for specific sectors and applications. For more information, please refer to [www.trueprice.org](http://www.trueprice.org).

## 1.2 What the monetisation factors can be used for

The monetisation factors included in this publication are to be used primarily in the context of true pricing. When calculating true prices as described in the Principles for True Pricing (True Price Foundation, 2020), these monetisation factors provide the key to expressing external costs (negative social and environmental impacts) in monetary terms.

True Price ultimately wants to enable everyone to calculate and publish true prices. However, at the moment, no true price standard methods and guidelines exist that can safeguard consistency and comparability between true prices calculated by different organisations. Therefore, to avoid confusion, we propose the users of these monetisation factors refer to external costs calculated with these factors as “social and environmental costs calculated with the true price method”, rather than “true prices”. If you are interested in calculating and disseminating “true prices” as such, please get in touch with True Price.

The monetisation factors can also be applied in various applications outside of true pricing, including (i) to monetise negative externalities in true cost accounting and impact assessments, (ii) to monetise impacts pertaining to the welfare dimension *respect of basic rights* for Integrated Profit & Loss statements, in line with the Framework for Impact Statements (Impact Institute, 2019), and (iii) as weighting factors for LCA.

The monetisation factors provided in this publication are a work in progress. We invite you to check regularly for updates on [www.trueprice.org](http://www.trueprice.org).

## 1.3 Who should use this publication

This publication is intended mainly for experts, researchers and practitioners who are active in the field of true pricing, impact assessment, true cost accounting or LCA.

## 1.4 Reader’s guide

This publication consists of four sections: this section is an introduction; Section 2 briefly discusses the concept of true pricing and the methodology used to derive the monetisation factors; Section 3 provides an overview of the impacts relevant for true pricing, along with their definitions and footprint indicators; Section 4 provides the monetisation factors.

In addition, a glossary of key terms is included at the end of the publication.

## 2. About the true pricing methodology

This section provides a brief discussion about true pricing methodology, focusing on the most important concepts to derive and apply monetisation factors. (For more information on the principles and framework behind this methodology, see the Principles for True Pricing [True Price Foundation, 2020]). A more detailed discussion of the true pricing methodology is forthcoming.

### 2.1 What is the true price?

The true price is a way to make the external costs of producing and consuming a product explicit. *External costs* are the costs associated with negative externalities. These are the negative effects on external stakeholders who did not participate in the production or consumption of that product (or, if they did, did not do so sufficiently freely). Externalities include effects on the environment, such as climate change and water pollution, and on people, such as health and safety accidents and child labour.

True price makes external costs explicit by assessing them on a per-unit basis and by monetising them—that is, expressing them in a monetary way (e.g., in euros or dollars), just as with conventional costs. The sum of all external costs assessed in this way is called the “true price gap”. The true price gap can be compared directly to the market price of the product: the two are added together to get to the true price. The true price can be interpreted as how much the product *truly costs*. It includes costs to the buyer (the market price) and the costs to external stakeholders (the true price gap).

We believe true pricing—expressing externalities as discussed above—can contribute to the transformation towards a more sustainable economy. (See *A roadmap for true pricing* [True Price, 2019]) for more on the applications of true pricing by businesses, consumers and governments.)

### 2.2. How the true price is calculated

Calculating the true price of a product requires calculating the true price gap and adding that to the market price. Calculating the true price gap in turn requires expressing all relevant externalities in monetary terms. This raises two questions: how to assess which externalities should be taken into account, and how to quantify and monetise them?

For the first question, the true price method takes a rights-based approach. Internationally accepted rights and agreements are taken as a starting point in determining which externalities should be included. The resulting subset of externalities—referred to as ‘unsustainable externalities’ or ‘unsustainable impacts’—is the set of negative effects of producing and consuming products that should be factored into the true price gap.

Rights that are considered are the basic rights of all people as specified by international conventions, and include human rights, fundamental labour rights and environmental rights. True pricing is based on the normative idea that, to reach sustainability, the rights of all stakeholders, including future generations, should be respected by markets and the economy. (For more details, refer to the Principles for True Pricing; in



particular, chapter 1 presents these normative foundations, Annex A contains principles and definitions and Annex C contains a [preliminary] list of all impacts that are to be included in a true price analysis, with a reference to which basic rights these relate to.)

The second question is how to quantify and monetise these externalities. For each of the relevant impacts, the size of the impact in natural unit (or ‘footprint’) can be measured or estimated using primary or secondary sources (e.g., LCAs). Examples of footprints are the emission volumes of greenhouse gases per unit product (for determining the contribution to climate change), and hours of child labour per unit product. The impact expressed in its natural units (or footprint indicators) can then be multiplied by the monetisation factor for that impact.

The following section explains how this is done.

### 2.3 What monetisation factors are based on

To determine the monetisation factor for an impact, principles on what perspective to take are needed. As examples: greenhouse gas emissions can result in climate change, which imposes large costs on society; the most disastrous effects of climate change could be prevented by taking a set of costly measures now. These two sets of costs are both associated to carbon emissions, but can differ. So it is important to use a coherent framework as to what the monetisation factors in true pricing mean.

The Principles for True Pricing defines the principle of remediation that monetisation can be based on. This is inspired by, among others, the UN Guiding Principles on Business and Human Rights (OHCHR, 2011) and links directly to the rights-based approach.

Article 22 in the Guiding Principles reads,

Where business enterprises identify that they have caused or contributed to adverse impacts, they should provide for or cooperate in their remediation through legitimate processes.

What remediation entails is explained further in the commentary to Article 25:

Remedy may include apologies, restitution, rehabilitation, financial or non-financial compensation and punitive sanctions (whether criminal or administrative, such as fines), as well as the prevention of harm through, for example, injunctions or guarantees of non-repetition.

The true price methodology implements the principles of remediation by identifying the following four types of costs that, when appropriately combined, form the remediation cost for an impact: 1) Restoration costs, 2) Compensation costs, 3) Prevention costs of re-occurrence and 4) Retribution costs.

#### 1) Restoration costs

Restoration costs are the cost of bringing people’s health, wealth, circumstances, capabilities, or environmental stocks and environmental qualities to the state they would have been in the absence of the social and environmental damage associated with an impact (e.g. cost of ecosystem restoration). Restoration

cost is applied for impacts where restoration is feasible, or feasible and more economically efficient than compensation when the damage to people or communities is not severe.

## 2) Compensation costs

Compensation costs are the cost of compensating affected people for economic and/or non-economic damage caused by the social and environmental impacts of producing or consuming a product. In the valuation literature, this is also called “damage cost” (e.g. compensating for denied income, or the value of lost human health). Non-economic damage can be assessed using the best available stated and revealed preference valuation techniques. Compensation costs are part of the remediation costs for impacts where restoration is not considered feasible.

## 3) Prevention of re-occurrence cost

Prevention of re-occurrence cost represents the cost that would be incurred in the future to avoid, avert or prevent the identified social and environmental impacts of a product from occurring again (e.g. the cost of introducing human rights audits in a supply chain). Prevention cost of re-occurrence is part of the remediation costs in addition to restoration or compensation when the damage is considered more severe and irreversible. Whereas the other types of costs refer to realised damage, this cost relates to the *prevention* of future damage. It finds its basis in, among others, the UN Guiding Principles mentioned above (OHCHR, 2011) that acknowledge a responsibility to prevent reoccurrence of human rights breaches.

## 4) Retribution cost

Retribution costs are the cost associated with fines, sanctions or penalties imposed by governments for certain violations of legal or widely accepted obligations. They represent the damage to society caused by the breaking law. For impacts that correspond to the breach of a legal or a widely accepted obligation, retribution costs are part of remediation costs, over and above restoration, compensation and/or prevention of re-occurrence costs.

## 2.4 How monetisation factors are derived

To derive monetisation factors for a given impact, the following approach is followed:

- Firstly, the types of damage that are associated to the impact are determined based on existing literature.

Damage can be either damage to people or to the environment. In some cases, the damage has already occurred (i.e. damage in the past; it is irreversible).

In other cases, the future damage *might* occur unless it is prevented (namely, reversible future damage), or is *certain to occur* (namely, irreversible future damage).

The damage can also be assessed as severe or non-severe.



- Which of the four types of remediation cost (i.e. Restoration, Compensation, Prevention cost of re-occurrence or Retribution) applies is assessed from the rules in [Section 2.3](#).  
More than one type of cost might be relevant (e.g., both Compensation costs and Prevention costs of re-occurrence). In some cases, the choice of cost may vary, depending on the country or region where the impacts take place, leading to different monetisation factors in different geographies.
- Secondly, based on economic modelling and data available in the literature, the relevant costs are quantified in a way that can be attributed linearly to one unit of impact as measured by the footprint indicators.
- Finally, the quantified cost(s) are summed to form monetisation factors.  
For impacts that have only one footprint indicator, this is a single monetisation factor. For impacts that have a set of distinct footprint indicators, there are monetisation factors for each.

These steps are carried out for each of the social and environmental impacts considered, resulting in 80 monetisation factors. A few examples are presented in the next section.

Once the footprint indicators are quantified for a specific product and multiplied by the respective monetisation factors, the contribution to the true price gap can be determined. [Sections 4.1](#) and [4.2](#) show the results of this procedure for the true price indicators that have been robustly assessed so far.

## 2.5 Examples of the derivation of monetisation factors

This section provides three examples to show the process of identifying elements that contribute to the monetisation factors.

### Contribution to climate change

Greenhouse gas emissions have been shown to change climate patterns globally. Anthropogenic activities increasingly disrupt climatological patterns, which has long-lasting impacts on human and natural environments. Climate-related risks include extreme temperatures and increases in the frequency, intensity, or amount of heavy precipitation, or droughts and precipitation deficits in other regions. Ultimately, climate change results in severe economic damage and damage to human health (e.g., malnutrition or increased risk of diseases) and ecosystems. (For example, see IPCC [2018] for more information.)

It is not yet too late to curb emissions and limit temperature increases to the *2-degree scenario* as specified in the Paris Agreement. However, measures to do so come with costs. Marginal abatement costs for the 2-degree scenario can be seen as the carbon price required to restore greenhouse gas levels in the atmosphere to a safe level. As a result, the monetisation factor for climate change has only one element: a restoration element that follows from a meta-study of marginal abatement cost models (Kuik, Brander and Tol, 2009). Compensation cost, prevention-of-recurrence and retribution costs do not apply in this case.

### Child labour

Child labour refers to work done by children beyond what is allowed by law: in most countries, children above a certain age are allowed to do light and non-hazardous work for a specified number of hours per day or week.

Child labour severely damages children. The damage includes missed education and lower future earnings (if the children were not able to attend school), and in some cases, physical and psychological damage (mostly for the more severe forms of child labour) (ILO, 2003, ILO, 2019a).

For severe damage to people that is reversible, the cost of restoration is included in the remediation cost (see [Section 2.4](#)). For example, restoration can occur through provision of quality education for underage workers not attending school, or through reintegration programmes for children involved in hazardous child labour. The monetisation factor contains the costs associated with these restoration activities.

For types of damage that cannot be restored, the compensation cost is taken into account. This includes compensation for the loss of future earnings due to lost years of education during childhood that cannot be regained. As the damage is severe, and not fully restorable, the cost of measures to guarantee non-reoccurrence should be factored in. The cost of an audit that verifies that child labour is not present in a supply chain is also included.

Finally, retribution also applies, as there is always a breach of the law. Retribution costs are estimated from a weighted average of penalties for forms of child labour that are derived from various countries.<sup>2</sup>

## 2.6 Key limitations

The monetisation factors contained in this publication and the true price methodology are a work-in-progress.

There are various limitations associated with the current factors that should be mentioned:

- Firstly, they are not complete with respect to all impacts mentioned in the True Price Principles. The coverage of the current impacts is more complete for impacts related to environmental rights and worker rights. Impacts related to rights of local and indigenous communities and society at large have not yet been covered. There are also some gaps for environmental impacts, particularly for impacts not commonly assessed in LCA, such as biodiversity loss (other than that related to land use change or pollution). Furthermore, as mentioned, many factors are local and this publication addresses only global factors.
- Secondly, the methodology is new and contains various normative assumptions. Translating principles into measurable targets and remediation categories requires interpretation.
- Thirdly, there are significant model and data uncertainties regarding the estimates of restoration, compensation (damage), prevention and retribution costs. In particular, retribution cost is an

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<sup>2</sup> A global average is used instead of a local value in each country to negate the idea that the health of a child is worth more in some countries than in others.



innovation in valuation and damage cost is not always available. In many cases, a best estimate based on proxy data was used, although there may be some impacts that have not been modelled. This leads to a possible underestimate of the remediation cost.

- Fourthly, this database involves combining datapoints from a very large variety of sources on social and environmental impact measurement and valuation. Even though significant effort has been put into standardizing assumptions and modelling choices used across indicators, including exchange rates, inflation rates, discount rates and valuation coefficients of human health and biodiversity, the presence of inconsistencies cannot be excluded.
- Finally, when developing a method that aims to be useful to many types of businesses and is applied to many types of products, aligning with the many existing standards and methods for sustainability reporting and impact measurement is demanding.

While care was taken to come to the present monetisation factors, these can and will, no doubt, be improved. True Price and our partners are committed to developing the standards and methods.

## 2.7 Next steps

In collaboration our partners, True Price will continue to refine the monetisation factors and develop the methodology, and will, in due course, publish a more detailed description of the methodology, including guidelines on how to apply it in practical cases.

The monetisation factors provided in this publication are a work in progress. We invite you to check regularly for updates on [www.trueprice.org](http://www.trueprice.org). We welcome feedback from valuation and true cost accounting specialists and users. We could be grateful for your input, which you can forward to [info@trueprice.org](mailto:info@trueprice.org).

### 3. Impacts and indicators for true pricing

#### 3.1 Environmental impacts

Table 1 provides an overview of all true pricing environmental impacts that are in scope of this publication. A total of 10 impacts is provided, along with their definition, footprint indicator(s) and sub-indicator(s) used to quantify them and corresponding unit. This list is not exhaustive, and more impacts, indicators and sub-indicators may be added in the future. Environmental indicators are largely based on the ReCiPe (Huijbregts et al., 2016) lifecycle assessment methodology.

*Table 1: Overview of environmental impacts in true pricing.*

Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
Contribution to climate change	Contribution to climate change	Contribution to climate change from emissions of greenhouse gases (carbon dioxide, methane, nitrous oxide and others). Emissions of greenhouse gases increase their atmospheric concentration (ppb), which increases the radiative forcing capacity and consequently increases the global mean temperature. Ultimately, extreme weather patterns, reduced agricultural yields and increased frequency of natural disasters can result in damage to the economy, human health – e.g., increased risk of diseases, natural disasters - and ecosystems (Huijbregts et al. 2016).	Greenhouse gas (GHG) emissions		kg CO <sub>2</sub> -eq
Pollution of the living environment	Air pollution	Impacts caused by emissions to air other than climate change, namely ozone layer depletion, acidification, photochemical oxidant formation, particulate matter formation, terrestrial and aquatic ecotoxicity and human	Toxic emissions to air	Human toxicity	DALY <sup>3</sup>
				Terrestrial ecotoxicity	kg 1,4-DB eq
				Freshwater ecotoxicity	kg 1,4-DB eq
				Marine ecotoxicity	kg 1,4-DB eq

<sup>3</sup> DALY, Disability Adjusted Life Year, (WHO, 2019)



		toxicity from toxic emissions to air, as defined in LCA methodologies (European Commission, 2012, Huijbregts et al., 2016).	Particulate matter (PM) formation		kg PM2.5 eq
			Photochemical oxidant formation (POF)		kg NMVOC eq
			Acidification		kg SO <sub>2</sub> -eq
			Ozone layer depleting emissions		kg CFC11-eq
Pollution of the living environment	Water pollution	Emissions to water contributing to ecotoxicity and human toxicity, as well as eutrophication of marine- and freshwater. Eutrophication occurs due to the runoff and discharge of nutrients, for example from leaching of plant nutrients into soil, marine and freshwater bodies and the subsequent rise in nutrient levels, i.e. of phosphorus (P) and nitrogen (N) (Huijbregts et al., 2016). Rising nutrient levels affect water quality and transparency and damage ecological systems, for example when autotrophic organisms and heterotrophic species and invertebrates take up the nutrients and lead to a local loss in biodiversity.	Toxic emissions to water	Human toxicity	DALY
				Terrestrial ecotoxicity	kg 1,4-DB eq
				Freshwater ecotoxicity	kg 1,4-DB eq
				Marine ecotoxicity	kg 1,4-DB eq
			Freshwater eutrophication	kg P-eq to freshwater	
Marine eutrophication	kg N-eq to marine water				
Pollution of the living environment	Soil pollution	Eco- and human toxicity caused by emissions to soil. Soil pollution occurs due to the runoff and discharge of contaminants, for example heavy metals (Huijbregts et al., 2016). Soil pollution is in principle a form of soil degradation, but it is added here separately from that impact to be consistent with the air and water pollution impacts. Soil pollution can in turn lead to negative effects on biodiversity and human health.	Toxic emissions to soil	Human toxicity	DALY
				Terrestrial ecotoxicity	kg 1,4-DB eq
				Freshwater ecotoxicity	kg 1,4-DB eq
				Marine ecotoxicity	kg 1,4-DB eq
Degradation of land, biodiversity	Land occupation	Decreased availability of land for purposes other than the current one, through land occupancy. Land occupation displaces habitats and ecosystems and therefore leads to	Land occupation	Tropical forest	MSA ha yr
				Other forest	
				Woodland/shrubland	

and ecosystems		biodiversity loss and loss of ecosystem services (De Groot et al., 2012).		Grassland/savannah Inland/wetland Coastal wetland	
Degradation of land, biodiversity and ecosystems	Land transformation	Changes in land-cover that can affect ecosystem services and the climate system. This impact includes the amount of natural ecosystems – i.e. (tropical) forest, woodland, grassland, and coastal wetland - that are transformed in a certain period of time. Land transformation reduces the size of habitats and ecosystems and therefore leads to biodiversity loss and loss of ecosystem services.	Land transformation	Tropical forest Other forest Woodland/shrubland Grassland/savannah Inland/wetland Coastal wetland	ha
Depletion of scarce abiotic resources	Fossil fuel depletion	Primary extraction of fossil fuels linked to fuel use, energy use and energy required to produce other inputs. Extraction of crude oil, hard coal and natural gas bears external societal costs because the stock of these materials is reduced for present and future generations. (Huijbregts et al., 2016). In this method, fossil fuel depletion is considered separately from the depletion of other non-renewable materials in line with LCA methodologies.	Fossil fuel depletion		kg oil-eq
Depletion of scarce abiotic resources	(Other) non-renewable material depletion	Primary extraction of scarce, non-renewable resources besides fossil fuels, such as minerals. These bear external societal costs because the stock of these materials is reduced for present and future generations. Excludes fossil fuel depletion.	(Other) non-renewable material depletion		kg Cu-eq
Depletion of scarce abiotic resources	Scarce water use	Concerns the use of blue water in such a way that the water is evaporated, incorporated into products, transferred to other watersheds or disposed into the sea, in areas where water is scarce (Falkenmark and Rockstrom, 2004). Water that is used as such is not available anymore in the watershed of origin for humans nor for ecosystems (Huijbregts et al., 2016).	Scarce blue water use		m <sup>3</sup> scarce water



		Scarcity of water depends on the watershed of origin and the geographical context (WWF, 2019).			
Degradation of land, biodiversity and ecosystems	Soil degradation	<p>Soil degradation is defined as the physical, chemical and biological decline in soil quality due to the physical deterioration of soil resulting from productive activities (e.g. waterlogging), the chemical deterioration of soil (e.g. loss of nutrients, loss of organic matter, acidification, and salinization), or soil erosion (from water or wind).</p> <p>Soil quality is the capacity of a soil to have the desired soil functions sufficiently available under varying conditions for a combination of objectives such as food production, an efficient nutrient cycle and the preservation of biodiversity (Hanegraaf et al., 2019).</p>	Soil organic carbon (SOC) loss		kg SOC
			Soil loss from wind erosion		kg soil lost
			Soil loss from water erosion		kg soil lost

### 3.2 Social impacts

Table 2 provides an overview of all true pricing social impacts that are in scope of this publication. A total of 10 impacts is provided, along with their definition, indicator(s) and sub-indicator(s) used to quantify them and corresponding unit. This list is not exhaustive, and more impacts, indicators and sub-indicators may be added in the future. The set of social impacts is based on the Principles for True Pricing (True Price Foundation, 2020, Annex C) and largely in line with labour rights, Human Rights and corporate responsibility standards for business and existing social LCA frameworks (UNEP 2009, ISO 2010, SAI 2014, CHRB 2018, Van der Velden en Vogtlander, 2017, Benoit-Norris et al. 2012, Croes & Vermeulen 2015). The set of social footprint indicators is developed by True Price.

*Table 2: Overview of social impacts in true pricing.*

Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
Child labour	Child labour	Child labour is work that deprives children of their childhood, their potential and their dignity, and is harmful to physical and mental development. Whether participation of children in work is deemed child labour depends on age, local regulation on minimum working age and minimum age for light work, nature of the work and the work relation, as specified by international institutions such as ILO (1999; 2019a) and UNICEF (2014) (See also ISO 2010). In its most extreme forms, child labour involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities (Goedkoop, Idrane, and de Beer, 2018).	Underage workers	Underage workers below minimum age for light work (12 or 13) involved in non-hazardous economic work	child FTE <sup>4</sup>
				Underage workers above minimum age for light work and below minimum age (12-14 or 13-15) involved in non-hazardous non-light economic work	child FTE
				Underage workers below minimum age (12 or 13) involved in hazardous work	child FTE
				Workers above minimum age (14 or 15) and below 18 involved in hazardous work	FTE

<sup>4</sup> Full Time Equivalent adapted for legal working hours for underage workers



Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
			Underage workers that are not attending school		children
			Labour force to be audited for child labour		FTE
Forced labour	Forced labour	Forced labour concerns all physical and psychological damage from work or service that is claimed under threat of punishment and for which the person concerned has not volunteered. Forced labour includes practices such as the use of compulsory prison labour by private business entities, debt bondage, indentured servitude and human trafficking (ILO, 2019b).	Forced workers (least severe)		FTE
			Forced workers (medium severe)		FTE
			Forced workers (most severe)		FTE
			Forced workers who are in debt bondage		FTE
			Forced workers who are victims of abuse		FTE
			Labour force to be audited for forced labour		FTE
Discrimination	Gender discrimination	Gender discrimination concerns the effect of discriminating, nullifying or impairing equality of opportunity or treatment based on sex. Gender discrimination includes insufficient provision of maternity leave and benefits, different pay for the same work between male and female employees and different opportunities to access higher pay job based on sex.	Female workers without maternity leave provision		FTE
			Value of denied maternity leave		EUR
			Wage gap from gender discrimination		EUR
			Wage gap from unequal opportunities		EUR
			Labour force to be audited for discrimination		FTE

Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
Non-guarantee of a decent living standard	Underpayment in the value chain	Underpayment occurs when the actual wages of employees over standard working hours, including financial wages and some forms of in-kind compensation, lie below the legal minimum wage or a decent living wage. Underpayment in the value chain can also include underpayment of child labourers and forced labourers. It excludes underpaid overtime, which is included under 'Excessive and underpaid overtime'.	Wage gap of workers earning below minimum wage		EUR
			Wage gap of workers earning above minimum wage but below decent living wage		EUR
			Labour force to be audited for insufficient wages		FTE
Non-guarantee of a decent living standard	Lack of social security	Negative effects of lack of social security (where this is obliged by law). Social security includes protection against certain life risks and social needs, such as guaranteed income security and health protection. It is provisioned through cash or in-kind transfers, intended to ensure access to medical care and health services as well as income security through one's life, particularly in the event of illness, unemployment, employment injury, maternity, family responsibilities, invalidity, loss of the family breadwinner, as well as during retirement and old age (ILO, 2019c).	Workers without legal social security		FTE
			Value of denied paid leave		EUR
			Labour force to be audited for insufficient social security		FTE
Non-guarantee of a decent living standard	Excessive and underpaid overtime	Overtime hours worked by employees that are carried out in violation of legal regulations or compensated below legal requirements. It does not include underpayment, the gap between liveable and actual wages, for standard working hours.	Workers performing illegal overtime		FTE
			Workers performing underpaid overtime		FTE
			Overtime wage gap		EUR
			Labour force to be audited for illegal overtime		FTE



Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
Non-guarantee of a decent living standard	Insufficient income	Smallholder farmers (and other small entrepreneurs with personal liability) in the value chain that have an income below the so-called living income (necessary for a decent standard of living). This impact differs from underpayment in the value chain because it only focusses on the income of self-employed smallholder farmers and entrepreneurs.	Income gap		EUR
Occupational health and safety risks	Occurrence of harassment	Negative effects of workplace harassment, including verbal and non-verbal, sexual and non-sexual. The term of "harassment" encompasses any act, conduct, statement or request which is unwelcome to a protected person and could, in all the circumstances, reasonably be regarded as harassing behaviour of a discriminatory, offensive, humiliating, intimidating or violent nature or an intrusion of privacy. This impact includes bullying/mobbing and sexual harassment (ILO, 2013a).	Workers who experienced harassment	Workers who experienced non-physical non-sexual harassment	workers
				Workers who experienced non-physical sexual harassment	workers
				Workers who experienced physical non-sexual harassment	workers
				Workers who experienced non-severe physical sexual harassment	workers
				Workers who experienced severe physical sexual harassment	workers
			Labour force to be audited for harassment	FTE	
Lack of union rights	Lack of freedom of association	Workers that are not given the right of freedom of association: the extent to which workers have the right to establish and to join organisations of their choice	Instances of denied freedom of association		violations

Impact category	Impact	Definition	Footprint indicator	Footprint sub-indicator	Unit
		without prior authorisation, to promote and defend their interests, and to negotiate collectively with other parties. They should be able to do this freely, without interference by other parties or the state, and should not be discriminated against as a result of union membership. The right to organise includes the right of workers to strike and the rights of organisations to draw up constitutions and rules, to freely elect representatives, to organise activities without restriction and to formulate programmes (UNEP, 2009).	Labour force to be audited for denied freedom of association		FTE
Occupational health and safety risks	Negative effects of employee health & safety	Impact on workers' health and safety at work: the extent to which working in the value chain negatively affects the safety and overall health status of the workers. The term health, in relation to work, indicates not merely the incidence of disease or infirmity, but also includes the physical and mental elements affecting health, which are directly related to safety and hygiene at work (ISO 2010, Goedkoop et al., 2018). Safety is understood as the extent to which working under defined conditions reduces safety of employees. This includes fatal and non-fatal incidents, the application of prevention measures and management practices and the incidence of occupational diseases.	Non-fatal occupational incidents	Insured non-fatal occupational incidents	incidents
				Uninsured non-fatal occupational incidents	Incidents
			Fatal occupational incidents		Incidents
			Occupational incidents with breach of H&S standards		Incidents
			Work performed in violation of H&S standards		FTE
			Labour force to be audited for H&S		FTE



## 4. Monetisation factors for true pricing

### 4.1 Environmental impacts

Table 3 provides the monetisation factors for all environmental impacts and corresponding footprint indicators in true pricing. Each monetisation factor represents a restoration, compensation, prevention or retribution cost, or a combination of those, as explained in chapter 2.2. An explanation of the types of costs and sources is also provided. All values are expressed in euro 2020.

*Table 3: Monetisation factors for environmental impacts in true pricing. (Version 2020 .1)*

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
Contribution to climate change	Greenhouse gas (GHG) emissions		0.152 EUR/kgCO <sub>2</sub> eq	A restoration cost which expresses the abatement cost for achieving the policy targets of reducing greenhouse gas emissions to meet the 2-degree target as set in the Paris Agreement, based on a meta-study of 62 marginal abatement cost estimates (Kuik, Brander and Tol, 2009).
Air pollution	Toxic emissions to air	Human toxicity	54,800 EUR/DALY	A compensation cost which expresses the value of a Disability Adjusted Life Year (DALY) based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, carried out by the OECD (2010).
		Terrestrial ecotoxicity	7.27 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Freshwater ecotoxicity	0.0302 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Marine ecotoxicity	0.00618 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment.

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
				The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
	Particulate matter (PM) formation		46.2 EUR/kg PM2.5 eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoints of human health (morbidity, i.e. sickness and disease, and premature mortality) and buildings and materials (man-made capital) (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
	Photochemical oxidant formation (POF)		2.22 EUR/kg NMVOC eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoints of human health (morbidity, i.e. sickness and disease, and premature mortality) and buildings and materials (man-made capital) (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
	Acidification		3.36 EUR/kg SO2 eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoints of human health (morbidity, i.e. sickness and disease, and premature mortality), ecosystem services (including agriculture) and buildings and materials (man-made capital) (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
	Ozone layer depleting emissions		31.8 EUR/kg CFC-11eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment.



Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
				The used cost is an environmental price given at midpoint level, accounting for the endpoints of human health (morbidity, i.e. sickness and disease, and premature mortality), ecosystem services (including agriculture) and buildings and materials (man-made capital) (CE Delft, 2018).
Water pollution	Toxic emissions to water	Human toxicity	54,800 EUR/DALY	A compensation cost which expresses the Value of Statistical Life (VSL) based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, carried out by the OECD (2010).
		Terrestrial ecotoxicity	7.27 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Freshwater ecotoxicity	0.0302 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Marine Ecotoxicity	0.00618 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
	Freshwater eutrophication		304 EUR/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 abatement cost 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.

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
	Marine eutrophication		63.4 EUR/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 cost 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.
Soil pollution	Toxic emissions to soil	Human toxicity	54,800 EUR/DALY	A compensation cost which expresses the value of a Disability Adjusted Life Year (DALY) based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, carried out by the OECD (2010).
		Terrestrial ecotoxicity	7.27 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Freshwater ecotoxicity	0.0302 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
		Marine Ecotoxicity	0.00618 EUR/kg 1,4-DB eq	A compensation cost which expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted to the environment. The used cost is an environmental price given at midpoint level, accounting for the endpoint of ecosystems (CE Delft, 2018). Country-specific factors are derived adjusting based on population density to calculate a global average.
Land occupation	Land occupation	Tropical forest	2,090 EUR/(MSA ha*yr)	A compensation cost which expresses the opportunity cost of land occupation based on the value of ecosystem services for main biomes based on a meta-analysis from TEEB (De Groot et al., 2012). Country-specific factors can be derived based on biome cover per country.
		Other forest	1,000 EUR/(MSA ha*yr)	



Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
		Woodland/shrubland	1,350 EUR/(MSA ha*yr)	
		Grassland/savannah	2,390 EUR/(MSA ha*yr)	
		Inland wetland	14,700 EUR/(MSA ha*yr)	
		Coastal wetland	10,800 EUR/(MSA ha*yr)	
Land transformation	Land transformation	Tropical forest	2,960 EUR/ha	A restoration cost which expresses the average cost of ecosystem restoration projects in different biomes based on a review of case studies (TEEB, 2009). Costs include capital investment and maintenance of the restoration project.
		Other forest	2,050 EUR/ha	
		Woodland/shrubland	848 EUR/ha	
		Grassland/savannah	223 EUR/ha	
		Inland wetland	28,300 EUR/ha	
		Coastal wetland	2,460 EUR/ha	
Fossil fuel depletion	Fossil fuel depletion		0.437 EUR/kg oil eq	A compensation cost which expresses the future loss of economic welfare due to increased extraction costs of fossil fuels in the future (Huijbregts et al., 2016).
(Other) non-renewable material depletion	(Other) non-renewable material depletion		0.223 EUR/kg Cu eq	A compensation cost which expresses the future loss of economic welfare due to increased extraction costs of non-renewable materials in the future (Huijbregts et al., 2016).
Scarce water use	Scarce blue water use		1.27 EUR/m3	A restoration cost which expresses the annualized 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 (World Bank, 2012).
Soil degradation	Soil organic carbon (SOC) loss		0.0299 EUR/kg SOC loss	A compensation cost which expresses the damage cost for the chemical, physical, biological and ecological decline of soil due to loss of SOC, based on a study on the

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
				shadow prices of soil quality by TNO and Wageningen University (Ligthart and van Harmelen, 2019).
	Soil loss from wind erosion		0.0351 EUR/kg soil loss	A compensation cost which expresses the cost of soil erosion based on an extensive review on the costs of soil erosion by FAO (2014). 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.
	Soil loss from water erosion		0.0275 EUR/kg soil loss	



## 4.2 Social impacts

Table 4 provides the monetisation factors for all social impacts and corresponding footprint indicators in true pricing. Each monetisation factor represents a restoration, compensation, prevention or retribution cost, or a combination of those, as explained in chapter 2.2. An explanation of the types of costs and sources is also provided. All values are expressed in euro 2020.

*Table 4: Monetisation factors for social impacts in true pricing. (Version 2020.1)*

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
Child labour	Underage workers	Underage workers below minimum age for light work (12 or 13) involved in non-hazardous economic work	16,700 EUR/child FTE	A combination of restoration, compensation, prevention and retribution cost. 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 (ILO, 2003). The compensation cost expresses the loss of future earnings when a child is prevented from attending school during youth (Psacharopoulos, 1999; ILO, 2003; Feyrer, 2006). 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 that expresses a global penalty.
		Underage workers above minimum age for light work and below minimum age (12-14 or 13-15) involved in non-hazardous non-light economic work	6,180 EUR/child FTE	
		Underage workers below minimum age (12 or 13) involved in hazardous work	35,600 EUR/child FTE	
		Workers above minimum age (14 or 15) and below 18 involved in hazardous work	17,900 EUR/FTE	

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
	Underage workers that are not attending school		21,800 EUR/children	
	Labour force to be audited for child labour		7.92 EUR/FTE	
Forced Labour	Forced workers (least severe)		13,700 EUR/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 (ILO, 2009; Kara, 2014). The compensation cost expresses the cost of lost health valued using DALY for forced workers victims of abuse (OECD, 2010). 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 average of penalties from various countries that expresses a global penalty. Restoration, retribution and compensation costs for harassment may also be included, if abuse exists in the specific case.
	Forced workers (medium severe)		73,000 EUR/FTE	
	Forced workers (most severe)		133,000 EUR/FTE	
	Forced workers who are in debt bondage		17,900 EUR/FTE	
	Forced workers who are victims of abuse		22,900 EUR/FTE	
	Labour force to be audited for forced labour		7.92 EUR/FTE	
Discrimination	Female workers without maternity leave provision		1,890 EUR/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 that expresses a global penalty.
	Value of denied maternity leave		1.06 EUR/EUR	
	Wage gap from gender discrimination		1.49 EUR/EUR	
	Wage gap from unequal opportunities		1.49 EUR/EUR	



Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
	Labour force to be audited for discrimination		7.92 EUR/FTE	
Underpayment in the value chain	Wage gap of workers earning below minimum wage		1.49 EUR/EUR	A combination of compensation, prevention and retribution costs. The compensation cost expresses the gap to a decent living wage, as well as the interest rate. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. The retribution cost represents a penalty for the amount of the wage gap that is below the legal minimum wage, based on the weighted average of penalties from various countries that expresses a global penalty.
	Wage gap of workers earning above minimum wage but below decent living wage		1.06 EUR/EUR	
	Labour force to be audited for insufficient wages		7.92 EUR/FTE	
Lack of social security	Workers without legal social security		2,520 EUR/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 that expresses a global penalty.
	Value of denied paid leave		1.06 EUR/EUR	
	Labour force to be audited for insufficient social security		7.92 EUR/FTE	
Excessive and underpaid overtime	Workers performing illegal overtime		118 EUR/FTE	A combination of compensation, prevention and retribution costs. The compensation cost represents the 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
	Workers performing underpaid overtime		118 EUR/FTE	
	Overtime pay gap		1.06 EUR/EUR	

Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
	Labour force to be audited for illegal overtime		7.92 EUR/FTE	limit or paid under legal requirements based on the weighted average of penalties from various countries that expresses a global penalty.
Insufficient income	Income gap		1.49 EUR/EUR	A compensation cost that represents the restitution of the income gap.
Occurrence of harassment	Workers who experienced harassment	Workers who experienced non-physical non-sexual harassment	17,600 EUR/worker	A combination of restoration, compensation, prevention and retribution costs. The restoration cost represents average medical costs for injuries, anxiety, depression and PTSD resulting from workplace harassment estimated for the Netherlands and adapted to other countries using value transfer (ILO, 2006, p.138; WHO CHOICE, 2019; Volksgezondheid en Zorg, 2019). The compensation cost represents the cost of loss of future well-being due to 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 that expresses a global penalty.
		Workers who experienced non-physical sexual harassment	19,700 EUR/worker	
		Workers who experienced physical non-sexual harassment	35,200 EUR/worker	
		Workers who experienced non-severe physical sexual harassment	43,100 EUR/worker	
		Workers who experienced severe physical sexual harassment	51,900 EUR/worker	
	Labour force to be audited for harassment		7.92 EUR/FTE	



Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor	Explanation
Lack of freedom of association	Instances of denied freedom of association		980 EUR/violation	A combination of prevention and retribution cost. 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.
	Labour force to be audited to be audited for denied freedom of association		7.92 EUR/FTE	
Negative effects on employee health and safety	Non-fatal occupational incidents	Insured non-fatal occupational incidents	2,220 EUR/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 US Bureau of Labour statistics, and adapted to other countries using value transfer (Leigh, 2011, WHO CHOICE, 2019), the value of health (DALY) loss in the case of non-fatal incidents and the VSL in the cause of fatal incidents as a compensation to the family of the victim (OECD, 2010). 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 which violate Health and Safety regulations, which is based on the weighted average of penalties from various countries that expresses a global penalty.
		Uninsured non-fatal occupational incidents	2,430 EUR/incident	
	Fatal occupational incidents	3,000,000 EUR/incident		
	Occupational injuries with breach of H&S standards	3,900 EUR/incident		
	Work performed in violation of H&S standards	2,740 EUR/FTE		
	Labour force to be audited for H&S	7.92 EUR/FTE		

## Glossary

<b>True price</b>	The true price of a product is the sum of the market price and the true price gap of a product. It reflects the price a buyer would have to pay for a product if the cost of remediating its unsustainable impacts would be added on top of its price.
<b>True price gap</b>	The true price gap of a product is the sum of all the remediation costs of all unsustainable impacts caused by the production and consumption of that product.
<b>Unsustainable impact</b>	An unsustainable impact is a realised or expected harm to the Natural, Financial, Social, Human, Manufactured or Intellectual Capital flow or experienced well-being of people or communities due to a breach of one or more generally accepted universal rights. Can also be referred to as unsustainable externality.
<b>Externality</b>	A societal cost or benefit that affects a party who did not choose to incur this cost or benefit. A societal cost is a negative externality and a societal benefit is a positive externality.
<b>Social impacts</b>	Impact on people and communities caused by production and consumption. In the context of a true price gap assessment, social impacts are unsustainable externalities related to breaches of human rights and labour rights.
<b>Environmental impacts</b>	Impacts on the environment, people and communities caused by production and consumption. In the context of a true price gap assessment, environmental impacts are unsustainable externalities related to the breaches of environmental rights.
<b>Footprint indicators</b>	Variables that quantify the actual social and environmental impacts that are in scope to calculate the true price of a product. Footprint indicators can be monetized and compared meaningfully across different life cycle steps.
<b>Monetisation factor</b>	Estimate of the remediation cost of the impacts measured by the footprint indicators. In some cases, different monetisation factors may be country-dependent and be different for the same impact for different parts of the product lifecycle (for example, if some damage cost coefficients are proportional to local income levels and the damage occurs in different countries).



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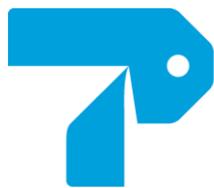
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