THE TRUE PRICE OF KENYAN COFFEE

Final report – *December 2023*

impactinstitute.com

Federal Ministry for Economic Cooperation and Development

giz

IFPRI

IMPACT INSTITUTE

December 2023

ABOUT IMPACT INSTITUTE

Impact Institute is a social enterprise with the mission to empower organisations and individuals to realise the impact economy by creating a common language for impact and providing the tools to use it. Impact Institute develops open-source standards for impact measurement and valuation and provides organisations with the tools, training, and services to implement them.

www.impactinstitute.com

DISCLAIMER

Impact Institute (a tradename of 21 Markets BV with office at Amsterdam, the Netherlands) has developed this publication for a partnership consisting of: BMZ, GIZ, IFPRI, Impact Institute and the Institute for Competition and Sustainability Research gGmbH, The conclusions and results in this publication are based on the data, scope and limitations as presented herein and on sources that are considered reliable, but no guarantee is provided on the accuracy, correctness, or completeness, either expressed or implied, of the publication. Neither Impact Institute nor any of its group companies are responsible or liable for loss or damages related to the use of the publication or the information presented herein. The document is written and made available under Dutch law. All copyrights in this document are reserved by Impact Institute.

CONTENT

Introduction

01

INTRODUCTION | PROJECT OVERVIEW

This report presents a True Price assessment of the environmental and social costs related to the Kenyan coffee value chain

This report presents the results of the true price assessment of **Kenyan coffee** performed by the **Impact Institute.** It provides crucial insights into the environmental and social externalities related to the Kenyan coffee value chain.

This study is one of the deliverables of the broader research project, **'True Costing and Pricing Mechanisms of Agricultural Commodities',** implemented by a consortium of partners.

The scope of this project is to carry out a comprehensive examination of the true cost and pricing mechanisms of selected agricultural commodities, from production in exporting countries to consumer markets in Germany. The objective is to inform policymakers on how environmental and social considerations should and can be accounted for in the price estimation process.

- **Consortium of partners:** BMZ, GIZ, IFPRI, Impact Institute, Institute for Competition and Sustainability Research gGmbH, Laterite
- Scheduled to run from **January 2022 through December 2024**
- **Impact Institute involvement | Kenyan coffee** : True Price Assessment and Living Income Assessment Validation
- **Final outcomes aimed to inform policy-making** to promote sustainability and social justice in agricultural commodity value chains

INTRODUCTION | IMPACT INSTITUTE

The work of the Impact Institute strengthens value chain transparency and increases stakeholders' knowledge on opportunities for change

Company Mission

Impact Institute's mission is to…

Empower organisations to realise the impact economy

By…

Providing innovative tools of impact measurement and valuation - True Price and Living Wage/Income method

A key focus is …

Supporting the transition towards an efficient, just and sustainable food system by strengthening transparency on value chains and increasing stakeholders' knowledge on opportunities for change

Global Engagement

Focussing on accelerating the transition to a future-proof agri-food system, Impact Institute has delivered socially and environmentally focussed projects across the globe in collaboration with a variety of NGOs, IGOs and the private sector

INTRODUCTION | TRUE PRICE METHODOLOGY

The True Price methodology is a unique method for capturing and reducing the environmental and social impact of commodities

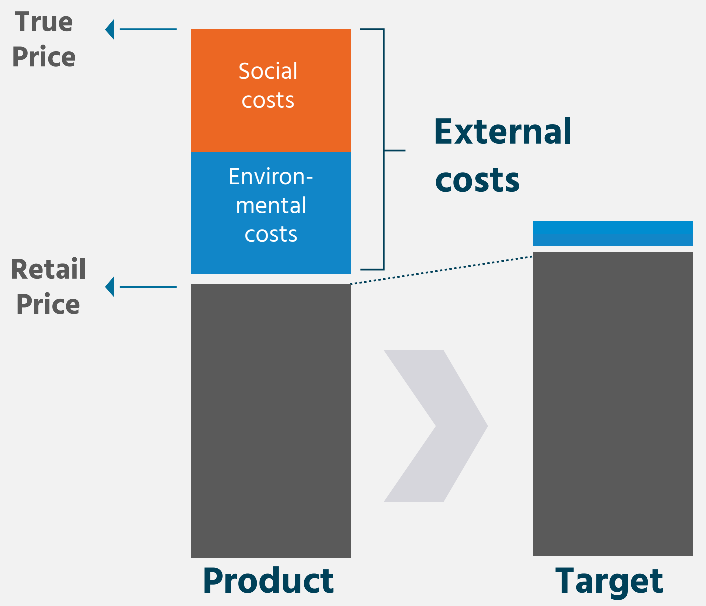
The assessment presented in this report is based on the **True Price methodology**, a unique method for quantifying, monetising and improving the negative environmental and social impacts of producing any given commodity.

The True Price of a product is defined as the retail price plus the negative environmental and social costs which are not part of the purchasing price but are paid by society nonetheless – for instance, the contribution to climate change, effects on water pollution or use of child labour. It therefore provides a **unique sustainability indicator**, comparable with the conventional pricing of products.

The True Price method can be **used to improve** (decrease) **the negative impact of commodities** in the following ways:

1. Empowers consumers to make more sustainable choices thereby incentivising producers to decrease the true cost of their products
2. Assists companies in determining and prioritising improvement opportunities along their value chains
3. Offers focus and direction for the development of effective policy measures

Visualisation of the true price and the target product price in which external costs are decreased.



INTRODUCTION | KENYAN COFFEE

The importance of coffee in the Kenyan economy and its major challenges

Key commodity

Recognised for its acidity and complexity of flavour, the Kenyan coffee sector has historically produced **some of the highest quality Arabica coffee in the world** (World Coffee Research, 2023; International Coffee Organization, 2019a)

Domestically, the coffee sector is an **important contributor to the Kenyan economy**, accounting for up to 8% of total agricultural export earnings and approximately 30% of the total labor force employed in Agriculture (International Coffee Organization, 2019a)

Top 5 world export destinations of Kenyan coffee: USA (19%), Belgium (19%), Germany (14%), South Korea (10%) and Sweden (5%) (AFA, 2023)

Major challenges

- Consistently **low prices coupled with rising costs of production** (Coffee Barometer, 2023; Solidaridad, 2022; Peixoto et al., 2022). This has recently been aggravated by the economic implications of the Ukraine war and the COVID-19 pandemic (Solidaridad, 2022; Agriculture and Food Authority, 2021)
- The **volatility** of coffee prices disincentivising producers from investing in the future viability of their farms. (Solidaridad, 2022; IDH, 2020)
- The increasingly adverse effects of **climate change on coffee cultivation** threatening **productivity yields** and **quality** (Coffee Barometer, 2023; International Coffee Organization, 2019)
- The **negative environmental impacts** of coffee production: deforestation, water, and soil contamination, reduced biodiversity, and global warming (Coffee Barometer 2023)
- The **inability** of smallholder farmers to **invest in more sustainable production practices** (Solidaridad, 2022)

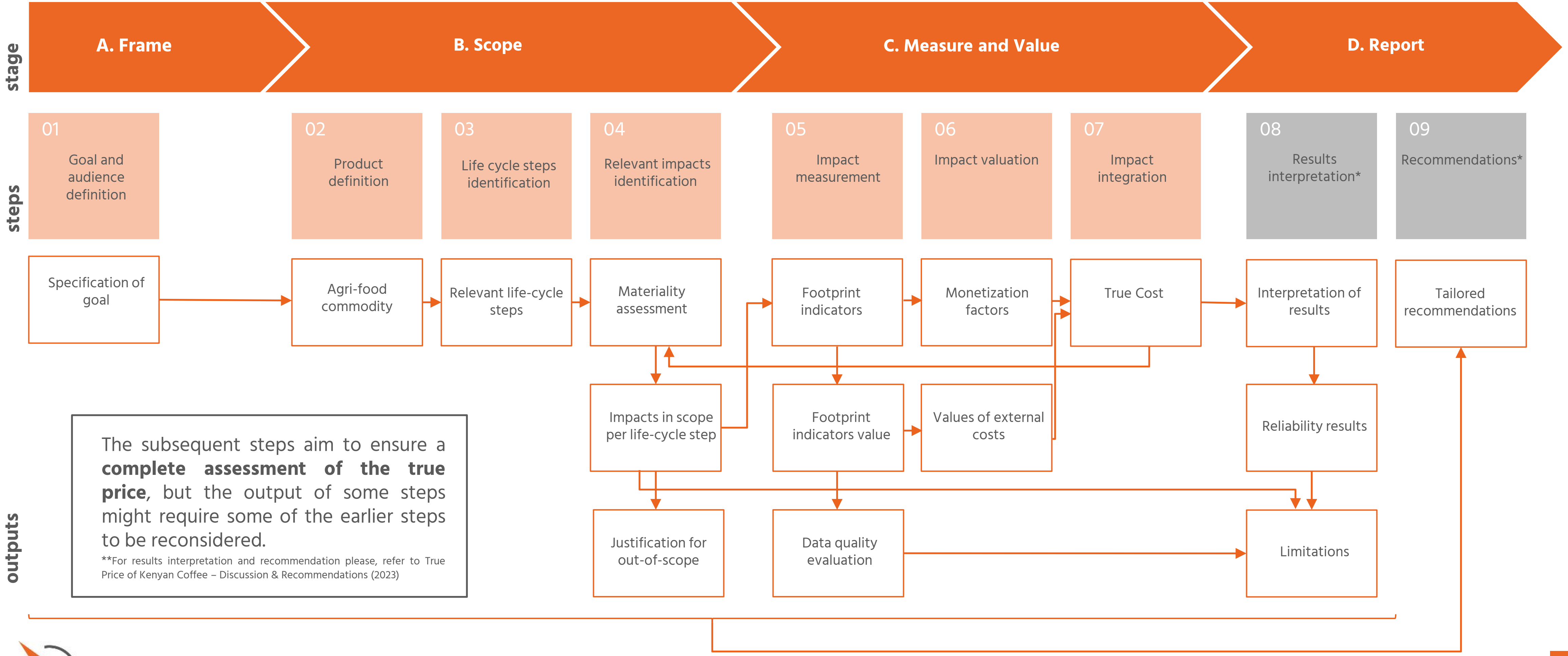
Methodology

True Price Assessment

02

METHODOLOGY | STAGE, STEPS AND OUTPUTS

The four stages and nine logical steps of a True Price Gap Analysis



The subsequent steps aim to ensure a **complete assessment of the true price**, but the output of some steps might require some of the earlier steps to be reconsidered.

**For results interpretation and recommendation please, refer to True Price of Kenyan Coffee – Discussion & Recommendations (2023)

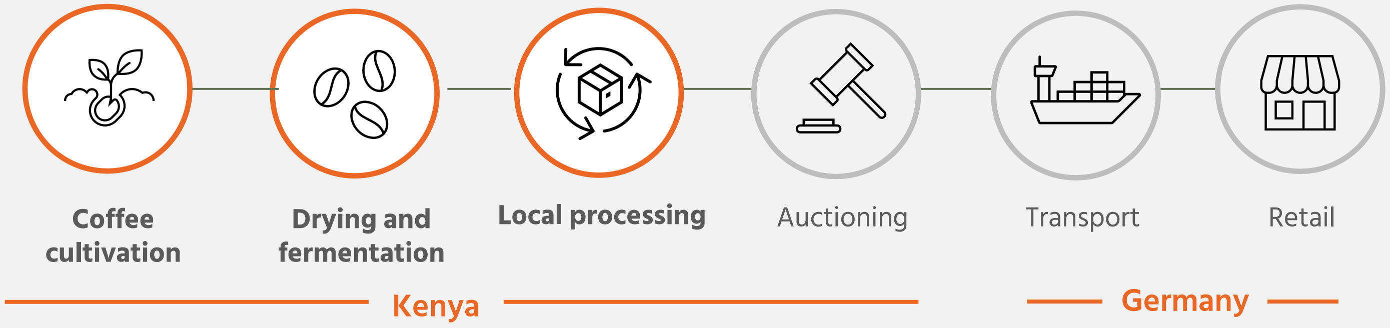
METHODOLOGY | COFFEE VALUE CHAIN

The value chain steps considered in this project include the cultivation stage up to local processing

Materiality of the value chain steps

The value chain considered in this project includes the steps from the cultivation stage up to the local processing. Due to the use of fertilisers and pesticides, and a lack of contractual safeguards for coffee workers, most of the environmental and social impacts of agri-food commodities are generated during the cultivation stage. Therefore auctioning, transport and retail steps have been excluded.

Coffee value chain steps included in our analysis



Value chain actors involved in the analysis

METHODOLOGY | ENVIRONMENTAL IMPACTS IN SCOPE

Seven environmental impacts were selected for the assessment based on their materiality and data availability

Soil pollution

The impact of the release of harmful chemicals, like phosphorus or nitrogen into the soil

Water pollution

The impact on health and ecosystem, and economic costs of additional water treatment, associated with increased nutrient discharge into freshwater lakes and rivers

Air pollution

The value of effects on human health from air pollutants

Contribution to climate change

The discounted future costs of climate change for health, agriculture and economy due to greenhouse gas emissions

Scarce water use

The cost of extracting water from freshwater ecosystems with limited amounts of water

Land use

The opportunity cost of using the land, derived from the ecosystem services supplied when the land would be in its native state

Fossil fuel depletion

The impact of the use of fossil fuel in the production process

Out of scope due to low-quality data and low materiality of these impacts in the Kenyan production

Non-renewable material depletion

The value of primary extraction of scarce, non-renewable resources such as gold, zinc, copper and many more

METHODOLOGY | SOCIAL IMPACTS IN SCOPE

Ten social impacts were selected for the assessment based on their materiality and data availability

Underearning

The cost of receiving an income lower than the income needed for an adequate standard of living.

Gender discrimination

The value of the pay gap between female and male employees along the value chain

Freedom of association

The impact of denying workers the right to join unions or other work-related organizations

Health & Safety

The extent to which working in the value chain negatively affects the safety and overall health status of workers.

Child labour

The cost of employing underage workers in the value chain

Forced labour

Presence of forced labour in own operations and in the value chains

Underpayment in the value chain

The gap between workers' wages, the local minimum wage and the local living wage

Occurrence of harassment

The occurrence and cost of sexual and non-sexual harassment towards workers in the value chain

Lack of social security

The cost of not providing legally required social security benefits

Excessive and unpaid overtime

The value of unpaid and excessive overtime worked

METHODOLOGY | MEASURE AND VALUE

Data collection

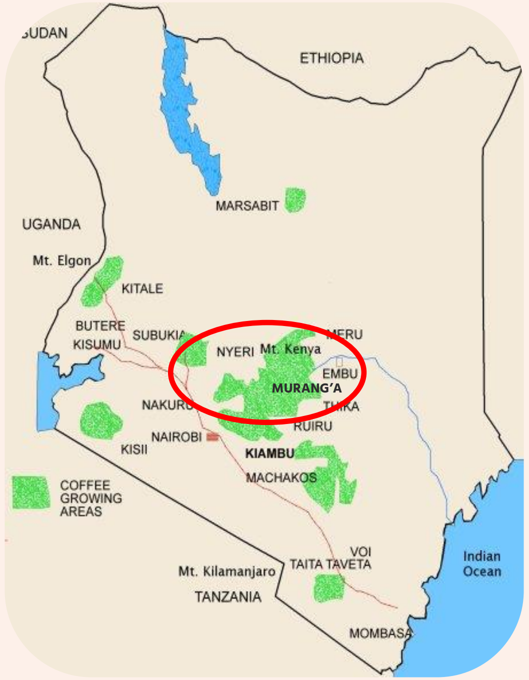
Primary data collection by Laterite* took place in two counties, **Nyeri and Murang'a**, among the most productive coffee-growing areas in early 2023.

Three **on-site surveys** formulated by the Impact Institute and addressed by Laterite to:

- Coffee farmers
- Coffee cooperatives
- Coffee workers

Secondary data collected according to Impact Institute's data hierarchy. It includes the research of secondary specific product data and generic data when needed to complement or contextualise primary data

Coffee growing areas



*Laterite is a data analytics firm specialised in data collection and development research projects in East and West Africa.

Data analysis

Data quality evaluation

- Value chain data
- Secondary-specific product data
- Secondary-generic data

*Data quality evaluation followed the True Price Assessment criteria for agri-food products by Galgani, P., et al. (2023).

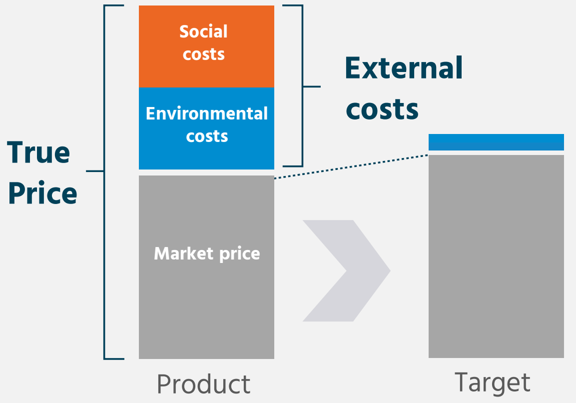
Data Processing

- **Pre-processing:** Data cleaning and outlier corrections
- **Data analysis:** Impact assessment and monetisation
- **Results validation**: Internal to Impact Institute and 2nd validation with IFPRI

METHODOLOGY | TRUE PRICE METHODOLOGY

Impact Institute has developed the True Price methodology for quantifying and monetising environmental and social impacts

The true price is defined as the sum of the market price of a product and the social and environmental costs created by its production (including the extraction of input materials).

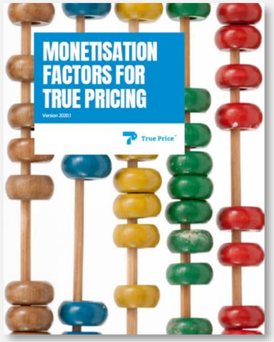


We apply a tried and tested methodology for impact measurement and valuation, as published in the Principles for True Pricing guide, to calculate the external costs throughout the supply chain.

The True Price methodology is based on Life Cycle Assessment, which is enriched with our own set of quantitative social indicators based on environmental, labour and human rights. This is done by capturing all relevant externalities based on a combination of data available at the client, our own sector expertise, field data and other relevant sector research and literature.

The result is an overview of the environmental and social footprints of the commodity under investigation. Each footprint is then monetised using objective and standardised valuation models built and published by True Price/Impact Institute (see Appendix 5.6 for impact monetisation examples).

The True Price methodology is versatile and has been applied to numerous products in the private, public and non-profit sectors. It has been used in the agricultural, construction, textile, financial, energy, and many other sectors.

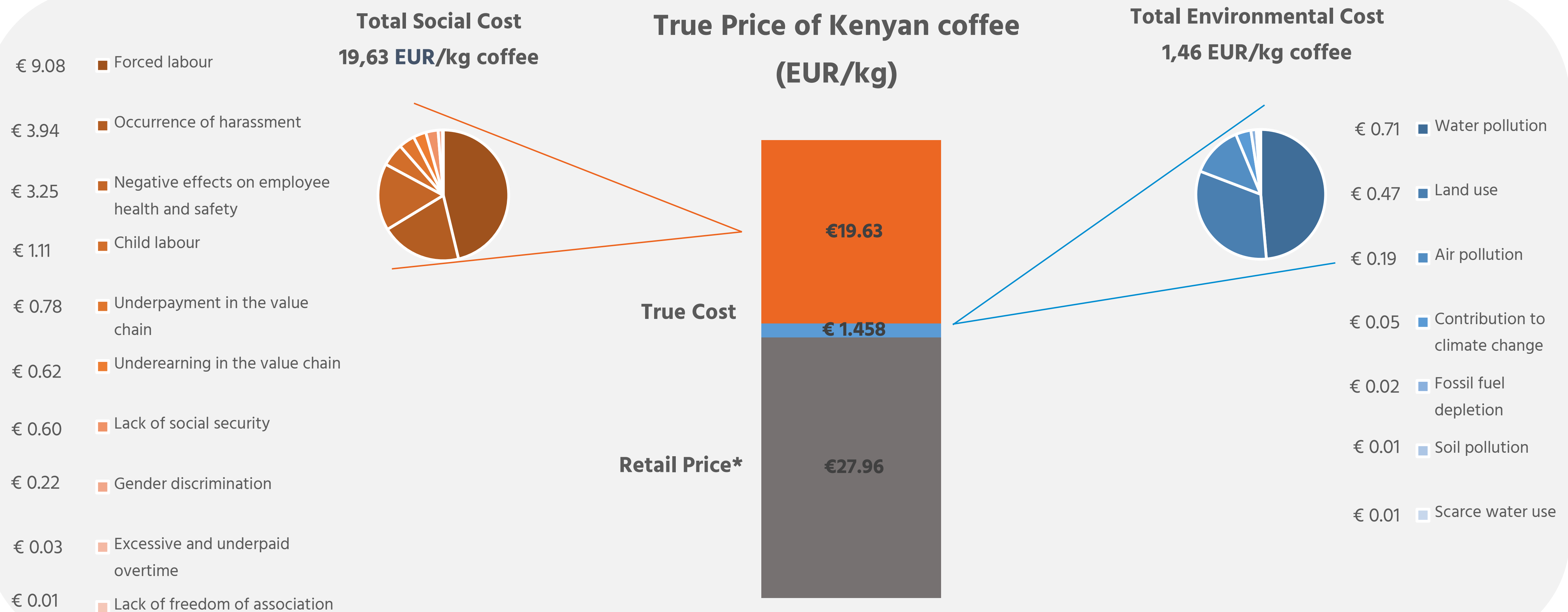


Results

03

RESULTS | TRUE PRICE GAP

The True Price gap for the stages from cultivation to local processing of Kenyan coffee amounts to €21,08 per kg of coffee

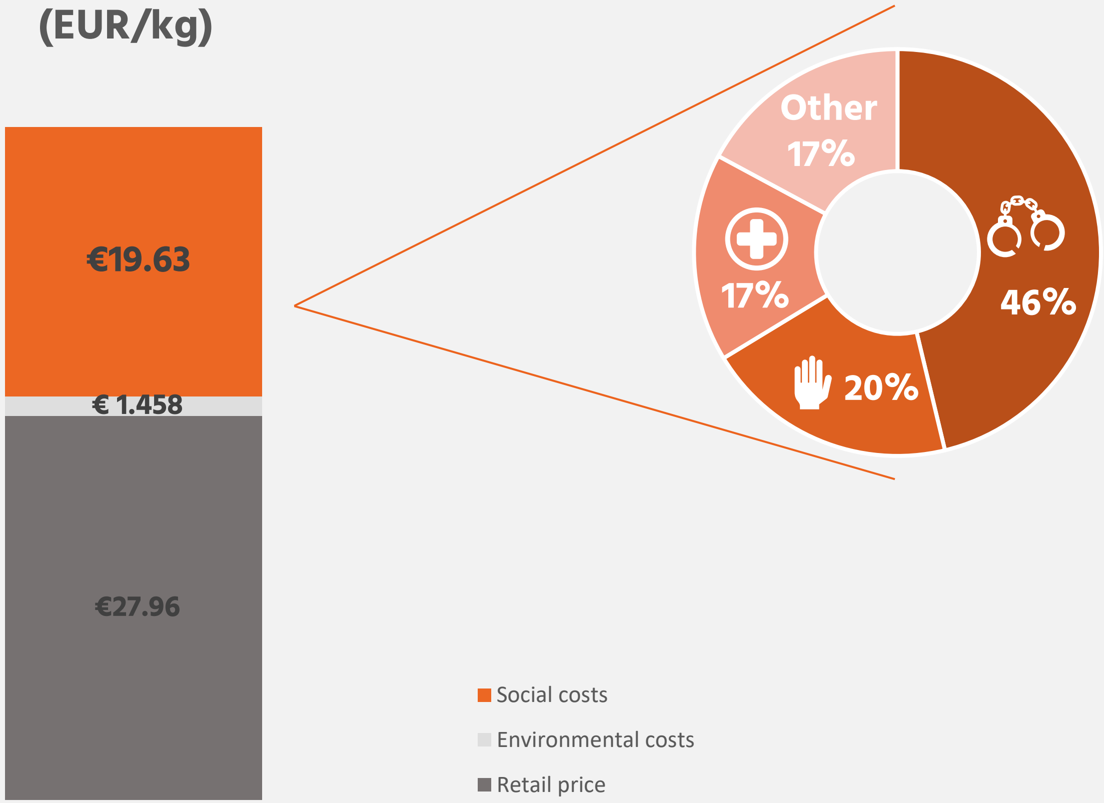


*Retail price from *tchibo.com*

RESULTS | TOP THREE MAJOR IMPACTS

The social cost is primarily driven by the impact of forced labour, negative effects on H&S and occurrence of harassment

Social Cost of Kenyan coffee (EUR/kg)

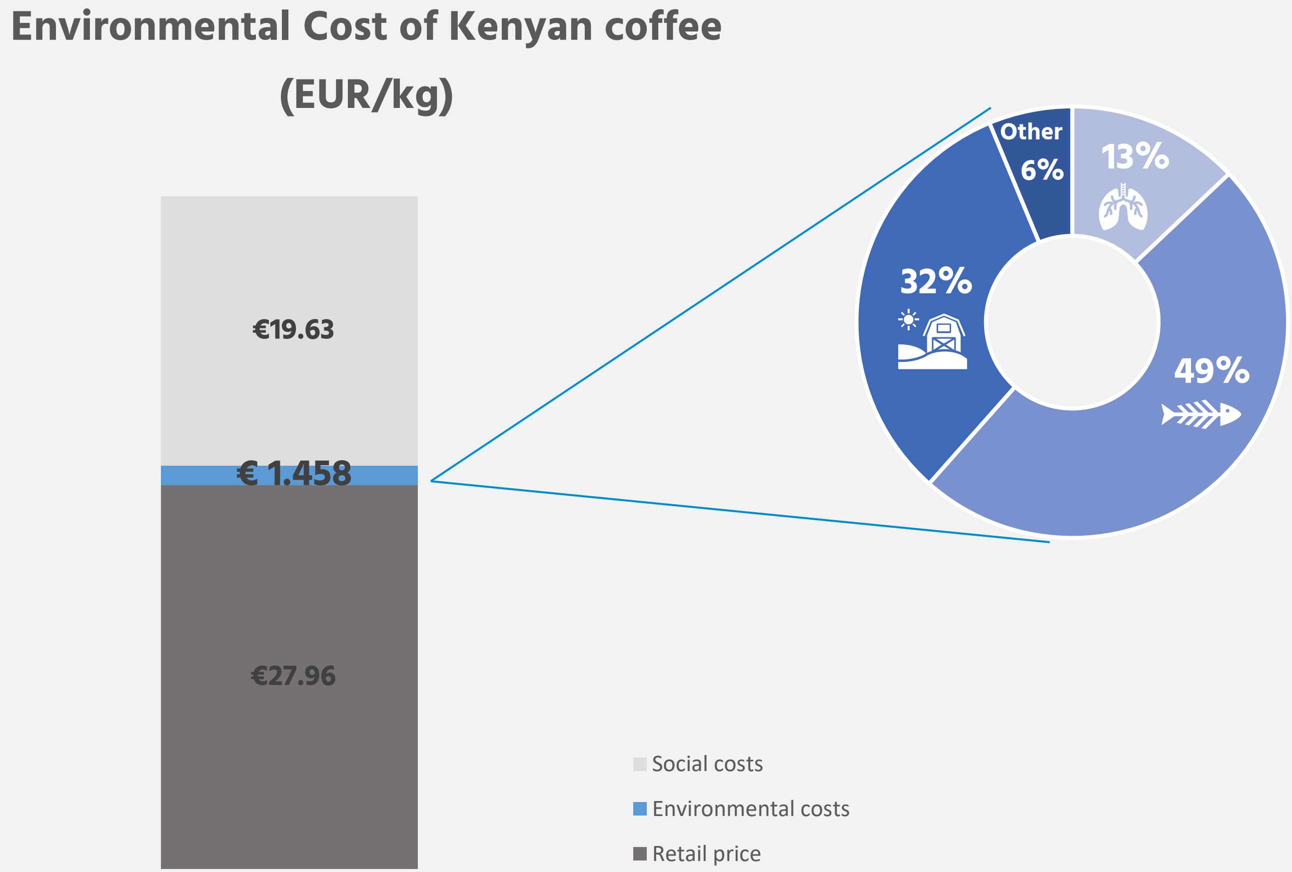


Social Impacts on people and communities caused by the production and consumption of coffee. In the context of a true price assessment, social impacts are unsustainable externalities related to breaches of human rights and labour rights.

Forced labour	**46 % (9,08 EUR/kg)** of the total social impact
Occurrence of harassment	**20 % (3,94 EUR/kg)** of the total social impact
Negative effects on employee health and safety	**17 % (3,25 EUR/kg)** of the total social impact

RESULTS | TOP THREE ENVIRONMENTAL IMPACTS

The environmental cost is primarily driven by the impact of water pollution, air pollution and land use

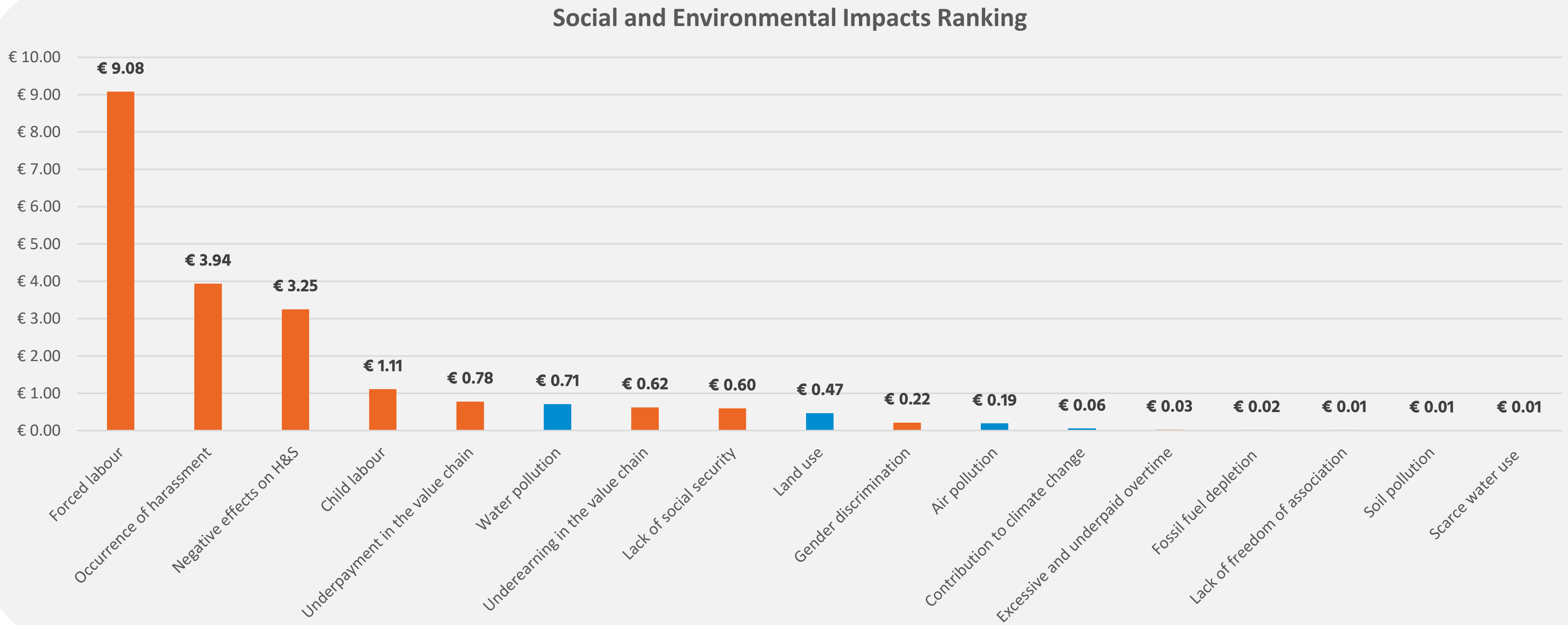


Environmental Impacts on the environment, and indirectly on people and communities, caused by the production and consumption of coffee. In the context of a true price assessment, environmental impacts are unsustainable externalities related to the breaches of environmental rights and human rights.

Water pollution	**49% (0,71 EUR/kg)** of the total environmental impact
Land use	**32% (0,47 EUR/kg)** of the total environmental impact
Air pollution	**13% (0,19 EUR/kg)** of the total environmental impact

RESULTS | OTHER IMPACTS OVERVIEW

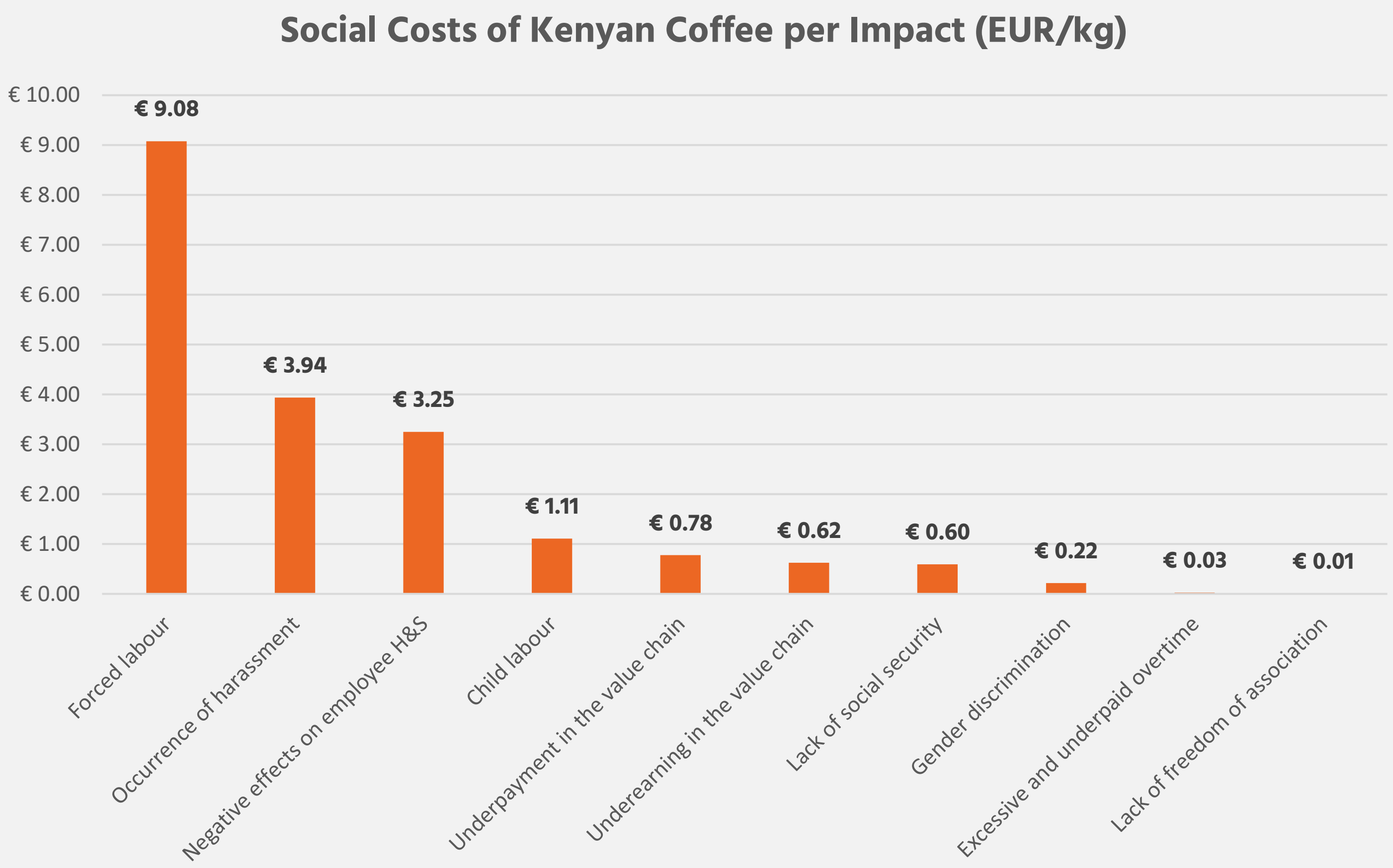
Ranking of social and environmental impacts from the production of Kenyan coffee



Social Impact Assessment

3.1

SOCIAL IMPACT ASSESSMENT | RESULTS



The following slides provide a detailed analysis of the seven largest impacts in descending order from largest to lowest impact. An explanation of the last three impacts is included in Appendix 5.1.

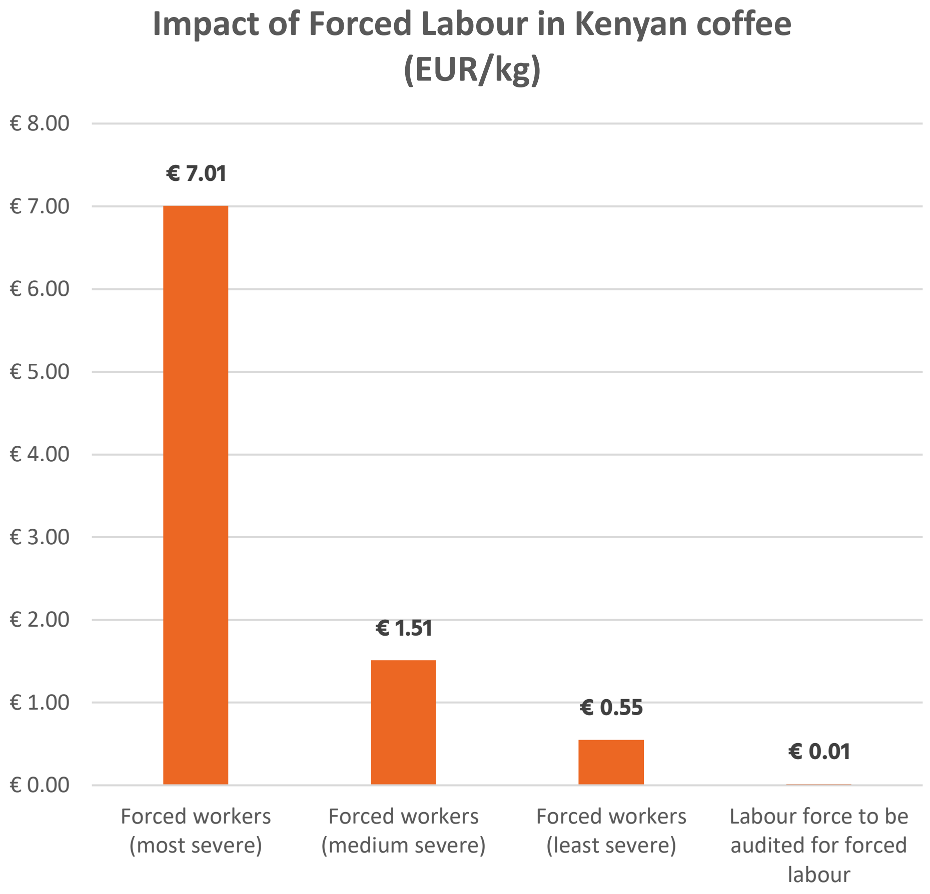
The analysis includes a description of the monetary value, the main drivers of the impact and the relevance of the result for understanding the most critical social issues currently facing the Kenyan coffee sector.

SOCIAL IMPACT ASSESSMENT | FORCED LABOUR

The impact of forced labour is primarily driven by the occurrence of physical coercion

Forced Labour

- **46 out of 181 workers** (25%) interviewed **reported experiencing some form of forced labour** ranging from less severe financial and psychological coercion to more severe forms of physical coercion
- **19 out of 181** (10%) **workers** interviewed **reported some form of physical coercion** – either restriction from movement or being held in isolation. Given the severity of this category, the occurrence of physical coercion has the highest contribution to the total social cost
- Forced labour has been flagged as a **critical issue** within the coffee industry across several countries including Cote D'Ivoire, Brazil and Guatemala (Verite, 2022; Rainforest Alliance 2020). The results of this report indicate the **relevance** of these issues within the **Kenyan coffee sector**
- A **crucial driver** is the prevalence of temporary, seasonal workers without formal contracts who are highly dependent on employers for basic necessities thereby making them vulnerable to coercion. This includes withholding of wages or personal documents to ensure that workers complete the harvest period (Verité, 2022; Rainforest Alliance 2020)

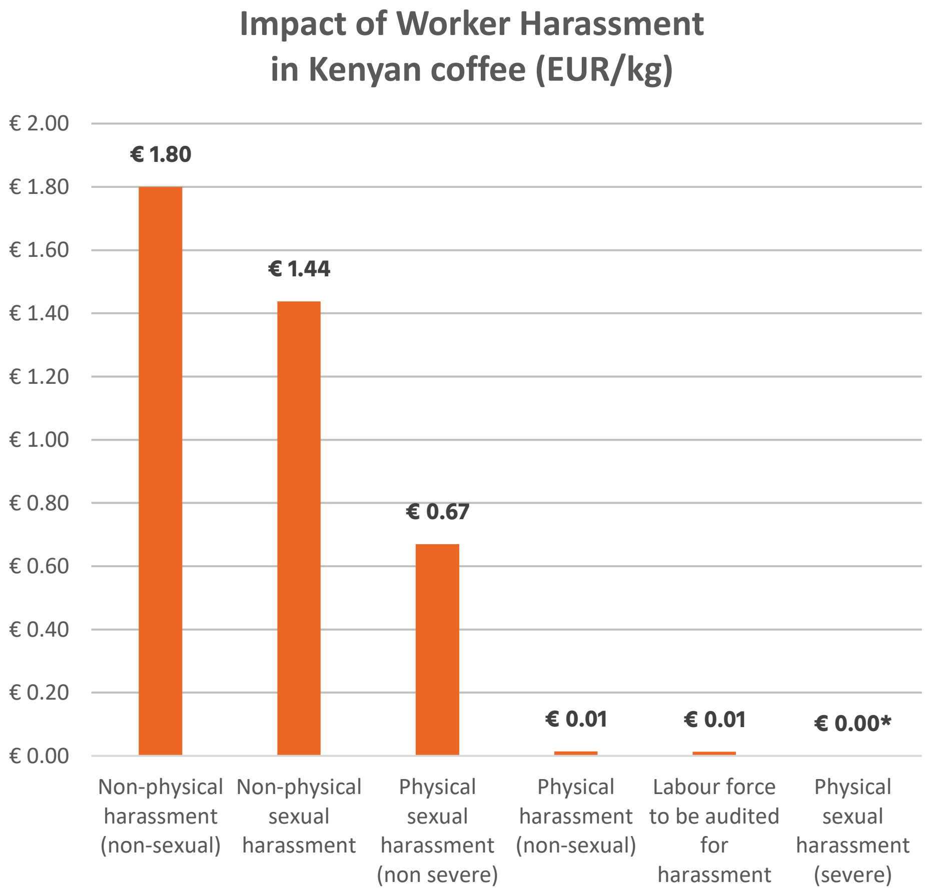


SOCIAL IMPACT ASSESSMENT | HARASSMENT

The impact of harassment is driven by the frequent occurrence of both sexual and non-sexual verbal harassment amongst coffee workers

Harassment

- **24 out of 181** (13%) **workers interviewed reported harassment of some kind –** whilst most workers experienced multiple forms of harassment, the method only quantifies the impact of the most severe form experienced per worker to avoid over-quantification
- This impact can be mainly attributed to the frequent occurrence of **verbal harassment** (both sexual and non-sexual) amongst coffee workers
- Harassment, both physical and verbal remains a **critical concern in the Kenyan agricultural sector**
- Recent studies reveal the **prevalence** of **sexual exploitation** among female workers in various agricultural fields, including tea production, textile manufacturing, and flower cultivation (Kenyan Ministry of Agriculture, 2022; International Labour Rights Fund, 2002; Rainforest Alliance, 2023). This report aligns with these findings, underscoring the relevance of these issues in the Kenyan coffee sector
- The Kenyan Ministry of Agriculture identifies **poverty and inequality as key drivers**, heightening women's financial desperation and vulnerability to accept threatening employment conditions



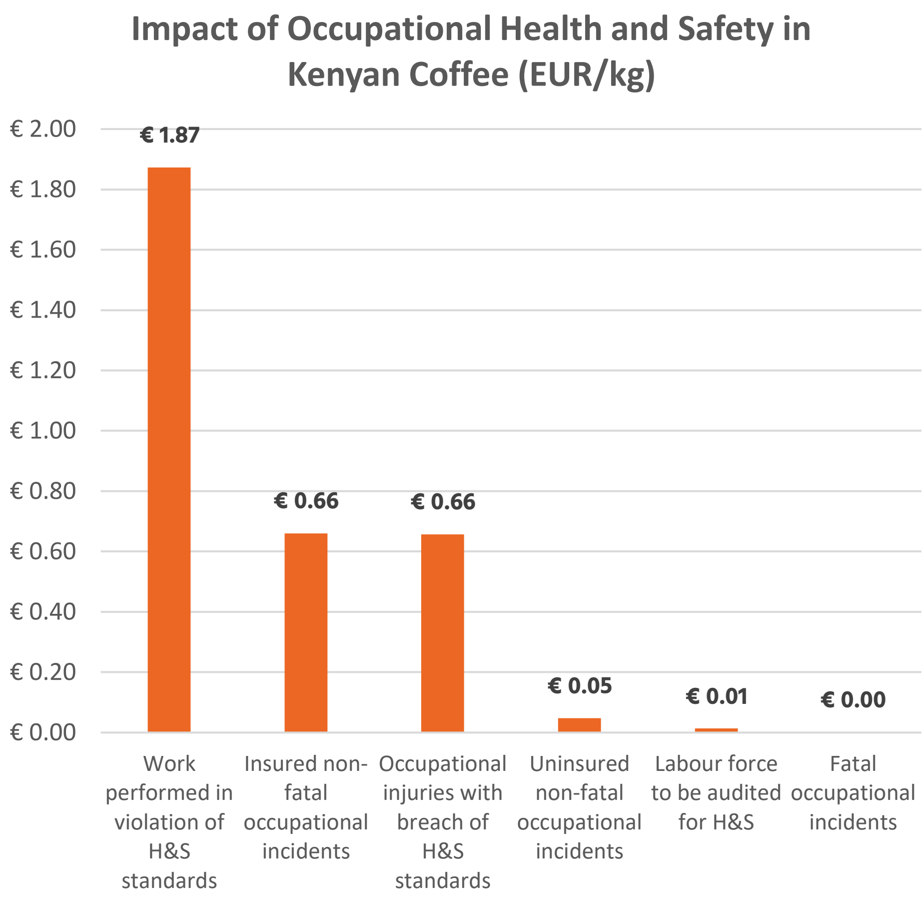
*The most severe type of harassment, physical and sexual harassment, was excluded from the assessment due to major issues with data interpretability (see Limitations in Chapter 4 for more information).

SOCIAL IMPACT ASSESSMENT | OCCUPATIONAL HEALTH AND SAFETY

The impact of occupational health and safety is mainly driven by the lack of H&S training received by Kenyan coffee workers

Health and Safety

- **23 out of 181 workers** (13%) interviewed **reported experiencing an injury of some kind**. Given the absence of safety training, these accidents **breach H&S standards**
- Most hazardous work performed was also in violation of H&S standards due to lack of training. Of the 66 workers who had manually applied pesticides, **only 18** (27%) **had received safety training**
- The significance of this impact is therefore mainly driven by the low levels of health and safety training received by workers
- Coffee cultivation involves various manual tasks like land preparation, weeding, pesticide application, fertilisation, harvesting, and transporting cherries
- Workers face **risks** such as pesticide exposure, sun and heat exposure, and injuries from tools and heavy loads (Verité, 2019)
- Due to the low capacity of smallholder farmers and the informal nature of the sector, many coffee workers **lack proper health and safety training** (New Foresight, 2021)

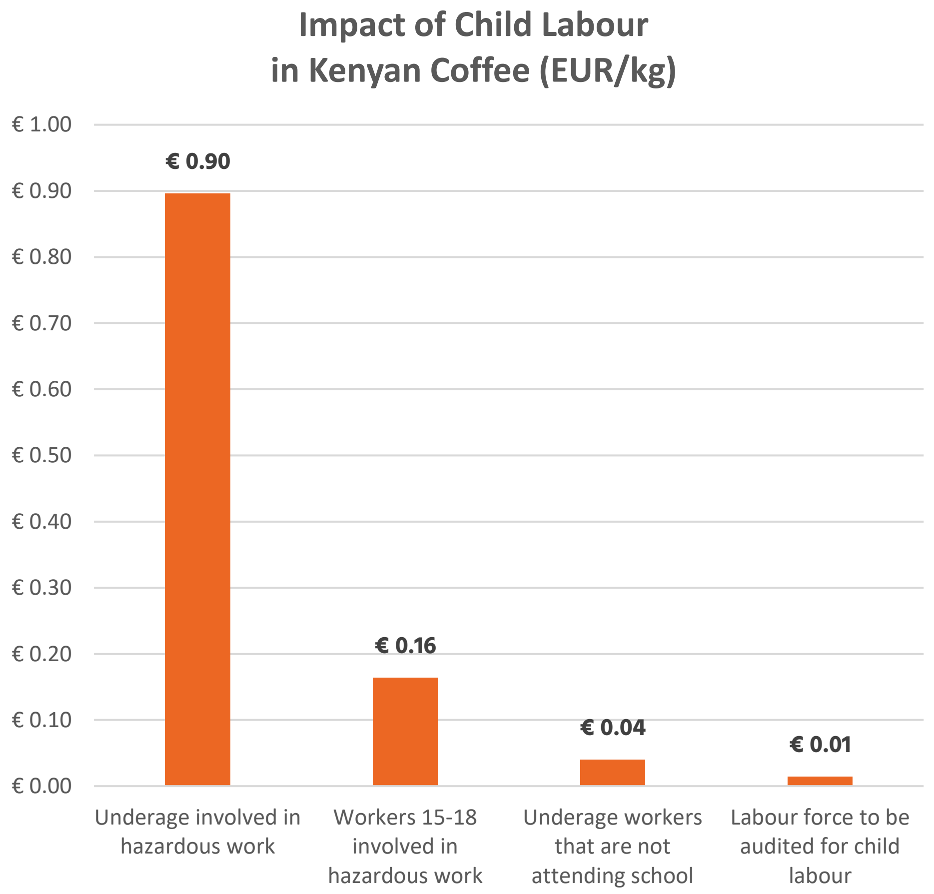


SOCIAL IMPACT ASSESSMENT | CHILD LABOUR

The impact of child labour is primarily driven by the number of underage workers performing hazardous work

Child Labour

- Occurrence of child labour accounts for **4.6% of the total social impact**
- This impact is primarily driven by **underage workers** (under 12 or 13) of farming families performing **hazardous work** activities. This cost is determined by both the **frequency** and **severity** of this result
- The impact of **underage workers** below the minimum age for light work (12 or 13 years old) **involved in non-hazardous** economic work is not monetised given that according to Kenyan jurisdiction, it **is legal**
- **Coffee** has been identified as one of the **highest-risk sectors for child labour** occurring within Kenyan agriculture (Bureau of International Labour Affairs, 2022; Bureau of International Labour Affairs, 2018)
- There is a strong **correlation** between **low coffee prices** and increased **child labour** on family farms which suggests that this practice is related to the **low income** of coffee farmers (International Coffee Organisation, 2019; New Foresight, 2021)
- Decreased profit margins pressure farmers to reduce their labour costs thereby necessitating them to rely more on family labour (New Foresight, 2021)

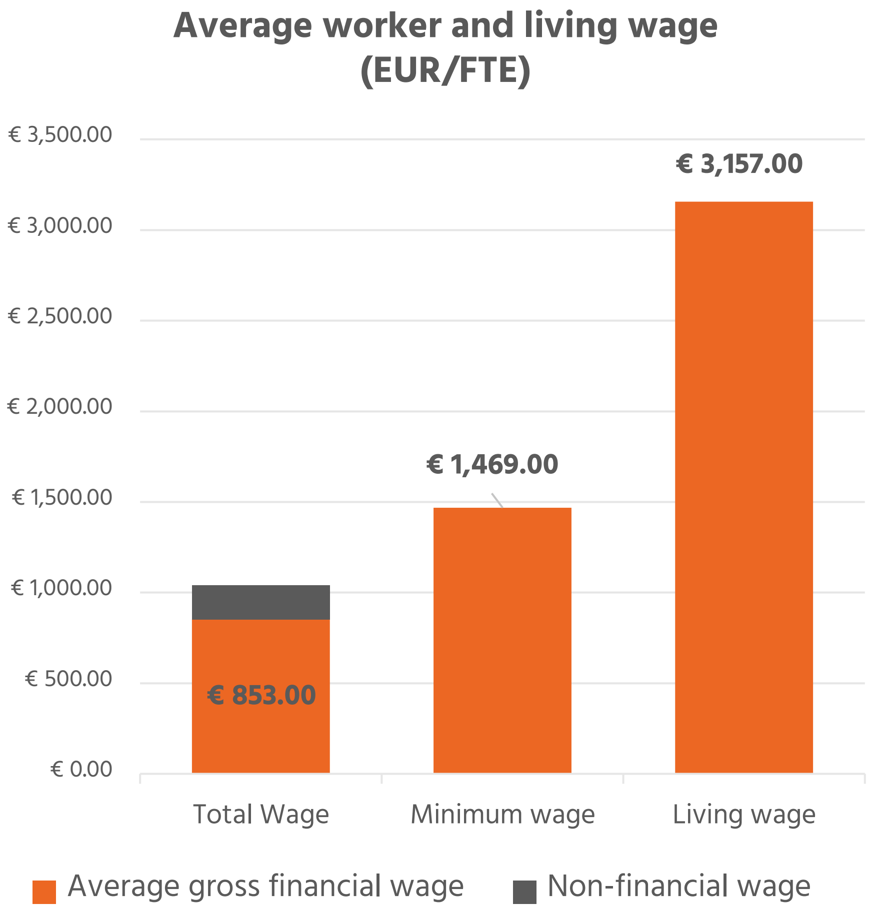


SOCIAL IMPACT ASSESSMENT | UNDERPAYMENT

The average gross financial wage per FTE is significantly lower than both the minimum and living wage for Kenya

Underpayment

- **The average wage** of workers is significantly **lower** than both the **minimum wage** and the **living wage** of Kenya
- The average gross financial wage is € 853 per FTE whilst the minimum wage is € 1469 per FTE and the living wage is € 3157 per FTE
- Accounting for non-financial payments, the total average wage per worker is approximately € 1041 per FTE
- Persistently low coffee prices, coupled with rising production costs, pose a significant challenge for smallholder coffee farmers (Solidaridad, 2022)
- Labour constitutes approximately 50-60% of total costs of coffee production (New Foresight, 2021; International Coffee Organization, 2019)
- Given that labour is the largest cost category producers have control over, it is often a target for reducing input costs resulting in consistently low wages for hired coffee workers (New Foresight, 2021)

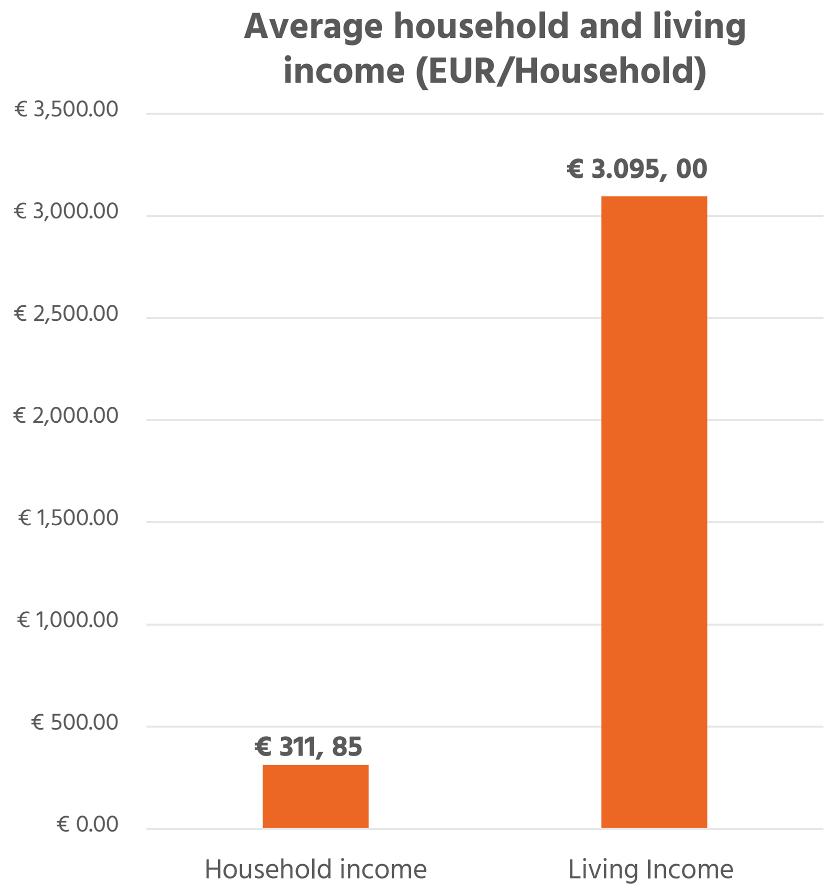


SOCIAL IMPACT ASSESSMENT | UNDEREARNING

The average household wage/FTE is significantly lower than the living wage/FTE for Kenya

Underearning

- The impact of underearning amounts to **€ 0.62/kg of coffee**
- This cost is determined by the gap between the net income received by farmer households for coffee production and the living income for Kenya
- The underearning assessment completed by IFPRI found that the average farmer household earns approximately **311, 85 EUR/year** from coffee production
- The living income for a comparable Kenyan household is **3095 EUR/year**
- The underearning of farmers is **largely driven** by the consistently **low and fluctuating prices** of coffee witnessed over the past two decades coupled with the **rising costs of production and living** (Solidaridad, 2022)
- In addition to low prices, farmers in Kenya face **low productivity** and **small farm sizes** thereby deepening their struggle to achieve a sufficient income (Solidaridad, 2022)



SOCIAL IMPACT ASSESSMENT | LACK OF SOCIAL SECURITY

The impact of lack of social security can be attributed to the percentage of workers without legal social security coverage

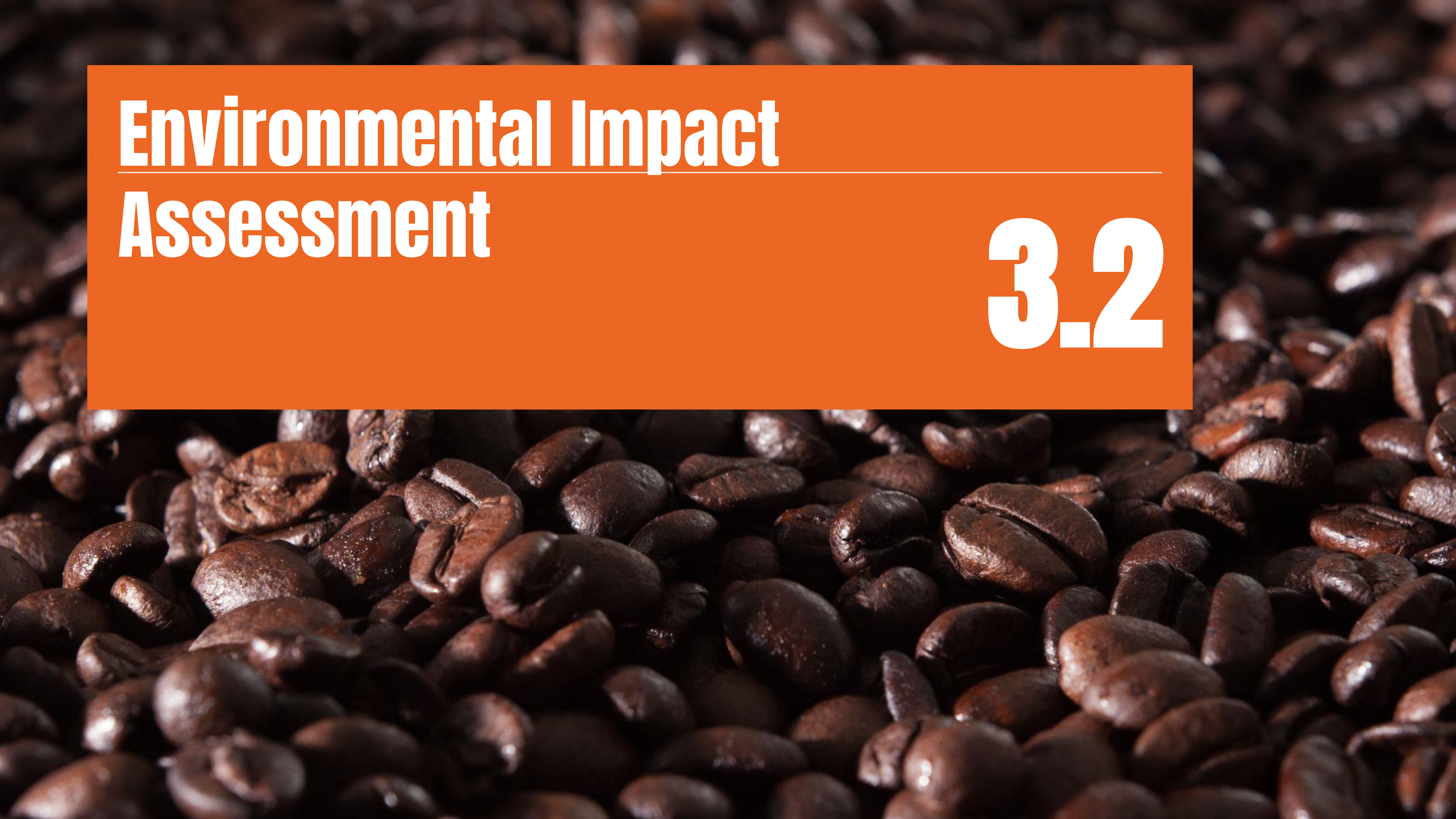
Lack of Social Security

- The lack of social security impact is largely driven by **the lack of legal social security** which equates to 72 workers, **66% of total adult hired workers**
- This cost is determined by the share of workers without legal pension contributions or legal healthcare contributions as well as the share of workers without legal unemployment insurance
- This impact is largely **driven** by the **high prevalence of informality** in the coffee sector. Workers are often hired for on piece rate for temporary, seasonal work without official employment contracts (New Foresight, 2021)
- Workers within the coffee sector therefore rarely have access to social security structures (Brounen et al., 2019)

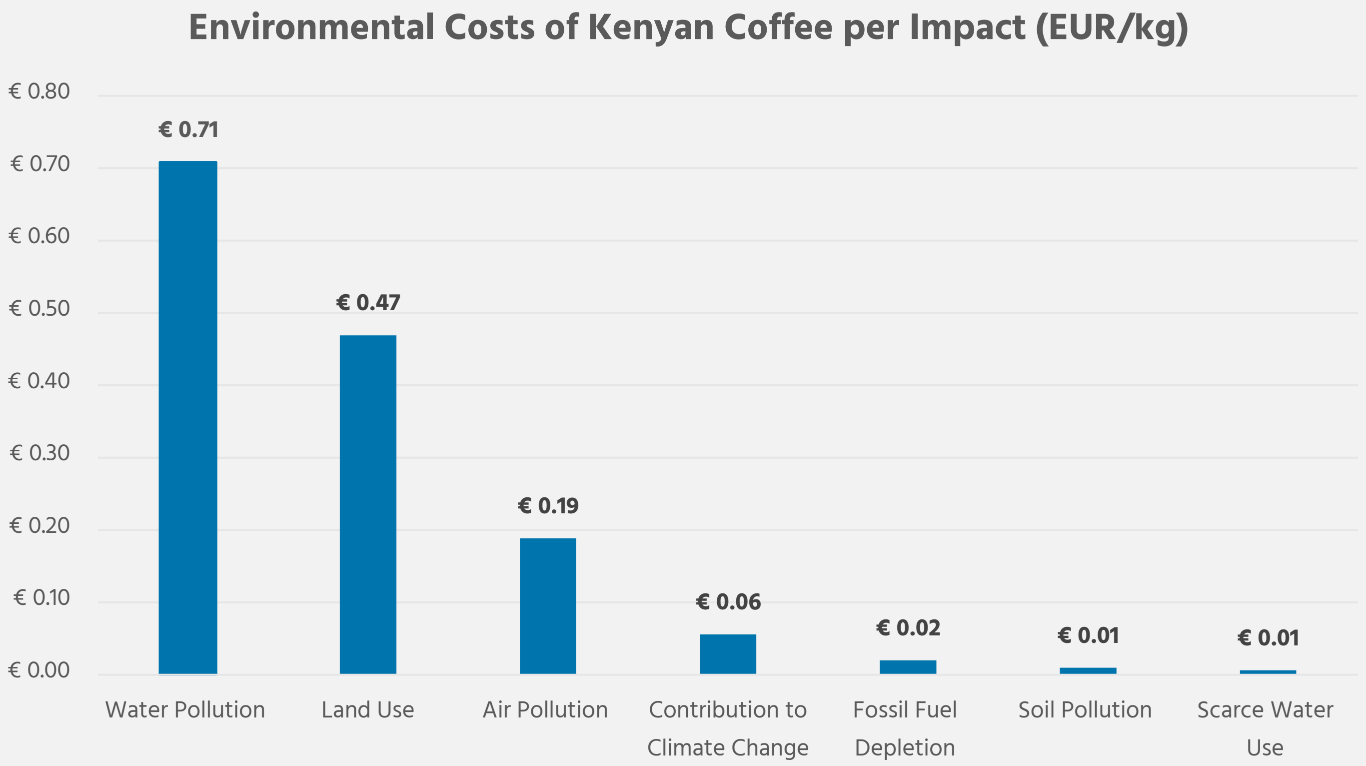
Impact of Lack of Social Security in Kenyan coffee (EUR/kg)

Environmental Impact Assessment

3.2



ENVIRONMENTAL IMPACT ASSESSMENT | RESULTS



In the following slides, a detailed analysis of the three largest impacts in descending order from largest to lowest impact is provided. An explanation of the last four impacts is included in Appendix 5.2.

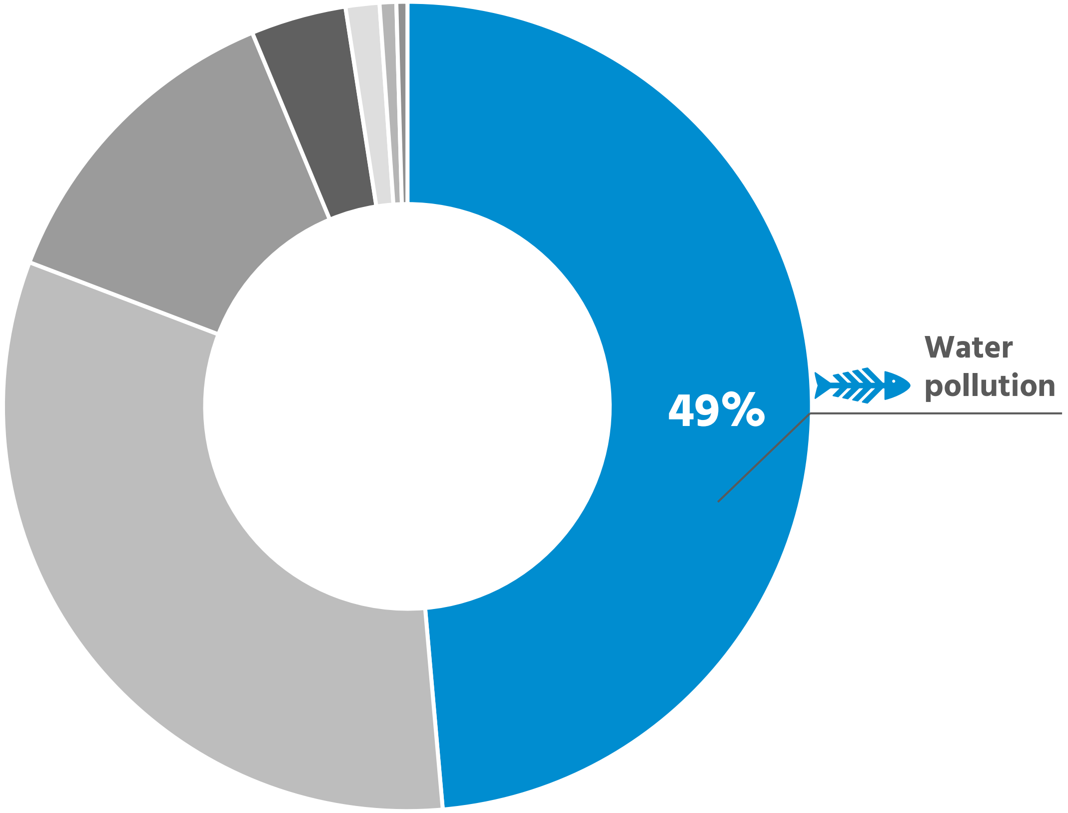
The analysis includes a description of the monetary value, the main drivers of the impact and the relevance of the result for understanding the environmental issues currently facing the Kenyan coffee sector.

ENVIRONMENTAL IMPACT ASSESSMENT | WATER POLLUTION

The application of chemical fertilizers increases freshwater eutrophication in nearby water bodies as a result of nutrient run-off

Water pollution

- The major determinant to water pollution is **freshwater eutrophication (0,70 EUR/Kg)**
- Eutrophication is caused by an excess of nutrients in water bodies, that lead to increased algal blooms. These shade out other plants and use up oxygen in the water due to their decomposition, jeopardizing life in water bodies due to low oxygen levels (Galgani et al., 2021d)
- The main **drivers** are **Nitrogen (N) and Phosphorous (P) from fertilizer application** (both artificial and organic), which through leaching and run-off end up in water bodies

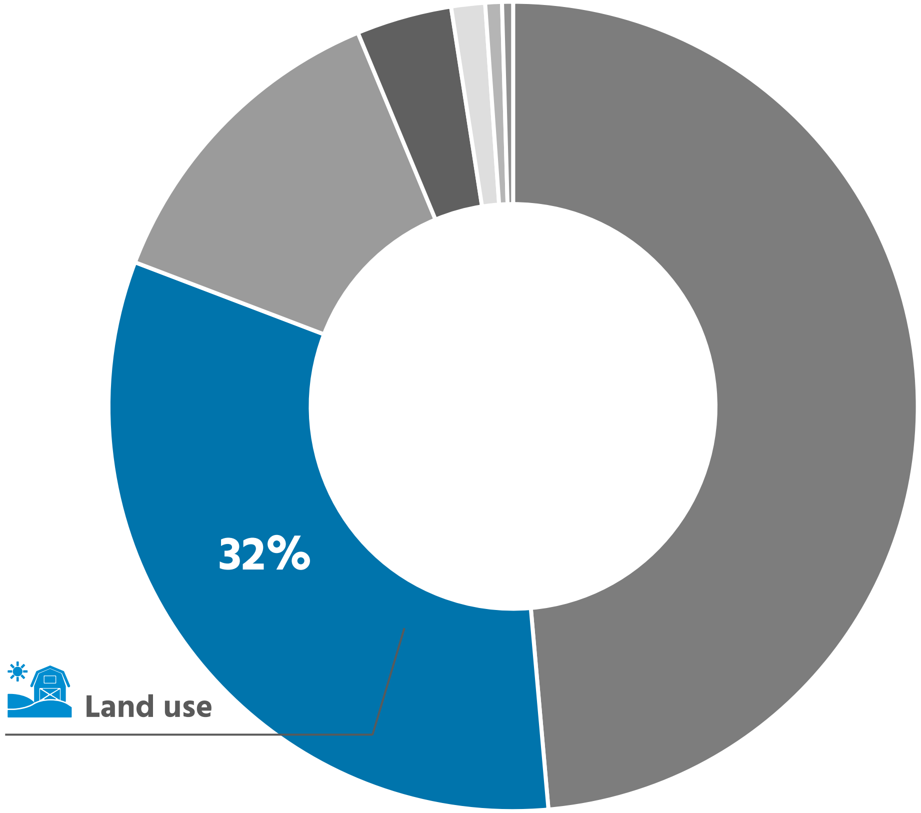


ENVIRONMENTAL IMPACT ASSESSMENT | LAND USE

The occupation of land for coffee cultivation has a negative impact on biodiversity and important ecosystem services

Land Use

- Land use represents the decreased availability of land for purposes other than the current one, through land occupancy (De Groot et al., 2012)
- The use of land for agricultural purposes displaces habitats and ecosystems subsequently leading to **biodiversity and ecosystem service loss** (De Groot et al., 2012)
- The large impact of land use **(0,16 EUR/kg)** is therefore related to the **occupation of land for coffee cultivation** rather than conserving its natural state as woodland or grassland and the subsequent **implications for biodiversity**

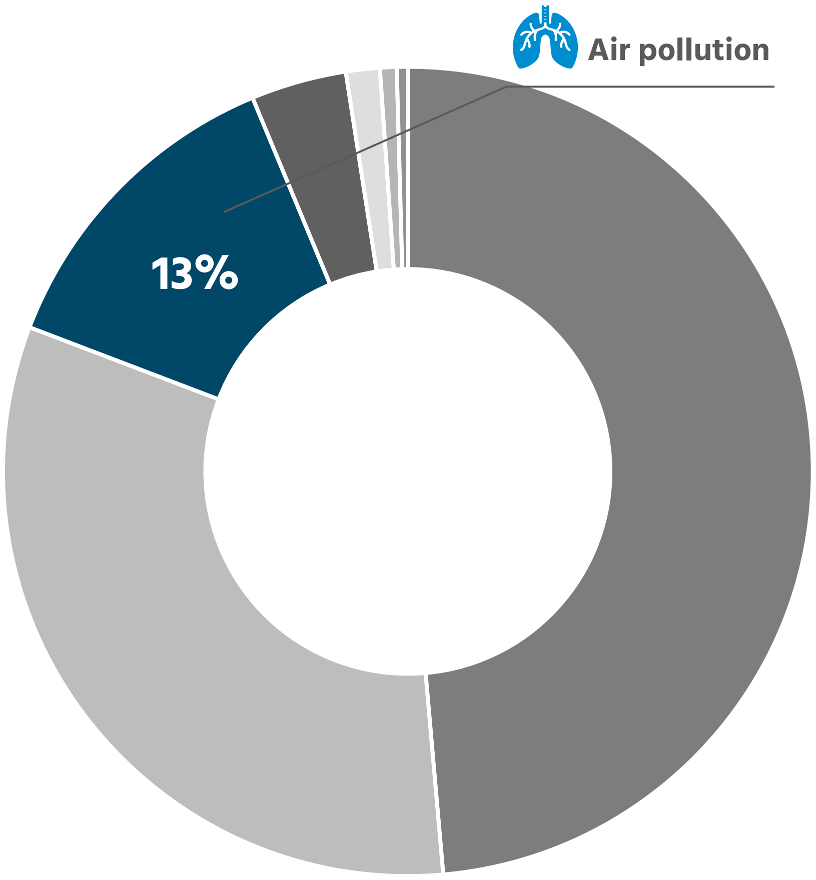


ENVIRONMENTAL IMPACT ASSESSMENT | AIR POLLUTION

Ammonia emissions, released through the application of chemical fertilisers contribute significantly to air pollution

Air Pollution

- The main driver of air pollution in Kenyan coffee production is the **ammonia emissions** released during the cultivation stage
- Chemical fertilisers, particularly nitrogen-based fertilisers are typically sprayed around the base of the plant to promote growth and achieve higher yields
- **Ammonia (NH3)** is a byproduct of the application process of **nitrogen-based fertilisers** (Kang et al., 2022)



Discussion, Recommendations & Limitations

04

DISCUSSION | SOCIAL CHALLENGES

Low prices coupled with the informality of the sector are the main drivers of the human rights violations implicated in Kenyan coffee production

Germany currently stands as the **third largest importer** of Kenyan coffee (AFA, 2023). The outcomes of the True Price assessment suggest that the **inability** of Kenyan coffee farmers to earn a **sufficient income** coupled with the **informality** of the Kenyan coffee sector are important drivers of the human rights violations and environmental costs implicated in Kenyan coffee production. These results are in line with previous analyses of the main issues faced by global coffee value chains.

Despite the overall growth of the sector, world market **prices for coffee** have remained **consistently low** over the past two decades, frequently below the cost of production for many producer countries (Coffee Barometer, 2023; New Foresight, 2021; Solidaridad, 2022). This imbalance is largely driven by the value distribution across the coffee supply chain which remains highly concentrated amongst downstream actors (New Foresight, 2021).

Low prices coupled with **rising costs of production** and labour result in increasingly low profit margins for coffee farmers, impacting not only their livelihoods but equally, the working conditions and wages of their workers (New Foresight, 2021; International Coffee Organization, 2019). For instance, the pressure to cut costs leads to a continuous downward pressure on farm workers' wages and severely impacts the conditions in which they work.

The lack of capacity on smallholder farms makes it less likely for proper training mechanisms to be put in place, putting at risk the health and safety of farmworkers. Moreover, the poverty and **lack of official employment contracts** faced by farm workers increases their vulnerability and exposure to the threats of **forced labour** and **harassment** (Kenyan Ministry of Agriculture, 2022; Rainforest Alliance, 2020; New Foresight, 2021).

Given that labour presents one of the largest cost categories faced by producers as well as one of the areas where they can exert the most control, smallholder farmers often end up depending more on family labour rather than hired work thereby increasing **the risk of child labour** occurrence on family-run farms (International Coffee Organization, 2019).

The **informality and lack of organisation** across the Kenyan coffee sector as a whole makes it more costly for local authorities to carry out surveillance and monitoring and thereby enforce labour regulations (New Foresight, 2021).

DISCUSSION | ENVIRONMENTAL CHALLENGES

Smallholders are disproportionately affected by the threats of climate change whilst simultaneously unable to invest in more sustainable production practices

Irregular rainfall patterns, rising temperatures and increased pests and diseases all pose **major threats to productivity yields and coffee quality** and subsequently, farmer income (International Coffee Organization, 2019; Solidaridad, 2022; Rainforest Alliance, 2021).

A recent analysis carried out by the Stockholm Environment Institute warns that **climate change could drive a 45.2% decline in the production of Arabica coffee** (Adams et al., 2021).

Smallholders are disproportionately affected by these threats given their limited financial capability to invest in strengthening the resilience and adaptive capacity of their farms (Dzebo and Adams, 2022; Solidaridad, 2022).

Simultaneously, the coffee sector itself faces increasing pressure to address the negative environmental consequences of its production processes (Coffee Barometer 2023; Peixoto et al., 2022).

Yet, the economic vulnerability of smallholder farmers continues to **hinder** the uptake of and **investments in more sustainable production** practices (Solidaridad, 2022; Molenaar et al., 2022).

Moreover, the **low profit margin** faced by farmers puts increasing pressure on their ability to maximise their productivity, further incentivising the use of chemical fertilisers and pesticides. These farming practices contribute significantly to the **negative environmental impact** of coffee farming such as air and water pollution and climate change.

RECOMMENDATIONS | INTERNAL STAKEHOLDERS

Recommendations for maintaining a sustainable coffee production on a regional scale

Empowering Coffee Workers

Individual workers are **limited** in their capacity to advocate and **safeguard their labour rights** related to harassment, health and safety and forced labour.

We recommend:

- Supporting the development and strengthening of **regional and localised workers' unions** and associations
- Facilitate **local trainings** for workers on fundamental Kenyan labour rights
- Developing **local grievance mechanisms** for workers either as part of or in close collaboration with each union/association

Potential benefits

1. **Worker capacity:** Workers' individual capacity to advocate and claim their fundamental labour rights is improved
2. **Advocacy:** Unions can help advocate for workers' rights at a regional and national level
3. **Negotiating power:** Offers new opportunities for collective bargaining thereby strengthening workers' position to secure fairer wages, better working conditions and in-kind benefits
4. **Training**: Unions can coordinate with employers to help provide workers with necessary health and safety trainings
5. **Community Support**: Workers have a place to come together and discuss or address issues facing the community as a whole

Link of recommendation in practice

- Fairtrade (2023). The vital role of trade unions.

Relevant Stakeholders

- Regional and/or national NGOs
- Local governments
- Kenya Coffee Producers Association

RECOMMENDATIONS | INTERNAL STAKEHOLDERS

Recommendations for maintaining a sustainable coffee production on a regional scale

Strengthening Knowledge and Transparency

There is **limited information and data** available on labour conditions within the Kenyan coffee sector. In addition, the **informality and lack of organisation** within the coffee sector makes labour regulation enforcement and intervention very challenging and costly for local authorities

We recommend:

- Carry out further **region-specific research** and data collection on the labour conditions currently facing coffee workers in Kenya
- **Mapping the main labour violations** within the Kenyan coffee sector according to region and producer

Potential benefits

1. **Localised solutions:** Enables the identification of context-specific drivers of current labour conditions and thus, more specific solutions which target the needs of the local community
2. **Targeted Interventions:** Supports local authorities in prioritising and developing more targeted interventions and thus help allocate their resources more efficiently
3. **Auditing:** Faciliates more efficient auditing based on risk-mapping

Link of recommendation in practice

- NewForesight (2021). Driving improvements in wages and working conditions in the coffee sector

Relevant Stakeholders

- Regional and/or national NGOs
- Local governments

RECOMMENDATIONS | TRANSNATIONAL STAKEHOLDERS

Recommendations for maintaining a sustainable coffee production on a regional scale

Enhancing Farm Performance

Enhancing the productivity, resilience and sustainability of coffee farming practices is critical for improving the overall livelihood of Kenyan coffee farmers. This entails using resources more efficiently to produce higher yields as well as adopting strategies to prevent, mitigate and adapt to the threats of climate change.

We recommend:

- Providing regional and local trainings and skill workshops on best **agricultural practices** and **adaptive strategies**
- Introduce more sustainable coffee farming practices rooted in **regenerative agricultural principles**
- Encouraging **income diversification**
- Investing in community development through corporate schemes or government funded policies

Link of recommendation in practice

- International Coffee Organization (2019). Development report 2019
- Koutouleas, A., Waswa, B., Ocimati, A., Notenbaert, A., Rahn, E. (2023). Regenerative Agriculture in Coffee Farming System

Potential benefits

1. **Strengthen knowledge and skills:** Provide access to relevant and actionable information which farmers can leverage to their economic advantage
2. **Prioritising prevention:** By focusing on restoring the health and resilience of natural ecosystems, regenerative farming practices decrease the need for synthetic inputs thereby reducing the cost of production whilst improving the environmental impact of coffee cultivation as a whole
3. **Accessing higher quality markets:** Farmers adopting more sustainable farming practices can access niche markets and benefit from premiums and certifications
4. **Mitigate risks:** Income diversification ensures a more stable income

Relevant Stakeholders

- Regional and/or national NGOs
- Governments of exporting and importing countries
- Private actors (buyers, importers, traders)

RECOMMENDATIONS | TRANSNATIONAL STAKEHOLDERS

Recommendations for maintaining a sustainable coffee production on a regional scale

Price and Risk Management

To improve farmer and worker livelihoods within the Kenyan coffee sector as well as facilitate community development and sustainable farming practices, it is necessary to **address the low and volatile prices** of coffee.

We recommend:

- **Price setting** against certain **benchmarks** (cost of sustainable production or income benchmarks)
- **Long-term purchasing commitments** and more direct linkages between producers and buyers
- **Direct income transfers** from governments based on specific criteria to support farmers

Potential benefits

1. **Improve farmer livelihoods:** Increasing profit margins of farmers increases their ability to provide and invest in the social and economic well-being of their families and communities
2. **Higher worker wages:** Higher income for farmers strengthens their capacity to pay their workers higher wages and reduces their dependence on family and child labour
3. **Reduce exploitative labour practices:** Higher income for workers reduces their vulnerability to exploitation and coercion
4. **Increase capacity for sustainable farming:** Farmers have higher capacity to invest in the productivity and quality of their coffee practices but equally, invest in a more long-term transition towards regenerative farming practices

Link of recommendation in practice

- International Coffee Organization (2019). Development report 2019

Relevant Stakeholders

- Private actors (buyers, traders, importers)
- Governments of importing countries

RECOMMENDATIONS | TRANSNATIONAL STAKEHOLDERS

Recommendations for maintaining a sustainable coffee production on a regional scale

Shaping the Enabling Environment

To achieve a **sustainable but equally, competitive coffee sector** it is necessary to create an enabling environment through effective incentives and regulations.

We recommend:

- Building **pre-competitive multi-stakeholder partnerships** across the entire German coffee value chain based on the pricing needs of sustainable and fair coffee production (See Malawi Tea, 2020)
- **Stronger regulation** on unfair trading practices
- **Incentivising competition on sustainability performance** rather than cost-efficiency amongst German buyers
- Create a pre-competitive **global coffee fund** based on both public and private investments to help finance direct income payments and climate resilience investments

Potential benefits

1. **Levels the playing field:** A pre-competitive framework ensures that value chain actors can adhere to new living income and living wage standards without sacrificing their profitability or market share
2. **Race to the top:** Competition around sustainability indicators promotes a race to the top in terms of environmental and social performance
3. **Collaboration:** Multi-stakeholder initiatives promote joint-problem solving, innovations and sharing of knowledge to design solutions which benefit all partners

Link of recommendation in practice

- International Coffee Organization (2019). Development report 2019
- Aidenvironment & SÜDWIND Institute (2022). Price in Global Commodity Value Chains
- IDH (2023). An Unprecedented Collaboration: Malawi Tea 2020.

Relevant Stakeholders

- Government of both exporting and importing countries
- EU level governance
- NGOs
- Private actors (buyers, traders, importers)

LIMITATIONS | PROJECT CHALLENGES (1)

Several limitations should guide interpretation of the results

Holistic approach to impact assessment	• Restricted scope of the value chain **not accounting for other steps of coffee production within the country** (*e.g.,* potentially miller, trader, transportation to port) • However, given previous studies on coffee and other commodities by far the **largest impacts occur at the cultivation stage**
Primary data quality at cooperative level	• Due to poor data quality, cooperative data regarding coffee production by cooperatives themselves (typically for the purpose of demonstrating a model farm) has been excluded (*e.g.,* coffee and other crop production, pesticides and fertilizer use). However, primary data regarding electricity, water, and fuel use were considered • This means that the impact of cooperatives is likely underestimated but considering the number of farms represented per cooperative and the small size of model farms, the underestimation is likely small
Survey design	• The choice of wording and questions occasionally yielded contradictory and/or difficult-to-interpret responses • Occasionally, there was the possibility of multiple interpretations of a response • This means that there is the possibility of false positives and the consequent possibility of overestimation – this is particularly relevant for the impact of **forced labour.** However, overestimation is preferred to underestimation according to the Impact Institute's precautionary principle

LIMITATIONS | PROJECT CHALLENGES (2)

Several limitations should guide interpretation of the results

Impact sensitivity to labour intensity	• The use of Full-Time Equivalent (FTE) as a functional unit significantly affects results • The FTE value per kg of coffee reported by the farmers and workers' surveys differs significantly (*i.e.,* 28 FTE and 48 FTE respectively). The weighted average of these two misalignments is used (when the same answer is reported in two surveys)
Vested interests	• Data mismatch between farmers' and workers' surveys can be explained by the willingness of farmers to hide sensitive dynamics (*e.g.,* underpayment, occupational health and safety, child labour, wage, etc.)
Methodological decisions	• Following the processing and analysis of the primary data and number of interview responses affirming to negative social externalities, consultation was established with Laterite to further check accuracy, misinterpretation or translation errors of survey responses. Following this consultation, the most severe type of harassment footprint was removed from the results due to the potential misinterpretation of the survey question

APPENDIX

05

APPENDIX

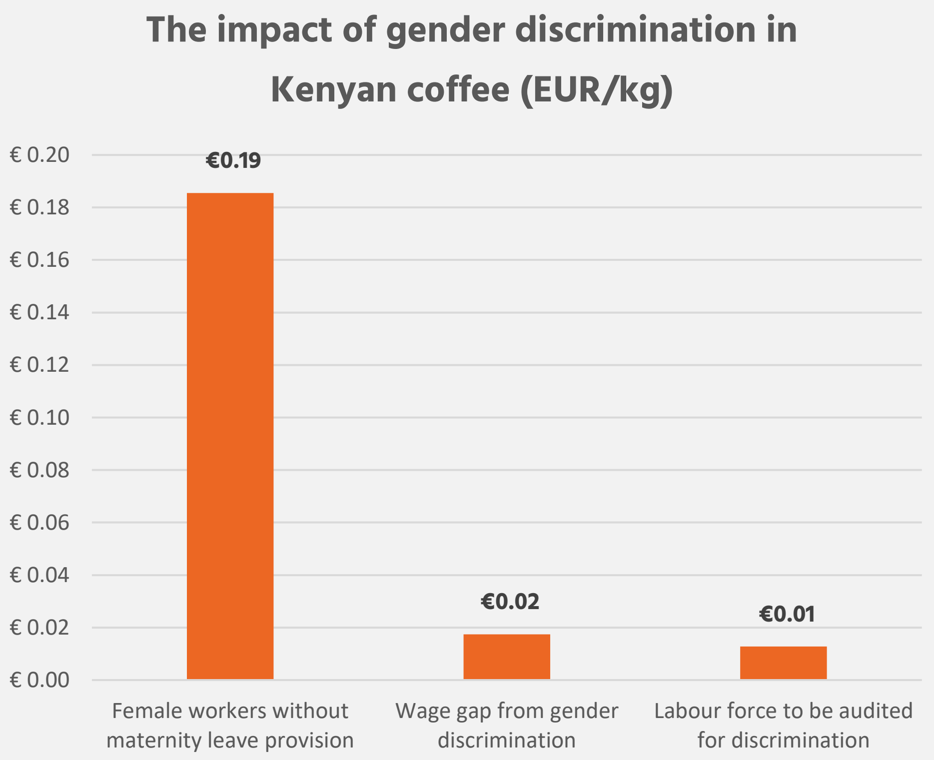
Social Impacts

5.1

APPENDIX 6.1 | GENDER DISCRIMINATION

Gender Discrimination

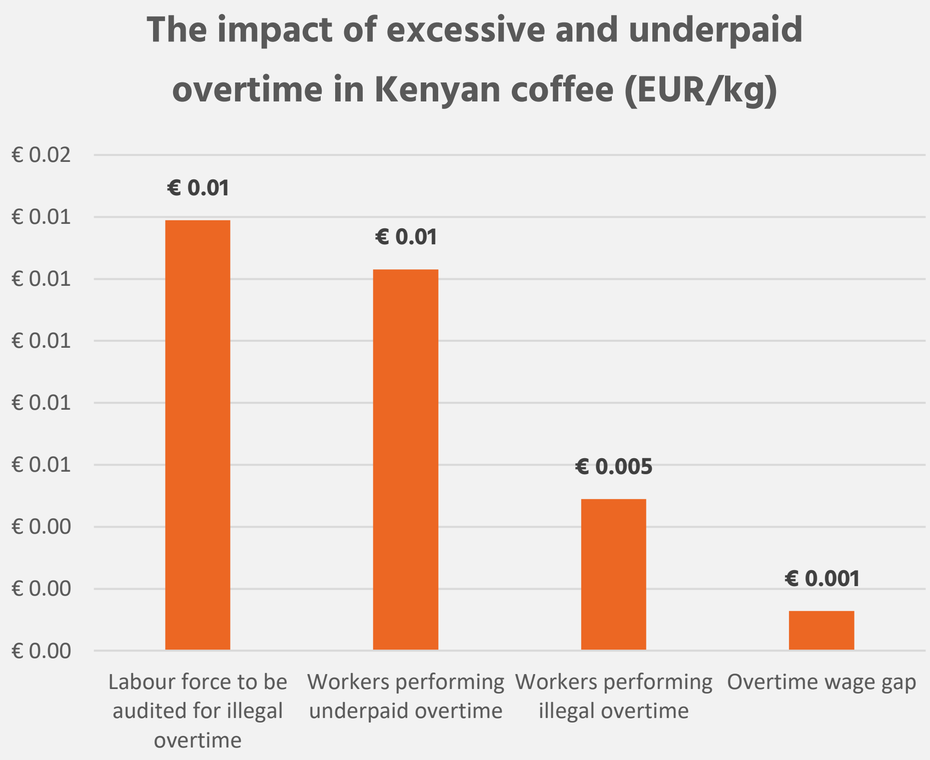
- The impact of gender discrimination amounts to **0,22 EUR/kg**
- This is primarily driven by the **percentage of female workers without maternity leave provision**



APPENDIX 6.1 | EXCESSIVE AND UNDERPAID OVERTIME

Excessive and Underpaid Overtime

- The impact of excessive and underpaid overtime amounts to **0,03 EUR/kg**
- This is primarily driven by the labour force to be audited for illegal overtime
- Just 3 workers out of the 126 respondents (~2%) reported the existence of a third party monitoring their right of association



APPENDIX 6.1 | LACK OF FREEDOM OF ASSOCIATION

Lack of Freedom of Association

- No evidence of lack of freedom of association was reported
- The impact of lack of freedom of association amounts to **0,01 EUR/kg.** This is uniquely driven by the labour force to be audited for denied freedom of association
- Just 2% of workers reported the existence of a third party monitoring their right of association.

APPENDIX

Environmental Impacts

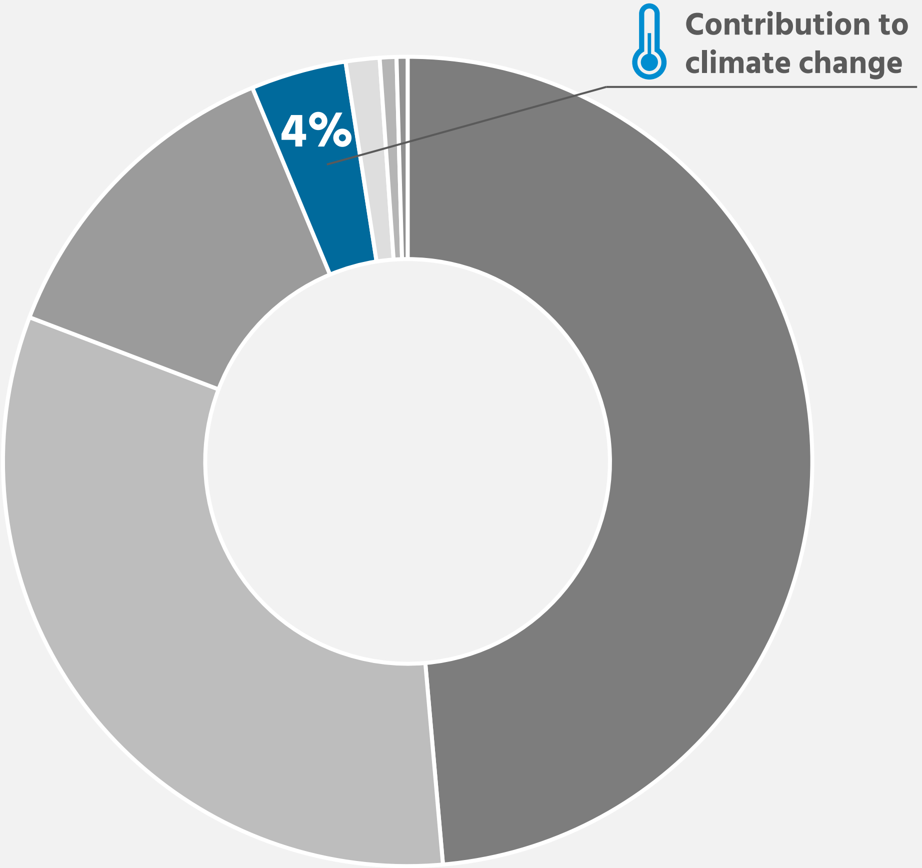
5.2

APPENDIX | CONTRIBUTION TO CLIMATE CHANGE

The impact of contribution to climate change is mainly related to the application of chemical fertilisers during the cultivation process

Contribution to Climate Change

- The impact of contribution to climate change amounts to **0,06 EUR/kg**
- This is largely driven by the release of nitrous oxide from the application of chemical fertilisers during the cultivation process (Solidaridad, True Price, 2019)

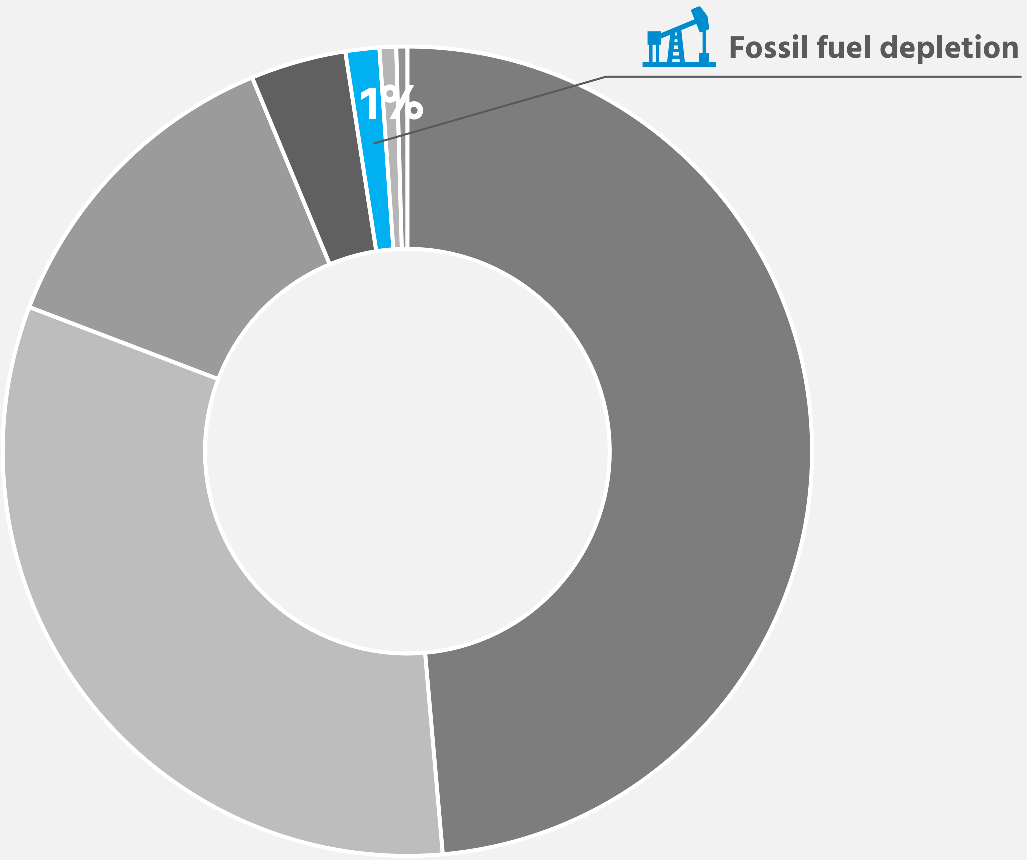


APPENDIX | FOSSIL FUEL DEPLETION

The impact of fossil fuel depletion is relatively low given the labour-intensive nature of coffee cultivation

Fossil Fuel Depletion

- The impact of fossil fuel depletion amounts to **0,02 EUR/kg**
- Given that coffee cultivation is a highly labour-intensive process, most work is conducted manually. Subsequently, little direct fuel usage was reported on the farms
- In addition, most transport was conducted through non-fuel means. Any reported use of fossil fuel-based vehicles was to travel very small distances (1,81 km)

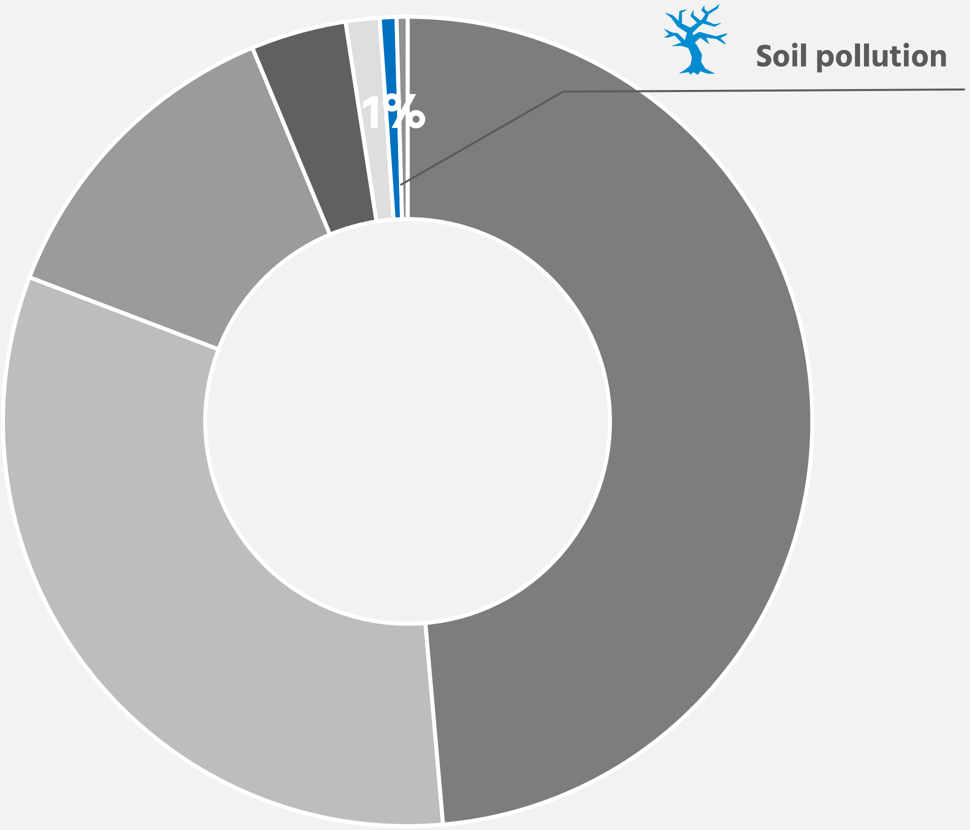


APPENDIX | SOIL POLLUTION

The impact of soil pollution is mainly related to the use of pesticides as well as organic and synthetic fertilisers

Soil Pollution

- The impact of soil pollution amounts to **0,01 EUR/Kg**
- The main contributor is the direct use of pesticides and organic and synthetic fertilizers (herbicides, fungicides, insecticides, rodenticides, *etc.*)
- As the main source of toxic emissions in agriculture, they are modelled by looking at amounts of active ingredients which should be counted as emissions to agricultural soil

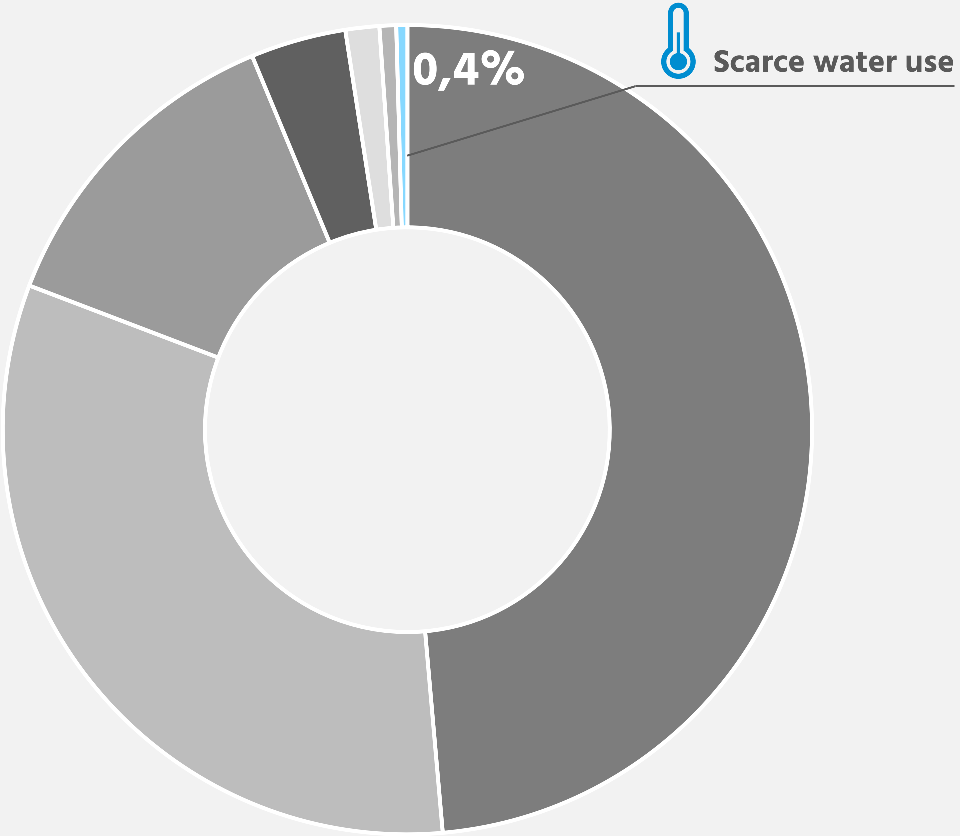


APPENDIX | SCARCE WATER USE

Kenyan cultivation of coffee is highly reliant on rainwater thereby leading to a relatively small scarce water use impact

Scarce Water Use

- Scarce water use, based on the use of blue water, either surface and/or groundwater, amounts to **0,01 EUR/Kg**
- The low impact is justified by the high reliance of Kenyan coffee cultivation on rainwater. In the processing phase of coffee (e.g., washing, drying), the main source of water use reported is surface water. Little use of groundwater from wells is detected
- The impact is estimated on a regional scale, accounting for the water scarcity factors by WWF (2020), which ranks Kenya at the 98/195 position on a global scale of countries suffering water scarcity



APPENDIX

Sample Interview Questions

5.3

APPENDIX | INTERVIEW QUESTIONS EXAMPLE

Information
The True Cost Assessment of Kenyan coffee production is based on qualitative information collected by Laterite via interviews in early 2023 with various value chain stakeholders. The survey was built by the Impact Institute according to data needed for True Cost assessment. All interviewees received the same information before the interview took place, including purpose of the interview, information on the project, and example interview questions (see below). The overview below shows questions posed during the interview by Laterite to the farmers' focus group, investigating the existence of child labour in coffee production.

Question ID		
q1	Has **[name]** attended school during the 2022 calendar year?	1. YES 2. NO
q2	How many hours per week did **[name]** attend school on average during 2022 calendar year? *Question relevant when: q1=1* *Response constrained to: <168*	
q3	Does **[name]** ever get involved in spraying pesticides?	1. YES 2. NO
q4	How many hours per week would **[name]** be working on spraying pesticides on average? *Question relevant when: q3=1* *Response constrained to: .<=80*	
q5	Does **[name]** ever use a machete, tractor or plough?	1. YES 2. NO

APPENDIX

Definition of Impacts in Scope

5.4

APPENDIX | DEFINITIONS OF IMPACTS IN SCOPE (1/3)

Environmental impacts in scope

Contribution to climate change	The rise of the global mean temperature cause by increased emissions of greenhouse gases (GHG) due to anthropogenic activities
Land use	Land use, or land occupation, represents the decreased availability of land for purposes other than the current one, through land occupancy. Land use by agriculture displaces habitats and ecosystems and therefore leads to biodiversity loss and loss of ecosystem services.
Air pollution	Impacts caused by emissions to air other than climate change, including ozone layer depletion, acidification, photochemical oxidant formation, particulate matter formation, nitrogen deposition from emissions to air, terrestrial and aquatic ecotoxicity and human toxicity from toxic emissions to air.
Soil pollution	Eco- and human toxicity caused by emissions to soil or crops. It occurs due to the runoff and discharge of contaminants, for example heavy metals and pesticides
Water pollution	The impact of emissions to water contributing to ecotoxicity and human toxicity, as well as eutrophication of marine and freshwater
Fossil fuel depletion	The reduction in future availability of fossil fuels caused by the primary extraction of fossil fuels linked to fuel use, energy use and to produce other inputs
Scarce water use	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 blue water is scarce.

APPENDIX | DEFINITIONS OF IMPACTS IN SCOPE (2/3)

Social impacts in scope

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. Work can interfere with children's schooling by depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work.
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.
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.
Gender wage gap	The value of the pay gap between female and male employees along the value chain.
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 without prior authorisation, to promote and defend their interests, and to negotiate collectively with other parties.
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.

APPENDIX | DEFINITIONS OF IMPACTS IN SCOPE (3/3)

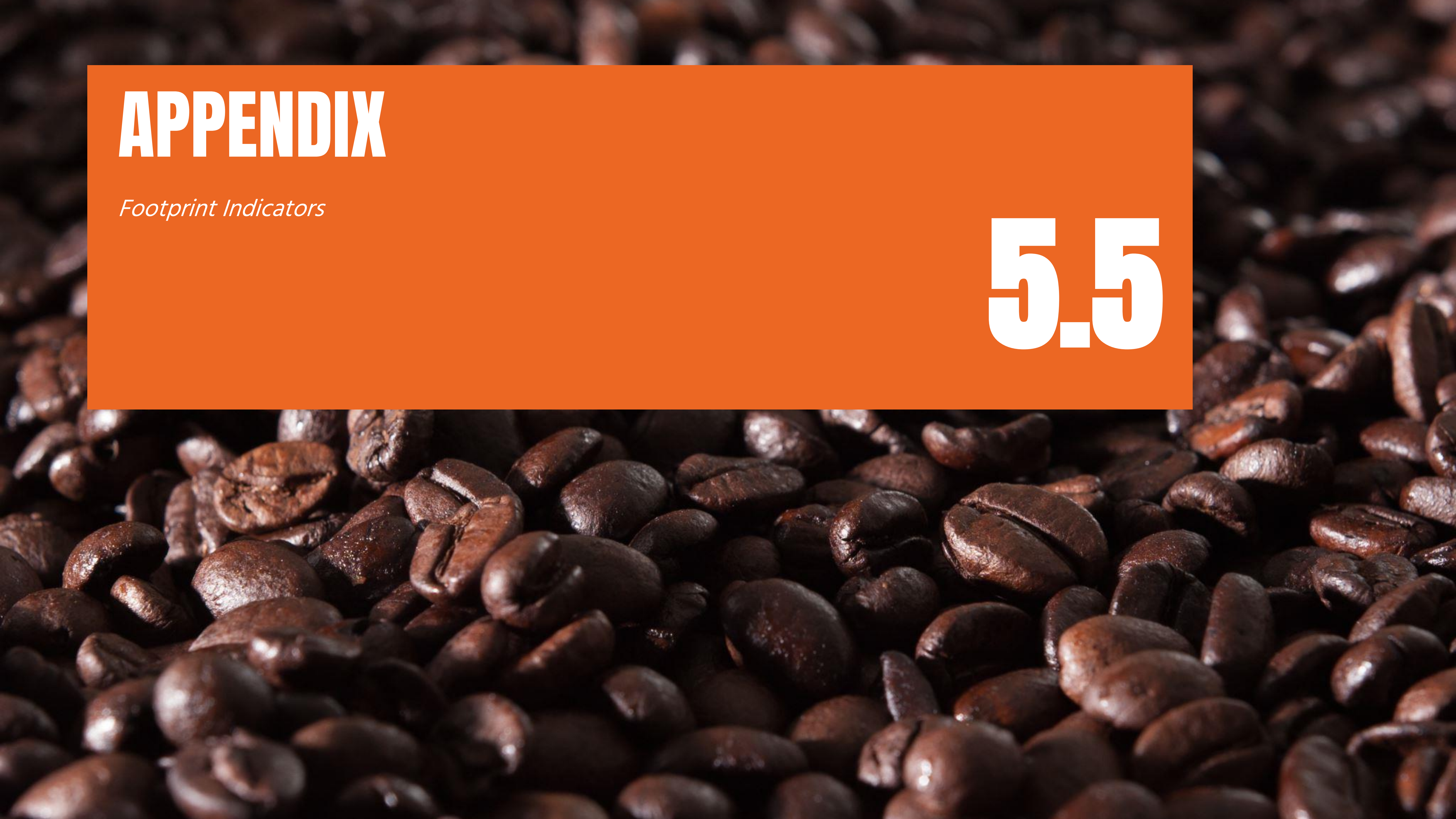
Social impacts in scope

Negative effects on employee health and 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.
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 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.
Underearning	Underearning occurs when the income of self-sufficient actors (e.g., smallholder farmers and entrepreneurs) lies below the living income. Living income is “the net annual income required for a household in a particular place to afford a decent standard of living for all members of that household.”
Underpayment	Underpayment occurs when employees earn less than a living wage: the wage required for a decent standard of living. 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 below a decent living wage.

APPENDIX

Footprint Indicators

5.5



APPENDIX | FOOTPRINT INDICATORS (1/3)

Footprint indicators of environmental impacts in scope

Contribution to climate change	1) Greenhouse gas (GHG) emissions in CO2 equivalents
Land occupation	1) Land use adjusted for biodiversity loss based on intensity and type of human activity.
Air pollution	1) Toxic emissions to air, 2) Ozone layer depleting emission, 3) NH3 emissions, 4) SO2 emissions, 5) PM 2.5 emissions, 6) Nox emissions, 7) NMVOC emissions
Soil pollution	1) Toxic emissions to soil
Water pollution	1) Toxic emissions to water, 2) Freshwater eutrophication, 3) Marine water eutrophication
Fossil fuel depletion	1) Fossil fuel depleted as a result of processes or actions within the value chain.
Scarce water use	1) Scarce water used.

APPENDIX | FOOTPRINT INDICATORS (2/3)

Footprint indicators of social impacts in scope

Child labour	1) Number of underage workers performing hazardous activities (under 15), 2) Number of underage workers performing hazardous activities (under 15) 3) Underage workers that are not attending school, 4) Labour force to be audited for child labour
Excessive and underpaid overtime	1) Workers performing illegal overtime, 2) Workers performing underpaid overtime, 3) Overtime wage gap 4) Labour force to be audited for illegal overtime
Forced labour	1) Forced workers (least severe, financial coercion), 2) Forced workers (medium severe, psychological coercion) 3) Forced workers (most severe, physical coercion) 4) Labour force to be audited for forced labour
Gender wage gap	1) Wages earned by male workers per FTE, 2) Wages earned by female workers per FTE
Lack of freedom of association	1) Labour force to be audited for denied freedom of association
Lack of social security	1) Workers without legal social security, 2) Value of denied paid leave, 3) Labour force to be audited for insufficient social security

APPENDIX | FOOTPRINT INDICATORS (3/3)

Footprint indicators of social impacts in scope

Negative effects on employee health and safety	1) Non- fatal occupational health and safety incidents, 2) Fatal occupational injuries, 3) Work performed in violation of H&S standards, 4) Occupational injuries with breach of H&S standards, 5) Labour force to be audited for H&S
Occurrence of harassment	1) Workers experiencing non-physical harassment (non-sexual), 2) Workers experiencing non-physical harassment (sexual), Workers experiencing physical harassment (non-sexual), 4) Workers experiencing physical harassment (sexual, least severe), Workers experiencing physical harassment (sexual, severe)
Underearning	1) Income earned by farmers per FTE spent on coffee
Underpayment	1) Wage gap of workers earning below minimum wage, 2) Wage gap of workers earning above minimum wage but below decent living wage, 3) Labour force to be audited for insufficient wages

APPENDIX

Monetisation Method

5.6

APPENDIX | MONETISATION FACTOR DEVELOPMENT EXAMPLES

How monetisation factors are derived – two example cases

Contribution to climate change

Greenhouse gas emissions have been shown to change climate patterns globally. **Anthropogenic activities** increasingly disrupt climatological patterns, which have 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.

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).

Child Labour

Child labour severely damages children. The damage includes missed education, 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).

For severe damage to people that is reversible, the **cost of restoration** is included in the remediation cost. 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 considered. 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.

APPENDIX | MONETIZATION FACTORS EXAMPLE

Impact category	Impact	Footprint indicator	Footprint sub-indicator	Monetisation factor (EUR)	Explanation
Environmental impact	**Contribution of climate change**	Greenhouse gas (GHG) emissions		0.163 EUR/kgCO2eq	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 et al., 2009).
Social Impact	**Child labor**	Underage workers	Underage workers below minimum age for light work (12 or 13) involved in non-hazardous economic work	9,910 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 (IPEC & ILO, 2004). The compensation cost expresses the loss of future earnings when a child is prevented from attending school during youth (IPEC & ILO, 2004). 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	2,380 EUR/child FTE	
			Underage workers below minimum age (12 or 13) involved in hazardous work	25,100 EUR/child FTE	
			Workers above minimum age (14 or 15) and below 18 involved in hazardous work	11,000 EUR/FTE	
		Underage workers that are not attending school		22,400 EUR/child	
		Labour force to be audited for child labour		8.55 EUR/FTE	

Link to the methodological report [MONETISATION FACTORS FOR TRUE PRICING - True Price]

REFERENCES

Adams, K., , M., Croft, S., Sadowski, S. (2021). Climate change, trade, and global food security. Stockholm Environment Institute. Available at: https://www.sei.org/wp-content/uploads/2021/09/climate-trade-global-food-security-sei-report.pdf.

Agriculture and Food Authority (AFA) (2022). 'Coffee Year Book 2020/2021' Accessed: Coffee Book Year 2020-21-compressed (3).pdf

AFA (2023). 'Coffee Year Book 2021/2022.' Accessed: https://coffee.agricultureauthority.go.ke/index.php/statistics/reports?download=55:coffee-year-book-2021-2022

Aidenvironment & SÜDWIND Institute (2022). Price in Global Commodity Value Chains. Accessed: https://www.solidaridadnetwork.org/wp-content/uploads/2023/03/Solidaridad_-Price-in-global-commodity-value-chains_FINAL.pdf

Bureau of International Labor Affairs (2018). 'U.S Department's of Labor's 2018 List of Goods Produced by Child Labor or Forced Labor.' Accessed: ListofGoods.pdf (dol.gov)

Bureau of International Labor Affairs (2022). 'Child Labor and Forced Labor Reports: Kenya.' Accessed: Findings on the Worst Forms of Child Labor - Kenya | U.S. Department of Labor (dol.gov)

Coffee Barometer (2023). 'Coffee Barometer Report.' Accessed: coffee_barometer_2023.pdf (coffeebarometer.org)

Dzebo, A. and Adams, K. M. (2022). The coffee supply chain illustrates transboundary climate risks: Insights on governance pathways. Policy brief. Stockholm Environment Institute, Stockholm. Available at: https://www.sei.org/publications/coffee-supply-chain-transboundary-climate-risks-governance/.

Galgani, P., et al. (2023). Monetisation Factors for True Pricing Version 3.0.0. True Price Foundation, Amsterdam. Accessed: https://trueprice.org/monetisation-factors-for-true-pricing/

Galgani, P., Woltjer, G., de Adelhart Toorop, R., & de Groot Ruiz, A. (2021b). Valuation framework for true price assessment of agri-food products. Retrieved from: https://trueprice.org/true-price-resources/

Galgani, P., Woltjer, G., de Adelhart Toorop, R., de Groot Ruiz, A., & Varoucha, E. (2021e). Contribution to Climate Change: Impact-specific module of the true pricing method for agri-food products. (forthcoming)

Galgani, P., Woltjer, G., de Adelhart Toorop, R., Varoucha, E., & Kanidou, D. (2021c). Soil degradation: Impact-specific module of the true pricing method for agri-food products. (forthcoming)

Galgani, P., Woltjer, G., Kanidou, D., A., Varoucha, E., & de Adelhart Toorop, R. (2021d). Air, soil and water pollution: Impact-specific module of the true pricing method for agri-food products. (forthcoming)

Huijbregts, M. A., Steinmann, Z. J., Elshout, P. M., Stam, G., Verones, F., Vieira, M. D. M., ... & van Zelm, R. (2016). ReCiPe 2016: A harmonized life cycle impact assessment method at midpoint and endpoint level. Report I: characterization; RIVM Report 2016-0104. National Institute for Human Health and the Environment, Bilthoven.

REFERENCES

International Coffee Organization (ICO) (2019). Country Coffee Profile: Kenya, 124th Session. Accessed: https://www.ico.org/documents/cy2018-19/icc-124-7e-profile-kenya.pdf.

ICO (2019). Development report 2019. Accessed: https://www.ico.org/documents/cy2021-22/coffee-development-report-2019.pdf

International Labor Rights Fund (2002). 'Violence Against Women In The Workplace In Kenya: Assessment of Workplace Sexual Harassment in the Commercial Agriculture and Textile Manufacturing Sectors in Kenya.' Accessed: Microsoft Word - KenyaReportFinal-5-14.doc (laborrights.org)

Kang, G., Kim, G., Roh, J., Jeon, E. (2022). 'Ammonia Emissions from NPK Fertilizer Production Plants: Emissions Characteristics and Emission Factor Estimation.' International Journal of Environmental Research and Public Health, 19(11): 6703

Koutouleas, A., Waswa, B., Ocimati, A., Notenbaert, A., Rahn, E. (2023). Regenerative Agriculture in Coffee Farming System. Available at: https://cgspace.cgiar.org/bitstream/handle/10568/131410/CoffeeRegAg_Handbook_Kenya.pdf?sequence=1&isAllowed=y

Ministry of Agriculture, Livestock Fisheries and Cooperatives (2022). 'Sexual Exploitation, Abuse and Harassment (SEAH) Prevention and Response Plan.' National Agricultural Value Chain Development Project. Accessed: World Bank Document

Molenaar, J. W., & Adams, F.H. (2022). 'Price in global commodity value chains'. Accessed: Solidaridad_-Price-in-global-commodity-value-chains_FINAL.pdf (solidaridadnetwork.org)

New Foresight (2021). 'Driving improvements in wages and working conditions in the coffee sector.' Accessed: 210908-Wages-and-working-conditions-in-coffee_NewForesight.pdf

OECD (2019). Land cover in countries and regions. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=LAND_COVER

Peixoto, J., Silva, J., Oliveira, M., Alves, R. (2022). 'Sustainability issues along the coffee chain: From the field to the cup.' Comprehensive Reviews in Food Science and Food Safety, 22, *1*, 287-332

Rainforest Alliance (2020). 'How We're Addressing Forced Labor in the Coffee Industry.' Accessed: How We're Addressing Forced Labor in the Coffee Industry | Rainforest Alliance (rainforest-alliance.org)

Rainforest Alliance (2023). 'The Roots of Sexual Violence on Tea Farms.' Accessed: The Roots of Sexual Violence on Tea Farms | Rainforest Alliance (rainforest-alliance.org)

Solidaridad (2022). 'Coffee Sustainability: Kenya's looming crisis amidst the soaring cost of production.' Accessed: Coffee Sustainability: Kenya's Looming Crisis Amidst the Soaring Cost of Production - Solidaridad Network

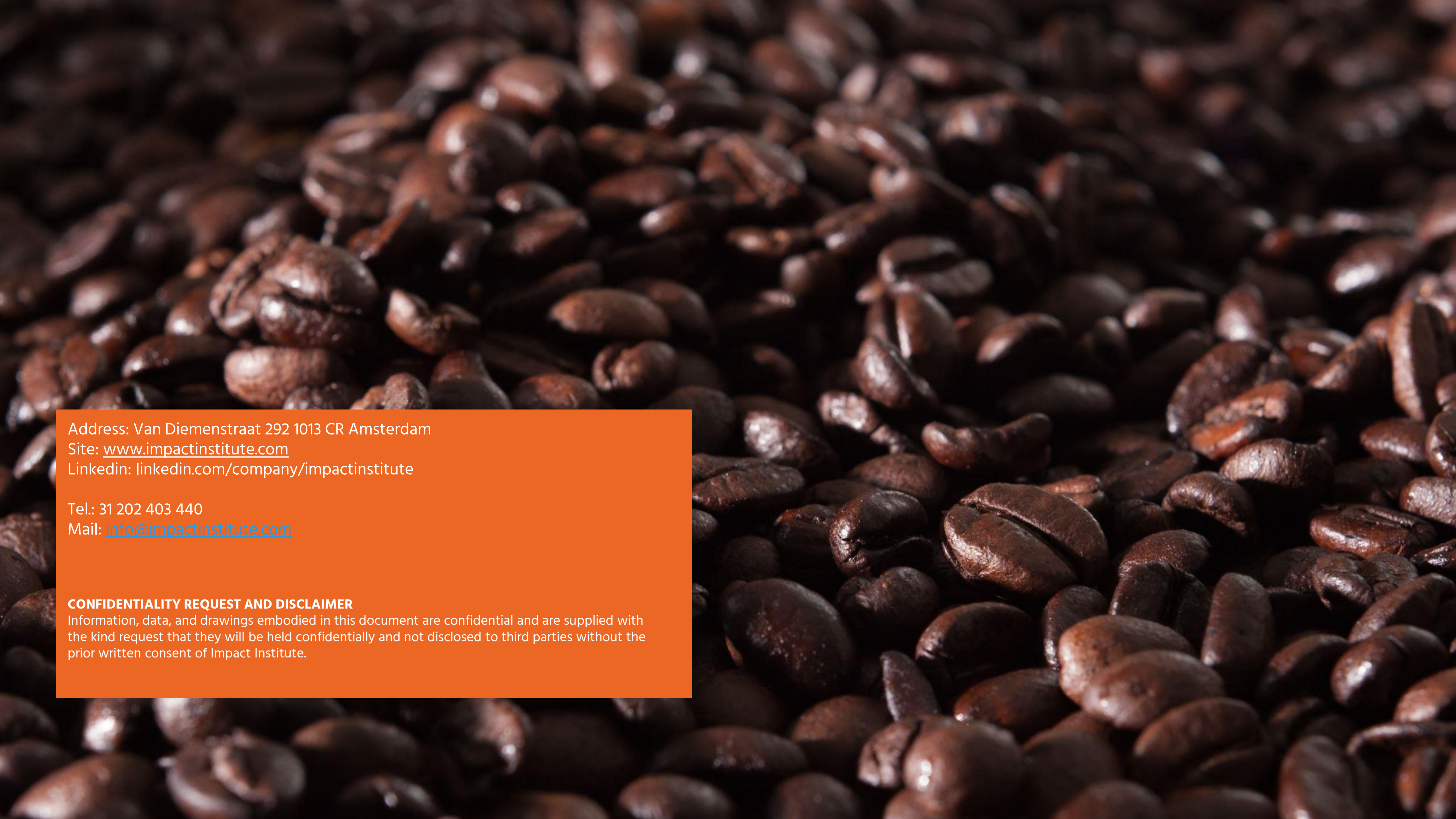
REFERENCES

Task Force for Coffee Living Income (TCLI) (2020). Strategy Handbook: A Fact-Based Exploration of the Living Income Gap to Develop Effective Sourcing and Pricing Strategies that Close the Gap. IDH – the sustainable trade initiative. Accessed: https://www.idhsustainabletrade.com/uploaded/2020/02/Task-Force-for-Coffee-Living-Income-Report_TCLI-Report-Summary.pdf.

Verité (2019). 'Summary of Key Trafficking in Persons Issues in Coffee Production.' Accessed: SSA-Verite-Commodity-Report-Coffee-2019.pdf

Verité (2022). 'Countries Where Coffee is Reportedly Produced with Forced Labor and/or Child Labor.' Accessed: Coffee Commodity Atlas Research Page with a Map (verite.org)

WWF (World Wildlife Fund) (2020). Water Risk Filter 5.0 Methodology Documentation. Available from: https://waterriskfilter.panda.org/en/Explore/DataAndMethod



Address: Van Diemenstraat 292 1013 CR Amsterdam
Site: www.impactinstitute.com
Linkedin: linkedin.com/company/impactinstitute

Tel.: 31 202 403 440
Mail: info@impactinstitute.com