Sustainable agriculture under Fairtrade terms

Prepared by Development International e.V.

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FAIRTRADE

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Acronyms & Abbreviations

AGM	Annual General Meeting
AI	Artificial Intelligence
AIDS	Acquired Immunodeficiency Syndrome
AP(s)	Agroecological Practice(s)
CAP	Common Agricultural Policy
CBD	United Nations Convention on Biological Diversity
CDP	Carbon Disclosure Project
CDSB	Climate Disclosure Standards Board
CEO	Chief Executive Officer
CFS	Committee on World Food Security
CH4	Methane
CLAC	Coordinadora Latinoamérica y del Caribe de pequeños productores y trabajadores del comercio justo
CLMRS	Child Labour Monitoring and Remediation System
CO2	Carbon dioxide
COSA	Committee on Sustainability Assessment
CSA	Climate-Smart Agriculture
DI	Development International e.V.
EC	European Commission
EPA	Environmental Protection Agency (United States)
ER	External Relations (Fairtrade Unit)
EU	European Union
EUR	Euro
FAO	Food and Agriculture Organization of the United Nations
FI	Fairtrade International
FLIRP	Fairtrade Living Income Reference Price
FOB	Free on Board
FSSI	Fairtrade Sustainable Sugarcane Intensification Project
FT	Fairtrade
FTA	Fairtrade Africa
FTE	Full Time Equivalent
GACSA	Global Alliance for Climate-Smart Agriculture
AP(s)	Good Agricultural Practices(s)
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GI	Global Impact (Fairtrade unit)
GIZ	Gesellschaft für Internationale Zusammenarbeit / German Corporation for International Cooperation
GMO(s)	Genetically Modified Organism(s)
GPM	Global Product Manager
GPPP	Global Products, Programmes and Policy (Fairtrade unit)
GRI	Global Reporting Initiative
HIV	Human Immunodeficiency Virus
HL	Hired Labour
HLPE	High Level Panel of Experts on Food Security and Nutrition
HML	Hazardous Materials List (Fairtrade)
HREDD	Human Rights and Environmental Due Diligence
ICS	Internal Control System
ICT	Information Communication Technology
IIED	International Institute for the Environment and Development
IIRC	International Integrated Reporting Council
ILO	International Labour Organization

IMS	Internal Management System
INM	Integrated Nutrient Management
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
ISO	International Organization for Standardization
IT	Information Technology
IUCN	International Union for Conservation of Nature
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MH	Max Havelaar
MPS	More Profitable Sustainability
MRV	Maximum Residue Values
MT	Metric Tonne
N	Nitrogen
N2O	Nitrous Oxide
NAPP	Network of Asia and Pacific Producers
NFO	National Fairtrade Organisation
NGO	Non-Governmental Organisation
NOAA	National Oceanic and Atmospheric Administration
NPK	Nitrogen, Phosphorous and Potassium
NRCS	USDA Natural Resource Conservation Service
OECD	Organisation for Economic Cooperation and Development
OHS	Occupational Health and Safety
PIP	Program For Increasing Productivity
PN(s)	Producer Network(s)
PO(s)	Producer Organisation(s)
PPE	Personal Protective Equipment
RA	Rainforest Alliance
SAFA	Sustainability Assessment of Foods and Agriculture Systems
SAM	Sustainable Agriculture Matrix
SASB	Sustainability Accounting Standards Board
SDG	Sustainable Development Goals
SDGD	Sustainable Development Goals Disclosure
SOC	Soil Organic Carbon
SOM	Soil Organic Matter
SPO(s)	Small-scale Producer Organisation(s)
SRC	Stockholm Resilience Centre
SU	Standards and Pricing Unit (Fairtrade)
TEEB	The Economics of Ecosystems and Biodiversity
TOC	Theory of Change
ToR	Terms of Reference
UK	United Kingdom
UN	United Nations
UNDROP	United Nations Declaration on the Rights of Peasants (officially: United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas)
UNGP(s)	United Nations Guiding Principle(s)
UNSDG	United Nations Sustainable Development Goals
UNTRIP	United Nations Declaration on The Rights of Indigenous Peoples
US	United States of America
USD	United States Dollars
VSS	Voluntary Sustainability Standards
WHO	World Health Organization
YICBMR	Youth-Inclusive Community Based Monitoring and Remediation

I. Acknowledgements

This proposed policy was prepared by Development International e.V. (DI) under the direction of the Fairtrade Steering Committee comprising Matthias Kuhlmann and Juan Pablo Solís Víquez of Fairtrade International and Martin Schüller of Fairtrade Germany.

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The policy positions outlined herein are premised on the advice provided by the Fairtrade key informants Tim Aldred, Javier Aliaga, Alina Amador, Sajindranath Arayath, Monika Berresheim, Silvia Campos, Samantha Coronel, Chloé Curtet, Melanie Dürr, Martin Eichhorn, Wilbert Flinterman, Oksana Forkutsa, Peter Kettler, Christine Knickelbein, Agapeters Kubasu, Matthias Kuhlmann, Ranjith Kumar, Andreas Kratz, Ashok Krishna, Nicolas Lambert, Nicolas Léger, Margret Loeffen, Elena Lunder, Dr. Arisbe Mendoza, Giovanna Michelotto, Dr. Tytti Nahi, Marike de Peña, Aaron Petri, Johnna Phillips, Laurie Roubas, Astra Rushton-Allan, Emilie Sarrazin, Gudrun Schlöpker, Johanna Schmidt, Martin Schüller, Anita Sheth, Juan Pablo Solís Víquez, Naomi Somerville-Large, Alison Streacker, Hung Tran, Charlotte Vernier, and Jon Walker.

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II. Introduction

Over half the world's GDP in 2019, almost US$44 trillion, was generated from industries that depend on nature (Herweijer et al., 2020). Yet in spite of our existential dependence on nature, we are collectively living on ecological overshoot: global current consumption and production levels are 1.7 times higher than the earth's sustainable carrying capacity (Global Footprint Network, 2020). In other words, humanity uses the equivalent of over 1.7 planet earths to provide resources and to absorb waste. The Anthropocene[1] poses an increasing pressure on natural processes that may lead to severe consequences for society (Centre for the Study of Existential Risk, 2021). Global warming and ecosystem collapse are catastrophic risks, to mitigate them a cohesive and global strategy is needed. It is vital that we reach a better and more just equilibrium – not least for the sake of our own, but also for future generations' economic and social viability.

Agriculture is a major contributor to many environmental issues. For example, it is the main driver of land-system change. According to FAO (2020), agricultural land accounts for 38% of global land surface. It is also one of the largest consumers of fresh water, withdrawing approximately 70% of global freshwater (Beare et al., 2017). In addition, agriculture activity, forestry, and other land use are responsible for an estimated 23% of total anthropogenic GHG emissions (IPCC, 2020). Furthermore, it impacts the climate, causes nutrient and chemical pollution, and contributes to adverse changes to the biosphere, ocean acidification, and ozone depletion (Beare et al., 2017).

Unsustainable agricultural practices include the overuse of fertilisers (synthetic/chemical and organic), the permanent application of various pesticides, including herbicides, the depletion of water resources, monoculture farming, as well as the deprivation of carbon from the soils. Such practices *inter alia* lead to soil carbon debt, atmospheric carbon emissions, poison soil and water, and/or eliminate biodiversity. The additional carbon released to the atmosphere contributes towards climate change, which lead to droughts, extreme precipitation events, and temperature increases that can result in outright crop losses (IPCC, 2021). It is also understood that there are a myriad of co-benefits to healthy air and water quality, carbon balance and biodiversity conservation.

Fairtrade intervenes in the agricultural markets and supply chain, aiming

1 Anthropocene is the unofficial name of the current geological age. This epoch is characterized by the influence of human activity on the climate and the environment (Lewis & Maslin, 2015; National Geographic Society, 2019a).

to provide better terms of trade and to empower producers, including small-scale farmers, to "combat poverty, strengthen their position and take control over their lives" (Fairtrade International, n.d.-b). Fairtrade has a legacy of improving livelihoods and fostering social justice, which is embedded in its vision: "a world in which all producers can enjoy secure and sustainable livelihoods, fulfil their potential and decide on their future" (Fairtrade International, n.d.-b).

Yet the aims of achieving decent livelihoods and social justice in agriculture are confronted with increasing exogenous challenges, climate change being one of the most significant. However, there are also other megatrends such as the continued unbalanced power relations in international trade, unsustainable pricing, land degradation, deforestation, biodiversity loss, water stress and COVID-19.

In its latest Global Strategy 2021-2025, Fairtrade commits to achieving decent, sustainable livelihoods in agriculture through, among other things, ensuring fair distribution of the certification benefits (e.g., minimum prices, Fairtrade premium, capacity building, inter alia). This new approach focuses not only on the end goals but also on the means to achieve them. By further recognising the role of women and youth, acknowledging workers' and farmers' rights, building resilience to climate change, growing markets, driving innovation, and leveraging the organisation's influence, strength and reputation, Fairtrade aims for a holistic approach to achieving sustainability. Fairtrade also seeks to advance its work in the environmental domain in tandem with the social and economic spheres of development. Consequently, Fairtrade's prominent "people first" approach is increasingly recognized as an untenable paradigm given its deliberate omission of sustainability parameters that, in turn, have negative feedback effects on the very people that are the object of protection. Fairtrade's Global Strategy 2021-2025 envisions sustainable agriculture at the production level, which in turn contributes to sustainable development in food systems, sustainable livelihoods, and social justice in rural areas.[2]

2 Agriculture contributes to development "as an economic activity as a source of livelihood and as provider and user of environmental services" (FAO, n.d.-i).

In light of the growing concern for the sustainability of agricultural production, including the environmental and social impacts of the agriculture it certifies,[3] Fairtrade-certified producer organisations are indirectly subjected to new regulatory frameworks such as the European Commission's *Proposal for a Directive on corporate sustainability due diligence* (European Commission, 2022).

3 At the UN climate change conference COP26, the need to transition into more sustainable agriculture systems and land use practices was highlighted. Forty-five governments pledged "urgent action and investment to protect nature and shift to more sustainable ways of farming" and 26 nations committed to "change their agricultural policies to become more sustainable and less polluting, and to invest in the science needed for sustainable agriculture and for protecting food supplies against climate change." Furthermore, governments, businesses, farmers and representative of local communities stressed the necessity to make sustainable practices in agriculture "more attractive, accessible and affordable than unsustainable alternatives" (UN Climate Change Conference, 2021).

III. Purpose

With this new sustainability policy, Fairtrade defines how it understands sustainability in social, economic, and environmental terms.

In its 2021-25 Strategy, Fairtrade aims to create a model for sustainable agriculture differentiated by region and product, harvesting the knowledge and best practice across contexts. Moreover, the strategy calls for "building producer resilience and developing a producer-led model for sustainable agriculture that focuses on both adaptation and mitigation."

Through the pursuit of a two-pronged approach: (1) adaptation and producer resilience and (2) sustainability, Fairtrade may future-proof its systems and evolve as a standard-setter and agent of change. Moreover, its Strategy recognises that Fairtrade's context of mostly agricultural production, sustainable development can be best supported by sustainable agriculture.

By systematically and clearly defining its position and expectations with regard to sustainability and specific risks, Fairtrade:

- renders more sustainable agriculture practices by informing relevant Fairtrade standards;
- takes advantage of opportunities by advancing offerings such as carbon removal units;
- is informed by – and be led by – empirical data;
- embraces appropriate technological innovations and applications;
- improves Fairtrade's business development work and relations with economic actors;
- promotes transparency, openness, and cooperation between stakeholders;
- guides decision-making with respect to international policies, corporate sustainability schemes and other corporate responsibility projects, coalitions and external positions;
- aligns with existing and future legislation and partner policies, norms, and expectations;
- remains competitive in the Voluntary Sustainability Standards (VSS) domain;
- guides programmatic and advocacy operations in fields such as producer support, partnership building, strategic alliances for policy influencing and monitoring, evaluation and learning;
- prevents and mitigates harm to producers and farmworkers;
- bridges the gap between social justice and the global climate crisis.

IV. Methodology

1. Scope of policy

The particular policy points featured in this *Sustainable Agriculture Policy under Fairtrade Terms* concern FI's immediate sphere of influence, in particular producers, Producer Organisations (POs) and Producer Networks (PNs).[4]

A. Unit of analysis

a. Current agricultural practices of certified entities (adherents)

The core unit of analysis is the Fairtrade-certified Producer Organisation (PO).[5] Approximately 1,800 POs held a Fairtrade certification in more than 70 countries at the end of 2020. In-scope products include Fairtrade products categorised as globally leading producers – Coffee, Cocoa, Bananas, Sugar, Flowers & Plants (incl. Tea), but also Fruit/Juices, Herbs/Spices (e.g., vanilla beans), Honey, Nuts/Oils (e.g., olive oils), Quinoa, Rice, Vegetables, Wine, and Composites (e.g., chocolate chip cookies). Also in-scope are Fairtrade Carbon Credits, which are governed under the Fairtrade Climate Standard.

b. Standards

Through its standards, Fairtrade provides a mechanism for these producers to seek accountability for meeting a wide range of environmental, economic, and social standards. The rewards are superior terms of trade, improvements in organisational development and capacities, as well as participation in the innovation and diffusion of Agroecological Practices (APs).

4 Although we know that other actors in supply chains (traders, commercial partners, consumers) also play a key role in achieving systemic sustainability, this policy paper focuses on actors directly involved in the production stage of the value chain.

5 Fairtrade has three types of producer settings or type of organisations, each with its own standards: small-scale producers organisations (SPO), hired labour organisations (HL), and contract production (CP).

The in-scope standards comprise:

i. Fairtrade Standard for Small-scale Producer Organisations (SPO) (there are standards for each FI product: Cane Sugar, Cereals, Cocoa, Coffee, Fibre Crops, Fresh Fruits, Herbs, Honey, Nuts, Oilseeds and Oleaginous Fruits, Tea, Vegetables);

ii. Fairtrade Standard for Hired Labour (there are standards for the following FI product: Flowers and plants, fresh fruit, fresh vegetables, herbs, oilseeds and oleaginous fruits, prepared and preserved fruit, Tea);

iii. Fairtrade Climate Standard.

B. Excluded matters

Except where implicated in product price, value distribution, traceability and transparency matters, excluded from this sustainability policy are matters beyond Fairtrade's direct influence or that do not have direct linkages with agriculture:

i. sustainability footprint of licensees, intermediary (supply chain) companies;

ii. sustainability matters outside of its control (e.g. population-level food security beyond the producer-side);

iii. various non-food- standards, specifically: textiles, sports balls, gold & associated precious metals (Flowers and plants were, however, included).[6]

In sum, the policy points focus on immediate levers at Fairtrade's disposal (i.e. its agency vis-a-vis POs, PNs, certification standards, premium types and rates, pilot programmes, etc.).

6 Notably excluding the Fairtrade Standards for Textiles & for Sports Balls as well as the Fairtrade Standard for Gold & associated precious Metals" and the respective operational activities, as neither of which is directly linked to agricultural activities.

2. Data collection

A. Literature review

The desk review that underpinned this report occurred in 4 phases:

1. ***Phase 1*** involved a review of literature on sustainable agriculture external to Fairtrade, including the performance of other actors in the Voluntary Sustainability Standards (VSS) space. The ToR specifies: "The first phase of the study will use desk-based research to analyse literature on sustainable agriculture. Most of this exploration will touch on concepts of sustainable agriculture such as agroecology, permaculture, agroforestry, climate-friendly farming, organic, conservation and agro-industrial agriculture, inter alia.[7]
2. ***Phase 2*** features a gap analysis between (1) the agricultural approaches (as revealed in Phase 1), (2) Fairtrade Strategy 2021-26 (also taking into account Fairtrade's historical responsibility vis-à-vis with POs in producing countries) and (3) the Fairtrade Theory of Change (aligned with the Fairtrade Strategy 2021-25).
3. ***Phase 3*** characterises sustainable agricultural practices applied by members of Fairtrade POs along with economic, sociocultural, and environmental sustainability criteria. To this end, Fairtrade data (e.g. non-compliances, etc.) and information was consulted.[8] The ToR specifies that potential criteria could be e.g.:
    - Ecological/social/cultural/economic dimensions and impacts of conventional, organic and other agricultural practices applied by members of Fairtrade POs;
    - Dependency on external inputs (fertilisers, pesticides, fuel, hired labour) agricultural approaches practised by members of Fairtrade POs;
    - Biodiversity impact of agricultural approaches practices by members of Fairtrade POs;
    - Impact on soil fertility and water retention capacity of agricultural approaches practised by members of Fairtrade POs;

7 Particular attention was be paid to that literature mostly used by commercial partners or applied by producer organisations and international development agencies, such as IUCN, FAO and UNEP. Also taken into account are studies that Fairtrade has commissioned.

8 This analysis was not fully executed due to the lack of access to complete/reliable information regarding the practices that are applied by Fairtrade POs.

- Economic viability of agricultural approaches practised by members of Fairtrade POs, with particular attention to benchmarks of Living Income and Living Wage;
- Cultural importance of agricultural approaches practised by members of Fairtrade POs, namely in indigenous communities."

4. *In **Phase 4***, the Research Team drew on selected "scientific papers to extract key recommendations, principles and structures to serve as foundations for Fairtrade's policy paper on Sustainable Agriculture under Fairtrade terms."

B. Secondary data collection

Secondary data was obtained by consulting statistics offered by Fairtrade, e.g. featured in section *V.1.A Mapping Fairtrade crops*.

C. Primary data collection

Primary data collection was notably conducted through key informant interviews, a Materiality Assessment (see b. Materiality assessment), and two FI-led internal workshops.

a. Key informant interviews/reviewers

Key informant selection

As per the Fairtrade Strategy 2021-25, the charge to develop a "producer-led model for sustainable agriculture" starts with respective Fairtrade units defined as FI (GPPP, Standards and Pricing Unit, GI, External Relations), FLOCERT, National Fairtrade Organisations (NFOs) and Producer Networks (PNs). Thirty-four (34) experts were selected by Fairtrade as respondents for the key informant interviews and/or as reviewers of (portions of) this document. The *Key Informants* are listed in Annex A.

Semi-structured instrument

A semi-structured questionnaire format was applied to review specific risks to Fairtrade and conditioned on the respondent's specific areas of expertise.

b. Materiality assessment

Furthermore, primary data was collected by conducting a double materiality assessment. To carry out the data collection, a survey was designed and answered by FI staff (GPPP, Standards and Pricing Unit, GI, External Relations), FLOCERT, NFOs, PNs and POs (for detailed methodology, see Annex B).

Materiality Assessment Risk

The survey comprised a prioritisation of identified risks for Fairtrade POs.

Respondents

In the materiality assessment survey, respondents were prompted to rate the principal risk through the bidirectional double materiality perspective: impacts to the PO, and impacts caused by PO, based on their knowledge and understanding of the topics and how it relates to Fairtrade POs.

Purpose

The results will inform the relevance of the salient risks as viewed by key stakeholders (producers and field workers, and Fairtrade staff). They will also help Fairtrade tackle the key issues affecting Fairtrade POs and channel resources where they are most needed.

c. Workshops

By conducting two workshops held with Fairtrade staff, a variety of views within the Fairtrade system were further consulted.

3. Data analysis and policy structure

A. Risk framework development

The recognition that productivity cannot be divorced from its physical environment led the Brundtland Commission's 1987 paper *Our Common Future* to observe: *"the 'environment' is where we live; and 'development' is what we all do in attempting to improve our lot within that abode. The two are inseparable."* Further, the Brundtland paper introduced the time dimension to their definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). In applying this definition, one school of thought considers the concept to denote "enough sustainability before it is too late," and another camp that considers the term to signify "more sustainable than before." This policy will seek to meet both of these operational definitions.

In line with the Brundtland definition, and mindful of the chemical reactor that is our planet, in 2009 a group of scientists with earth system, environmental, and climate science backgrounds identified nine "planetary life support systems" essential for human survival. The idea was to assess and measure the extent to which the earth systems would be able to absorb anthropogenic pressures without comprising the living conditions of the human species. Quantifying how far these critical support systems could be pushed to date, and how much further they could be pushed before planetary habitability was threatened would define a "safe space for human development." Nine Planetary Boundaries (PB) were identified, beyond which lie unacceptable environmental degradation and potential tipping points in Earth systems: climate change, change of biosphere integrity, stratospheric ozone depletion, ocean acidification, biogeochemical flows, land system change, freshwater use, atmospheric aerosol loading, and novel entities (Rockström et al., 2009). Key parameters for these earth systems may be defined and measured, and the application of limit values assigned.

In 2016, the Stockholm Resilience Centre's first model was further elaborated. The "wedding cake" illustrates that the base of an anthropocentric approach is the ecocentric level (Stockholm Resilience Centre, 2016).

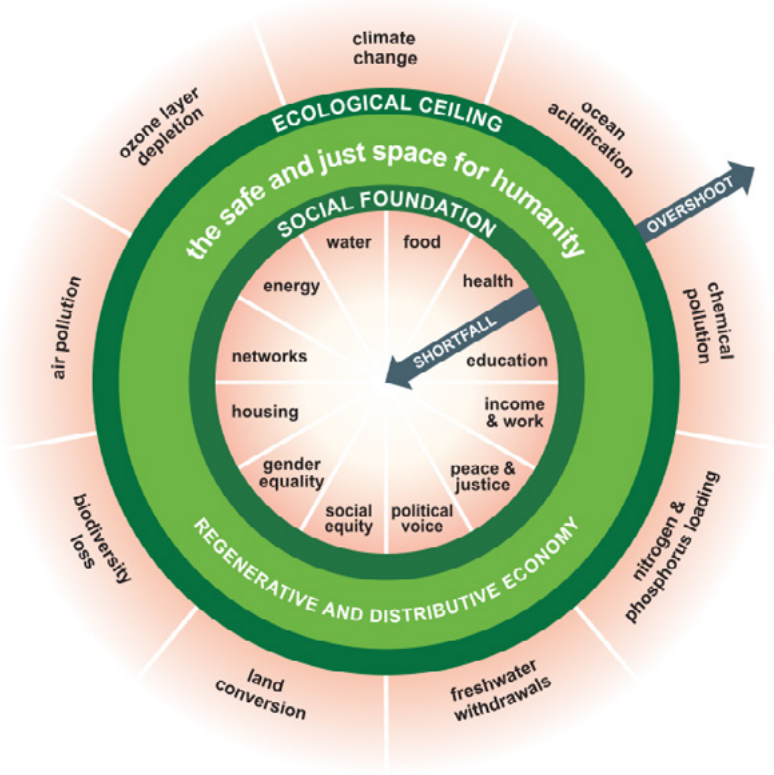
Figure 1: SDG wedding cake

Source: Stockholm Resilience Centre (2016), URL

The new model further connects, directly or indirectly, the SDGs to sustainable and healthy food. For example, hitting the target of halving food waste would also help achieve the SDG 1 target on poverty (less waste equals greater economies for farmers, businesses and families) and SDG 2 target on hunger (less waste, more food), as well as to many other targets regarding life on land and underwater and the climate. However, these advances depend on developments in other spheres: innovation, education, strong institutions and partnerships (Stockholm Resilience Centre, 2016).

In "*Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*", Kate Raworth (2017) builds on the nine planetary boundaries by adding twelve social dimensions, derived from internationally agreed minimum social standards as identified in the 2015 Sustainable Development Goals. Between social and planetary boundaries lies an environmentally safe and socially just space in which humanity can thrive (see Figure 2).

Figure 2: Doughnut of social and planetary boundaries

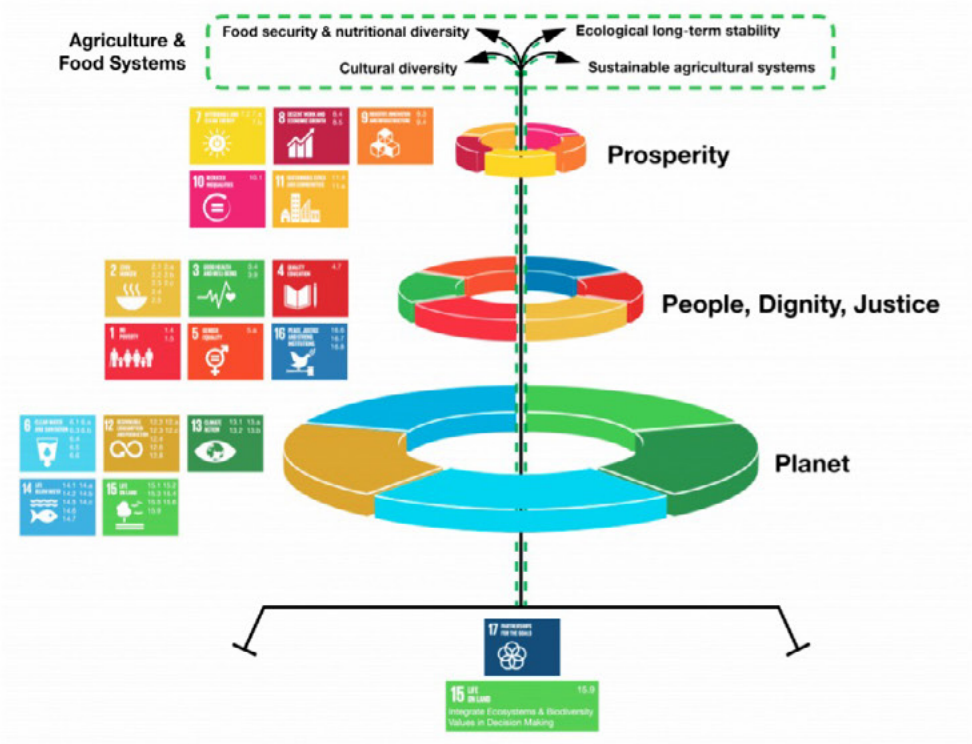


Source: Kate Raworth (2017), URL

"Not meeting the social dimensions means that there is a shortfall: people are left behind by not having access to basic needs and insufficient well-being. But if people's basic needs are met by using more natural resources than our planet can generate, humans are overshooting planetary boundaries in areas such as biodiversity, climate and fresh water" (Messina & van Zanten, 2021). The Doughnut Economics approach identifies the major earth systems that need to be recognised and included in sustainability policies as well as evaluation criteria. Moreover, it seeks to balance the prioritisation of the economic dimension of sustainability with social and environmental ones, and recognises that reaching a safe and just space will lead to prosperity. While the Doughnut Economics framework proposes a set of big-picture indicators to measure the ecological and social boundaries, they are, however, not directly applicable to micro-level activity.

A similar critique of the Planetary Boundaries model was made by The Economics of Ecosystems and Biodiversity (TEEB), which argues that the Stockholm model is a necessary but insufficient condition to achieve social objectives, especially that of SDG 1 on poverty and SDG 10 on reduced inequalities, as well as economic ones such as SDG 8 on good jobs and economic growth. Focusing on the agro-food system, their SDG wedding cake identifies five spheres: Planet, People, Justice, Dignity, and Prosperity (The Economics of Ecosystems and Biodiversity [TEEB], 2019) (Figure 3). In their model, the agriculture and food systems interact through complex multilayer mechanisms with all SDGs. These interactions operate through climate systems, markets and policies, implying potential trade-offs, compromises, and managing risks among goals.

Figure 3: TEEB wedding cake



Source: TEEB (2019), URL

Adapted for the agricultural setting and aligned with international agreements, multilateral guidelines and global targets such as the SDGs, the framework of the Committee on Sustainability Assessment (COSA) was further consulted for the project (COSA, n.d.-a). Disaggregated COSA indicators were matched and grouped with each domain of the doughnut.

The Sustainable Agriculture Matrix (SAM) is presented by Zhang et al. (2021), which *inter alia* offers country-level indicators to measure sustainable agriculture. The matrix also defines sustainability thresholds (green and red) for each dimension. The indicators and thresholds allow to track and assess performances and evolution over time. Even though macro-level metrics are offered, they serve as example thresholds. Each SAM domain was included in this framework.

In order to develop a risk framework tailored to Fairtrade's sustainability performance, this paper drew on the domains offered by all four frameworks: Planetary Boundaries, Doughnut Economics, COSA, and SAM.

B. Primary data analysis

Qualitative data analysis was conducted, triangulating the perspectives between sources. Where item divergence was identified in key informant data, the majority view was relayed in the policy.

C. Policy development and structure

Each of the policy positions is based on the empirical literature, developed by and with the key informants during the interviews and review period. Feedback was furthermore received in the two workshops (held on December 7, 2021 and March 9, 2022), and by peer reviewers. DI's contribution involved analysing inputs, identifying convergence and divergence, and relating inputs to the relevant academic state-of-the art discourse.

The suggested **policy positions** for each sustainability risk are structured as follows:

a. Introduction to the risk	Context of the risk.
b. Relevance for Fairtrade	Reasons to why the sustainability risk is relevant to sustainable agriculture under Fairtrade terms.
c. Links to Fairtrade Strategy	Linkages to the new Fairtrade Strategy 2021-2026.
d. Underlying agroecological principle(s)	The leading agroecological principle or rules under which the sustainable issue lies.
e. Policy positions	Mainstream and subjacent policies -- in the form of rules, principles or guidelines – which inform the basis for making decisions.
f. Definition of success	Ambitions or objectives Fairtrade may pursue to accomplish its general policies related to the risk (and also demonstrate that the organisation is addressing the particular risk), and quantifiable metrics and KPIs to measure, assess and monitor the organisations performance on the policies. By utilising metrics, an organisation can take corrective actions when its performance approaches or deviates from the objectives. Metrics serve as indicators to know when the organisation needs to align its processes to achieve objectives, change the approach taken or revise its performance.
g. Linkages to other sustainability risks or challenges	Linkages to other risk(s), reflecting that the sustainability areas may have an impact on each other.

The recommended **activities/actions** are grouped by type and the structure is:

a. Link to risk areas	Linkage to the other policy areas impacted.
b. Description if the action	Suggested actions or interventions Fairtrade may make in order to achieve their goals, target or desired outcome defined with regard to the selected risks and policy positions.
c. Objective(s)	Objectives Fairtrade may pursue to accomplish the activity concerned.
d. Definition of success	Quantifiable metrics and KPIs to measure, assess and monitor the organisation performance on the activities / actions.

In addition, Annex D contains supplementary information per risk used to inform and develop the final suggested policy positions. This empirical basis included the following.

1. Definition(s)	Terminological clarity is imperative in order to understand the problems and their root causes, such that policies and strategies can be developed and lead to the systemic changes which are required.
2. Background	Provides context for the risk and why they are relevant to sustainable agriculture under Fairtrade terms.
3. Linkages between social, economic and environmental outcomes	Linkages are necessary to show the interconnections among the risks, helping to analyse and understand the possible trade-offs and synergies that might arise.
4. Leading framework(s)/ standard(s)/regulation	Frameworks provide a structure, a set of principles, rules, ideas or beliefs that serve as guidance to treat a topic. It can outline what should be known, done or obey. It defines requirements and can set practical and consistent standards. The relevant frameworks for each of the risks could be, among others, laws, Fairtrade standards, international treaties and national/global frameworks.
5. (Potential) countermeasure(s)	Potential or existing actions/measures to mitigate, offset or eliminate the risks. It could also entail adaptation strategies to face the risk. The list of sustainable agricultural practices provided are tentative countermeasures as is crucial to mention that not all sustainable practices may be applicable to the universe of farms, crops and producer (a pre-analysis of the farm conditions would need to be undertaken in order to determine the applicability).
6. Other relevant metric(s)	Other metrics provided by key informants and relevant literature that could be useful to assess and monitor the organisation performance on the sustainable risks.
7. Recommendation (s)/ amendment(s)	Complementary suggested strategies or interventions Fairtrade may pursue or consider in order to achieve goals, target or outcomes with regard to the selected risks.
8. Credible verification/ Impact assessments	Credible verification could e.g. occur through a compliance verification / conformity assessment / alignment assessment / adherence to standard and in practical terms involve objective measurement through the audits of certification standards, satellite-based land use analysis, etc.

D. Sustainable agriculture approaches analysis

A comparative analysis of the fourteen different approaches to sustainable agriculture identified in phase 1 of the literature review was performed. Desk research on approaches to sustainable agriculture was conducted (see Annex F), using as a primary source the IUCN's latest compilation paper, "Approaches to sustainable agriculture: exploring the pathways towards the future of farming" (Oberč & Arroyo Schnell, 2020).

The analysis consisted of assessing the approaches' principles, and identifying the explicit/implicit mention of the three pillars of sustainability among them.[9] The objective was to identify inclinations in one or more of the three pillars: economic, social and environmental, to evaluate if the approaches align in principles with Fairtrade mission, vision, strategy and understanding of sustainability.

The selection of principles is necessary given that sustainable agriculture is not a universal fixed set of practices. On the contrary, it is dynamic, context-specific, and may encompass a variable and emergent set of practices. On the other hand, principles can be generalized across this diversity of practices and principles and can be expanded in terms of applicability. This means that principles can be observed and applied in different parts of the world, regions, types of soils, and crops. In addition, practices are better understood under a framework or a set of principles that set an ultimate goal and allow a deeper analysis of potential trade-offs and synergies that could potentially affect the purpose of the approach.

9 For example, an explicit allusion of the economic domain would be making a reference in the principles to increase yields or economic diversification. If the term is too broad – for example "diversification" – we include in the table the description of 'not explicit'. In the environmental domain, the expression 'partial' was used to indicate that the approach is focus in one aspect of environmental elements of sustainability.

4. Research ethics

A. Respondent consent

Interviews were carried out with the explicit consent of the respondent prior to the interview. Only adults (18 years and older) were interviewed as part of this study. The goal of the study was clearly explained, as well as the fact that the data would be kept confidential.

B. Confidentiality

The collected data and other correspondence were kept secure and confidential by the researchers. The respect of the respondents' confidentiality was emphasised at the beginning of data collection.

5. Project Team

The lead researchers comprised Eliana González Torres and Dr. Chris N. Bayer. Substantive input was provided by Michiel Hendriksz, Peter Navratil, Janica Anderzén, Andrew Gerlicz, and Dr. Alejandra Guzmán Luna.

6. Peer review

Peer review was performed by experts in their respective fields. The experts named in Annex C inputted and/or critiqued this policy. Participation in the peer-review does, however, *not* translate to endorsement of this policy.

7. Limitations

The methods employed in this policy development allow it to reach its research objectives. However, particular caveats must be highlighted. The design employed to obtain primary data is explicitly not representative of a particular cohort or stakeholder group. Purposive selection of key informants was employed so as to allow the policy recommendations to be based on expert opinion. Nevertheless, as the suggested policy is grounded in empirical literature, and reliant on the perception of experts within the Fairtrade system, it is useful for its intended purposes.

V. Findings

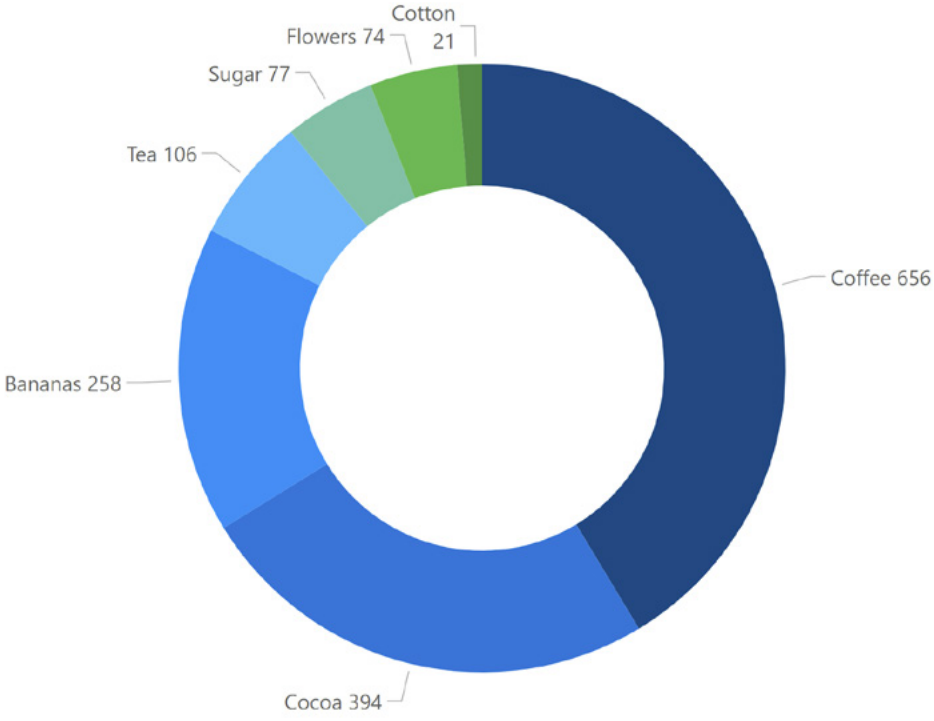
1. Fairtrade background

A. Mapping Fairtrade crops

The current research will focus on Fairtrade crops tiers one and two: Bananas, Cocoa, Coffee, Flowers, Sugar, Tea, Cotton, Fruit and Juices, Herbs and Species, Honey, Nuts and Oils, Quinoa, Rice and Vegetables. However, the first seven are the top relevant commodities regarding the number of POs, hectares cultivated, and production. Based on data available for 2020, the following portfolio profile of Fairtrade crops was identified (Fairtrade International, 2020).

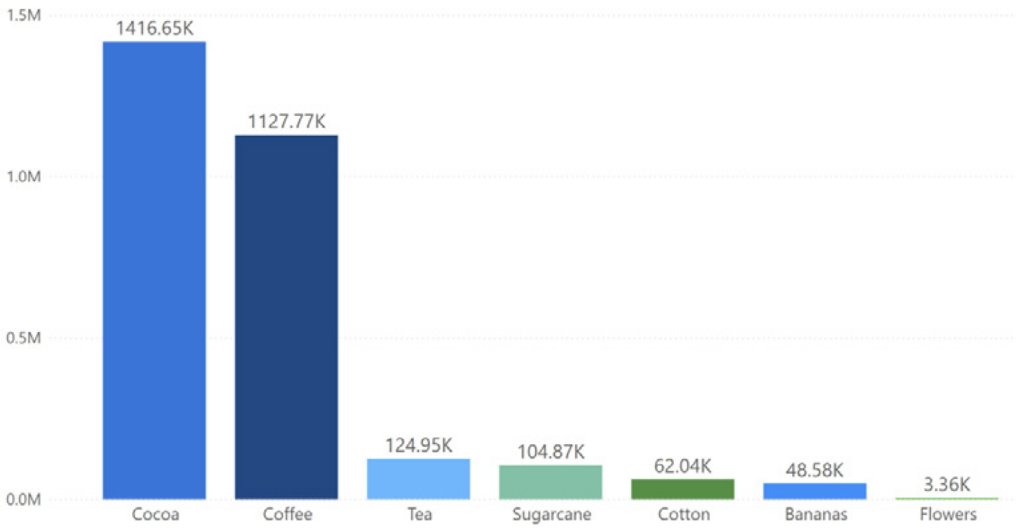
In terms of the number of POs, Coffee is the most relevant crop (see Figure 4). In 2020, Fairtrade Coffee was produced in 32 countries, with a total number of 656 POs (41,36%). The second crop was Cocoa (24,84%) with 394 POs and 22 producing countries, the third was Bananas (16,27%) with 258 POs and 16 countries, the fourth was Tea (6,68%) with 106 POs, and the last three were Sugar (4.85%) with 77 POs, Flowers (4.67%) with 74 POs, and Cotton with (1,31%) 21 POs.

Figure 4: Top seven crops – Number of producer organisations per crop in 2020



In terms of landmass under Fairtrade certification, Figure 5 depicts that the primary crop is Cocoa, as it accounts for 49.05% of the total area Fairtrade certified or 1.41M ha in 2020. The second crop was Coffee (39.05%), the third was Tea (4.33%), the fourth and fifth, Sugar (3.68%) and Cotton (2.15%), respectively, and the last Flowers (0.12%). However, a distinct analysis could be made for Flowers, as production is mostly done in greenhouses, hectares (ha.) do not accurately reflect the relative importance of Flowers on the Fairtrade portfolio.

Figure 5: Top seven crops – Area under certification per crop in 2020



In terms of area under certification, all top seven crops, except for Cocoa and Coffee, remained steady, showing minor variations between the years selected (see Figure 6). Cocoa increased its certification area significantly over the last five years, almost doubling in 2020 the area certified in 2016 (it went from 722K ha to 1.4M ha). Among the other crops, Coffee is the second crop to show a more pronounced variation between the years 2016 and 2017, where hectares certified decreased from 1M in 2016 to 938K in 2017, primarily due to the impact of Coffee rust. However, since 2017 the Coffee certified area has been growing.

Figure 7 shows that in terms of premium generated for the year 2020, Coffee comes first, Cocoa second and Bananas third. These three commodities plus Sugarcane are the ones with more variation between the years 2016 and 2020. Coffee always remained in the first position but with a decline in the year 2018, although the loss was recovered in 2019 and slightly increased in 2020. Cocoa, between the years 2018 and 2020, exhibited a decreasing trend. On the contrary, Banana premiums increased in those same years. In the case of Sugar, the commodity experienced a slight decrease between the years 2019 and 2020. The other crops remained rather steady over the period.

Figure 6: Top seven crops – Area under certification per crop (2016-2020)

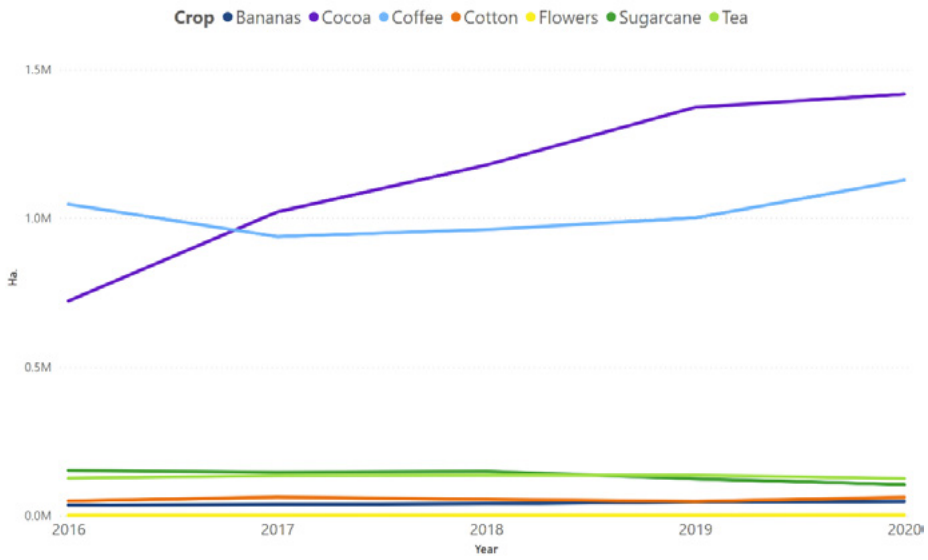
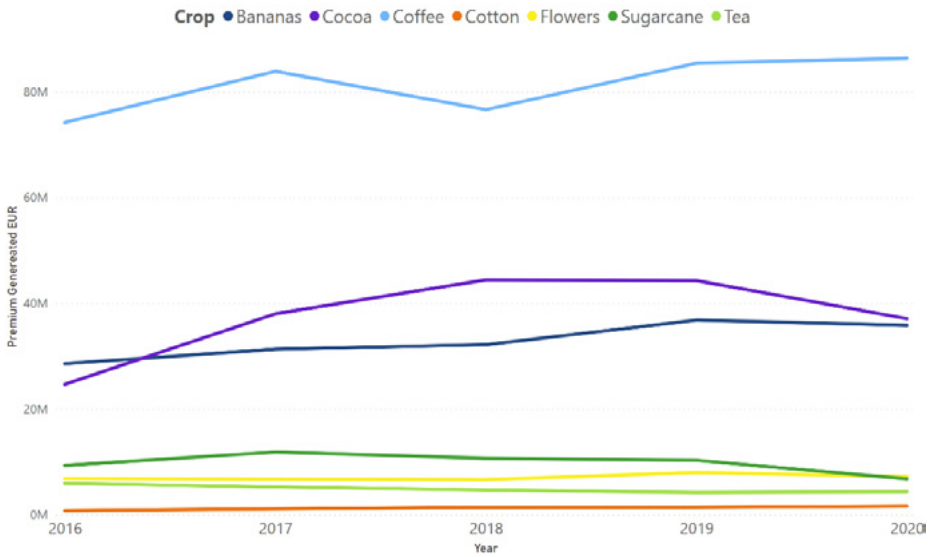
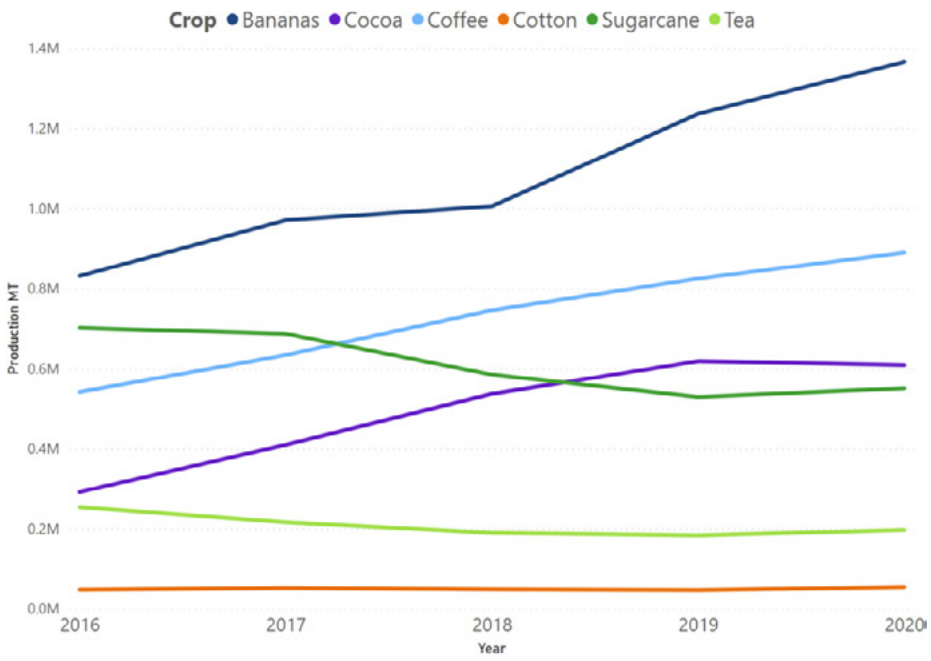


Figure 7: Top seven crops – Premium in EUR evolution generated per crop (2016-2020)



Concerning production, Flowers were left out as the unit of measurement (stems) did not allow a comparison between crops (see Figure 8). The commodity produced the most in 2019 was Bananas, second Coffee, third Cocoa, fourth Sugar, fifth Tea and sixth Cotton. Bananas, Coffee and Cocoa show a clear upward trend, Tea and Coffee remained the same, but Sugar production declined.

Figure 8: Top seven crops (ex. Flowers) – Evolution in production 2016-2020 (in MT)



In terms of Fairtrade sales (see Figure 9), Bananas outperformed by far the other commodities during the period analysed, though Flowers were not considered due to the same reasons explained above. The second commodity was Coffee, followed by Cocoa, Sugar, Cotton, and Tea. Interestingly, comparing the evolution of sales with the changes in the area under certification (see Figure 6), it seems that they are not evolving similarly (e.g, area in cocoa a coffee is growing rapidly, but Fairtrade sales for these two commodities are not matching the growth, Fairtrade cocoa sales are even falling).

Figure 10 shows that organic sales volumes of Cotton (lint), Bananas and Coffee account for more than 50% of the total volumes sold on Fairtrade terms. However, while Bananas and Coffee volume sales grew considerably between 2019-2020, Cotton sales dropped from 71% in 2019 to 56% in 2020. Sugar and Tea shared a positive trend between the years 2016-2019, but in the last annual period, while organic Tea sales in volumes kept growing, Sugar sales dropped. Last, after four years of a downward trend, Cocoa showed substantial growth (10 point rise) between 2019-2020, surpassing 2016 levels.

Figure 9: Top seven crops (ex. Flowers) – Evolution in Fairtrade Sales 2016-2020 (in MT)

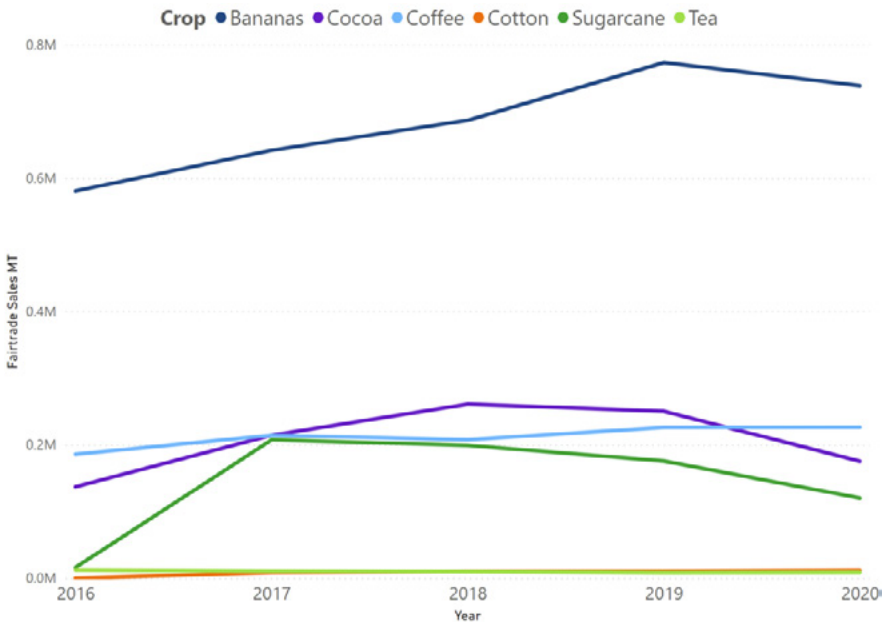
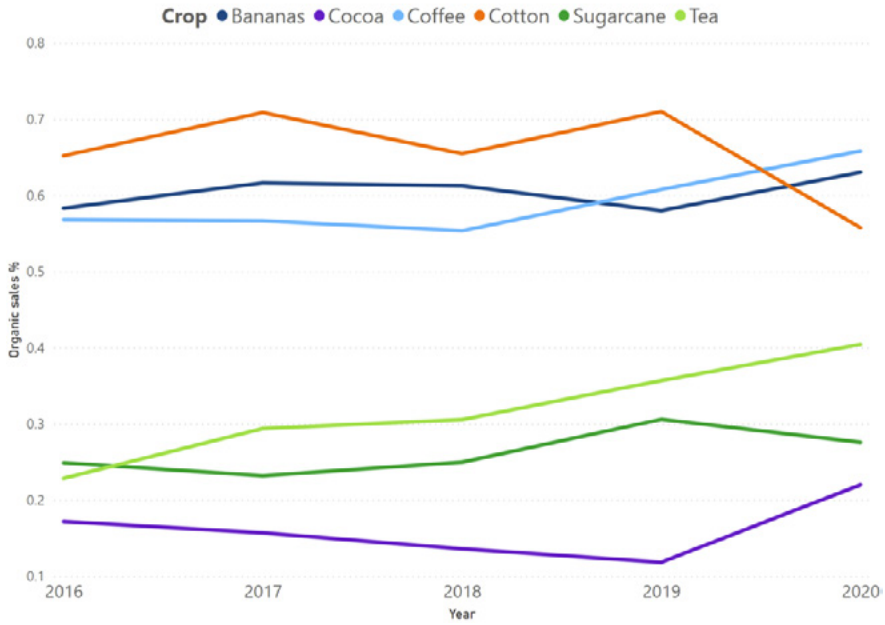
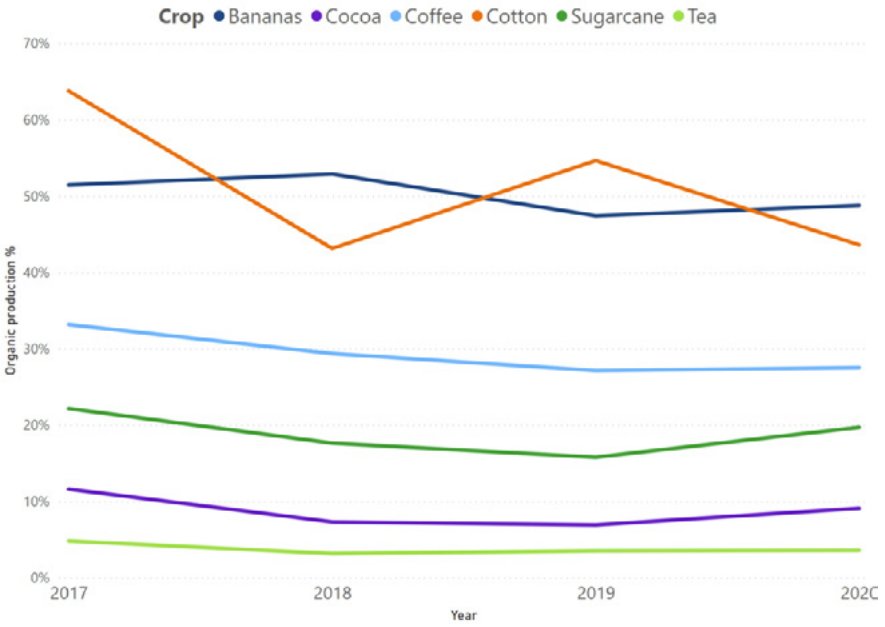


Figure 10: Top seven crops (excl. Flowers) – Evolution in % of Fairtrade Organic Sales 2016-2019 (in MT)



Last, Figure 11 features organic production. The chart shows that Bananas and Cotton (seeds) are the commodities with more organic production in terms of volume (MT), both around 50%.

Figure 11: Top seven crops (excl. Flowers) – Evolution in % of Fairtrade Organic Production 2016-2020 (in MT)



For more information on each of the crops, see Annex E.

B. Prior Fairtrade positions on sustainable agriculture

After analysing the internal documents provided and research on official online publications, FI has not yet taken a formal and public position on sustainable agriculture and what it entails for the Fairtrade system. However, the term and elements of sustainable agriculture have been incorporated in some relevant documents (public and internal), such as the Fairtrade Standards, the Fairtrade Global Strategy 2021-2025, the new Fairtrade Theory of Change, Fairtrade position on Climate-Smart Agriculture, and other positions such as CLACs "Fairtrade Youth Demand Urgent Climate Actions." Moreover, FI, NFOs, PNs and POs have worked on and promoted projects that incorporate elements of (or are closely related to) sustainable agriculture over the years.

a. Fairtrade standards

The most direct reference to the term "sustainable agriculture" can be found in the latest revised version of the Fairtrade Standard for Coffee, where adopting sustainable agricultural practices appears as a core requirement. There are also references to agroecology and organic agriculture10 in this standard. In fact, Fairtrade promotes organic production by offering an organic differential for organically grown products. However, Fairtrade standards do not require organic certification, as not all producers are able to switch to organic production for a variety of reasons. Also, Fairtrade does not impose organic agriculture on producers who may not see a benefit in doing so.11

The Fairtrade Standard for Cocoa, for example, also includes terms related to sustainable agriculture, such as sustainable production, farm sustainability, and the adoption of Good Agricultural Practices.12 However, the standard did not provide a definition for the terms.

Similarly, the general standards for SPOs and HL, as well as the Climate Standards, also include the terms sustainable production systems and sustainable production practices, and the word sustainability is frequently used and linked to various aspects of sustainable agriculture and sustainable development. The HL standard also makes a point that improving soil fertility improves sustainability in agriculture.

10 Agroecology and organic farming are considered approaches to achieving sustainable agriculture (see Annex F).

11 As coffee requires large amounts of N to produce, the use of mineral sources is essentially required. Using only organic sources means either low yields or nutrient imbalances in the soil. On the other hand, since the cocoa tree needs little N, organic farming in cocoa is possible.

12 For the definition of 'agroecological practises' please see section V.2.D. Defining agroecological practices.

b. Fairtrade Global Strategy

The Fairtrade Global Strategy 2021-2025[13] explicitly engages *sustainability* and, as a part of it, sustainable agriculture. In particular, it calls for developing sustainable agriculture models differentiated by region and by-products and highlights the importance of sustainable agriculture's capacity to adapt and mitigate climate change and achieve resilience. Furthermore, as a high-level aspiration, Fairtrade set the goal for Fairtrade farmers and workers to apply APs and/or environmentally sustainable practices and implement risk mitigation and climate adaptation plans. This internal document indicates a clear position to move towards more sustainable agriculture systems and calls for a definition agreed across Fairtrade systems of what entails sustainable agriculture under Fairtrade terms.

An associated document containing the KPIs for the global monitoring system for the new strategy includes a metric on good agroecological practices. This document also envisions that the high-level aspirations mentioned in the strategy should be accomplished by 2030.[14] Despite explicit references to agroecology and APs, the terms were not defined in any of the documents.

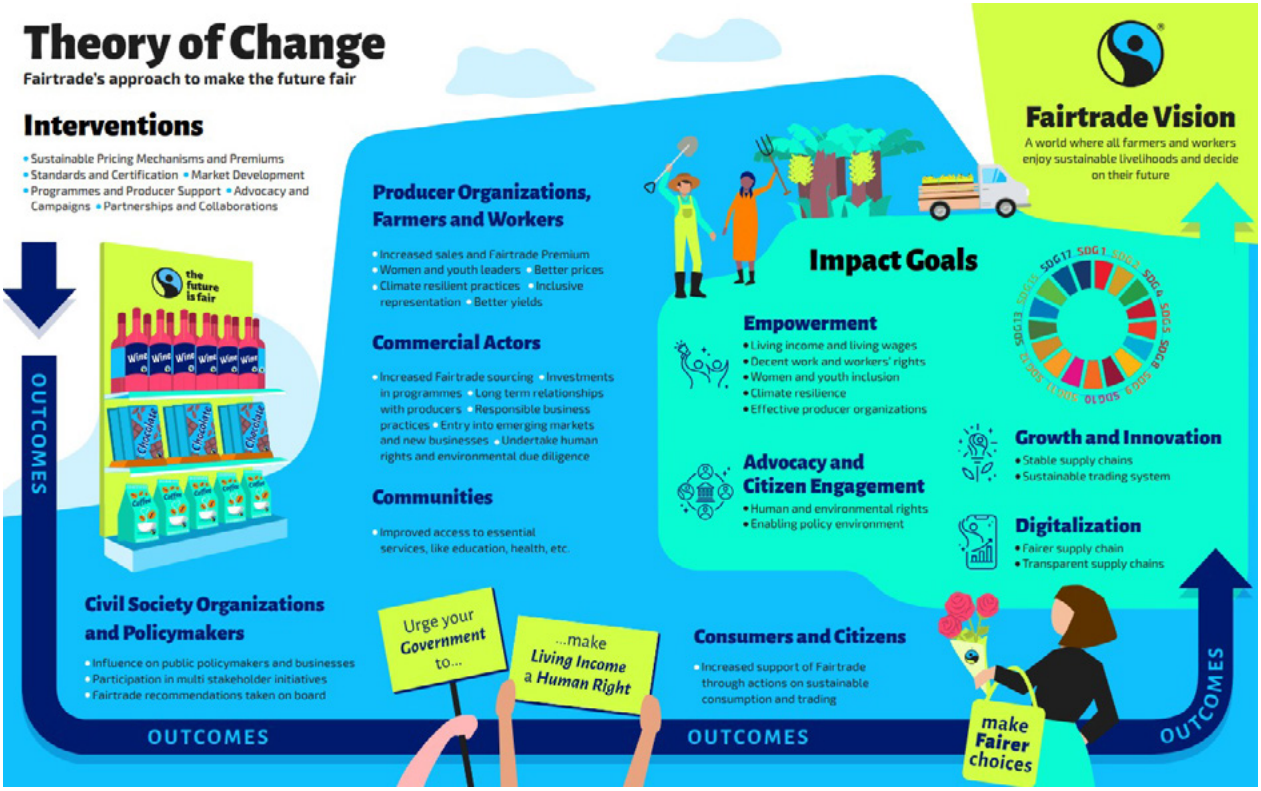
c. Fairtrade Theory of Change

The new revised 2021 Fairtrade Theory of Change outlines Fairtrade's approach to fulfil its vision of a fairer future where all producers achieve sustainable and meaningful livelihoods (see Figure 12). Although no explicit reference is made to the term *sustainable agriculture*, the linkages are clear as the outcomes, and the interventions Fairtrade promotes are interconnected to what sustainable agriculture entails in the social, economic, and environmental domains. Fairtrade impact goals include empowerment, advocacy and citizen engagement, growth and innovation, as well as digitalisation.

13 A complete and internal document of Fairtrade Global Strategy 2021-2025 was provided to perform this analysis.

14 KPI: # and % of Producer Organizations that apply good agricultural practices (APs) and/or good agro-ecological environmentally sustainable practices and/or implement risk mitigation and climate adaption plans.

Figure 12: Fairtrade Theory of Change 2021



d. Other positions (internal and public)

i. Climate-Smart agriculture (CSA)

Fairtrade took an internal position on CSA15 mindful of the controversy of the term (see Annex F). The document resolves the following regarding CSA and Fairtrade:

a. FI is not a member and should not become a member of the Global Alliance for Climate-Smart Agriculture (GACSA), as it was concluded that CSA did not align with Fairtrade Climate Change programme, strategy and standards;

b. In the case of joining partnerships to achieve strategic goals, its foundation should not be based on CSA;

c. Fairtrade and its member will assess case-by-case whether to participate or not in programmes that are labelled as CSA or reference the term;

d. Fairtrade can and should nonetheless take part in meetings/events where CSA is discussed in order to expand its knowledge, and as long as they are not publicly associated with the term.

15 This document is only for internal use.

ii. Agroecology

CLAC and Fairtrade in 2021 released a policy position on youth, "Fairtrade Youth Demand Urgent Climate Actions," where climate action and sustainable food development are promoted by adopting agroecological production practices and environmentally friendly production (Fairtrade and CLAC, 2021).

Also, in 2019, Fairtrade Germany endorsed agroecology by signing the policy position paper "Strengthening agroecology: For a fundamental transformation of agri-food systems" aimed at the German Federal Government. The paper was supported by 59 civil society organisations that called for the use of agroecology as a tool to bring about a fundamental transformation in the agri-food systems, to combating rural poverty and to adapt to climate change.

2. Sustainable agriculture

A. Defining sustainable agriculture

To define the term "sustainable agriculture", one must investigate its components: sustainability and agriculture.

The term 'sustainability' is a much-abused term in contemporary discourse. As a result of broad usage, there is certain ambiguity on what it entails or what can be called or labelled as 'sustainable.' A popular understanding considers sustainability a continuum: if something cannot continue into the future, it is unsustainable. Thus, the time dimension is quite relevant in the definition,[16] as it places the future as a critical element, a 'must have' requirement without which there is no sustainability. Nevertheless, a factor to consider under this perspective is the timeframe of 'sustainability' because if it is too short, one may be committing a 'tragedy of the horizon.'[17]

Although the focus on continuity or durability over time is relevant and key to defining sustainability, it falls short of incorporating and encompassing other aspects. In this sense, two critical questions arise: first, about the current state of systems and to what extent they are producing negative

16 The Brundtland Commission (1987) also included the time dimension in their definition of sustainable development in the following manner: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

17 Notably discussed by Mark Carney in his speech "Breaking the tragedy of the horizon-climate change and financial stability" (Carney, 2015), the term describes "a behavioural / economic phenomenon where certain risks may exceed the management (Risk Horizon) of most actors, imposing a cost on future generations of actors that the current generation has no direct incentive to fix" (Open Risk Manual, n.d.).

externalities, mitigating or reversing damage in the present (implying that a process can have adverse effects in the present and possibly in the future), and the second question revolves around today's assurance on what is sustainable, as factual proof of sustainability remains in the future (Gliessman, 2015). In response to these observations, first, the focus of sustainability should be broadened to incorporate an analysis of current practices and systems' effects on the environment, society and the economy in the present regardless of continuity over time. Second, uncertainty can be mitigated with technology and research, which can predict, to some extent, future outcomes based on evidence and assumptions. If there exists sufficient agreement, a system or practice may be considered sustainable. Considering the caveats raised above, Gliessman (2015) refers to sustainability as "the many characteristics of an ostensibly sustainable practice or system that are responsible for endowing that practice or system with the self-sufficiency, resilience, and balance that allow it to endure over time."

The term 'agriculture' is broadly used to describe human activities that have as their primary objective the production of food and other products (e.g., fibres, fuel) using plants and animals as the main inputs (FAO, 2017; Harris & Fuller, 2014). The term 'farming' is often used as a synonym for agriculture, and in addition to the activities or processes that concern agriculture, the latter can also be defined by its scale or size, the significance in local landscapes and contribution to the human diet. In this sense, agriculture "is the form of land use that represents a change in the landscape, as people regularly cultivate, raise, and focus more attention on domestic plants and/or animals" (Harris & Fuller, 2014).

Concerning the definition of sustainable agriculture, multiple concepts have emerged over the years. Despite its relevance to achieving global sustainable development,18 an authoritative definition has yet to emerge. How it is defined varies depending on stakeholders, their particular interests, and the relative weight they assign to the myriad aspects of sustainability. Another relevant discussion in the conceptualisation is whether to consider sustainable agriculture as a technological/ management strategy or as broader systems-thinking perspective that pulls social, economic and ecological systems and systems dynamics into the scope of agriculture. The latter view may be considered ideological (Zhang et al., 2021).

The FAO (2017) report "*A Literature Review on Frameworks and Methods*

18 The Sustainable Development Goal 2 aims to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" (FAO, n.d.-i). Indicator 2.4.1 measures the "proportion of agriculture are under productive and sustainable agriculture". This highlights that sustainable agriculture is crucial to achieve zero hunger.

for Measuring and Monitoring Sustainable Agriculture" identified at least 70 definitions and compiled some of them, reflecting the complexity of defining sustainable agriculture in "a precise, operational and absolute" way. Another factor that complexified the challenge was the emergence of "alternative" approaches to agriculture, such as organic, regenerative, permaculture and agroecology, with their own set of understandings, principles, practices and goals.

An overview of some definitions provided by authoritative organisations are in Table 1.[19]

Table 1: Relevant definitions of sustainable agriculture

Definitions	Source
"Sustainable agriculture involves the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of the environment and conserving natural resources."	Consultative Group on International Agricultural Research (CGIAR) (1988)
"A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends, provides for basic human food and fibre needs, is economically viable, and enhances the quality of life for farmers and society as a whole."	American Society of Agronomy (1989)
"Sustainability should involve the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of the environment and conserving natural resources."	Consultative Group on International Agricultural Research, 1989; reported by Goldman (1995)
Sustainable agricultural development is "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development (in agriculture, forestry and fishing etc.) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable."	Food and Agriculture Organisation of the United Nations (FAO), (1990)

19 All definitions referred to in Table 1 are post-Brundtland report, implying a global paradigm shift in agriculture.

Sustainable agriculture is "an integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy human food and fibre needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole."	Definition by United States Congress; reported by Feher and Beke (2013)
"Sustainable agriculture does not mean a return to either the low yields or poor farmers that characterised the 19th century. Rather, sustainability builds on current agricultural achievements, adopting a sophisticated approach that can maintain high yields and farm profits without undermining the resources on which agriculture depends."	Union of Concerned Scientists (1999)
Sustainable agriculture is "a way of practicing agriculture which seeks to optimise skills and technology to achieve long-term stability of the agricultural enterprise, environmental protection, and consumer safety. It is achieved through management strategies which help the producer select hybrids and varieties, soil conserving cultural practices, soil fertility programs, and pest management programs. The goal of sustainable agriculture is to minimise adverse impacts to the immediate and off-farm environments while providing a sustained level of production and profit. Sound resource conservation is an integral part of the means to achieve sustainable agriculture."	USDA Natural Resource Conservation Service (2009)

Based on the definitions provided, common elements defining "sustainable agriculture" are:

- efficient[20] resource management;
- meeting human needs for the present *and* future generations;
- maintenance, conservation and improvement of the natural environment quality;

20 The term efficiency in the context of the study will refer to the concept of eco-efficiency, which integrates sustainability and traditional economic efficiency definitions by incorporating "the environmental costs and the negative externalities in the calculus of economic efficiency" (Borza, 2014). Eco-efficiency was defined by the World Business Council on Sustainable Development (WBCSD) as "the development of goods and services at a competitive price so that they could meet the human needs, lead to a progressive improvement of life quality and at the same time, reduce the impact on environment and the irrational exploitation of resources throughout the entire life cycle of the product, until a minimum level" (Borza, 2014). In other words, producing more while using less resources and generating less waste and pollution. Mathematically it is calculated as "the ratio between the outcomes of the economic process and the environmental inputs, thus reflecting the nature's productivity" (Borza, 2014). The numerator is the "difference between the production cost of a good or service and its sale price" and the denominator "the effects on consequences of the socio-economic activities on environment, synthesized in a calculus of the impact on environment" (Borza, 2014). At the micro level, eco-efficiency implies, for example, reducing raw materials, energy consumption and toxic materials in production, and increasing recycling (Borza, 2014).

- economic viability;
- social adaptability;
- improvement of farmer' and society's quality of life; and
- usage of technologies and skills.

In addition, all the definitions in Table 1 refer to the three-pillar approach to sustainability with greater or lesser explicitness. This points to the fact that there seems to be an emerging consensus that sustainable agriculture should incorporate elements of environmental, social and, economic, and sustainability (FAO, n.d.-i; Zhang et al., 2021), which reinforces the idea that sustainable agriculture is not separate or independent from sustainable development.

The FAO definition, in addition, proposes five interconnected principles[21] any sustainable system in agriculture should embrace (FAO, 2014a):

1. improving efficiency in the use of resources;
2. carrying out actions to conserve, protect, and enhance natural resources;
3. protecting and improving rural livelihoods, equity and social well-being;
4. enhancing the resilience of people, communities and ecosystems;
5. ensuring responsible and effective governance mechanisms.

Another entity that adopted the three-pillar approach was the European Commission (2021a) which set nine (9) key objectives in its common agricultural policy (CAP) for the period 2023-2027, which are "to ensure fair income to farmers, increase competitiveness, rebalance the power in the food chain, climate change action, environmental care, preserve landscapes and biodiversity, support generational renewal, vibrant rural areas, and protect food and health quality".

21 Other authors who embarked on the task of setting out principles, characteristics and parameters for sustainable agriculture are Pretty (1996), Rasure (2010) and Lockeretz (1988). Lockeretz (1988) proposed the following parameters for sustainable agricultural systems (FAO, 2017):
i. "diversity of crop species;
ii. selection of crops and livestock that are adapted to a particular environment;
iii. preference for farm-generated resources rather than purchased inputs;
iv. tightening of nutrient cycles to minimise nutrient losses;
v. livestock housed and grazed at low densities;
vi. optimum storage of nutrients in the soil;
vii. maintenance of protective cover on the soil;
viii. rotations that include deep-rooted crops, and control of weeds;
ix. use of soluble inorganic fertiliser; and
x. use of pesticides for crop protection only as a last resort".
Rasure (2010) set 14 dimensions of sustainability in agriculture "technological appropriateness, economic feasibility, economic viability, environmental soundness, temporal stability, efficiency of resource use, local adaptability, social acceptability, political acceptability, administrative manageability, cultural desirability, equity and productivity" (FAO, 2017).

Gliessman (2015) – who refers to these pillars as ecological soundness, economic viability, and social justice – also proposes minimum requirements for food systems based on present knowledge. With agriculture being a component of food systems,[22] sustainable agriculture should observe the following elements:

- Minimise negative externalities on the environment and minimise air, water and groundwater pollution by toxic and noxious substances.
- Reduce GHG emissions and increase adaptation and mitigation strategies or practices such as carbon-storing systems to address climate change.
- Protect, conserve and restore soil health and fertility (prevent soil erosion).
- Efficiently use water "that allows aquifers to be recharged and the water needs of the environment and people to be met."
- Minimise the use of external inputs, and rely more on sources within the farm and nearby communities. It could entail replacing "external inputs with nutrient cycling, better conservation, and an expanded base of ecological knowledge."
- Protect and conserve biodiversity (in wild and domesticated environments).
- Ensure equal access and control of resources such as practices, knowledge and technologies.
- "Eliminate hunger, ensure food security in culturally appropriate ways, and guarantee every human being a right to adequate food."
- "Remove social, economic, and political injustices from food systems."

Given the deep interrelatedness of elements, each of the three pillars are essential to achieving sustainability. Comparing and contrasting the three central frameworks – (1) the Stockholm Resilience Centre (SRC) ("The Planetary Boundaries" and its further elaborated model of "The SDGs Wedding cake"), (2) "The Doughnut Economics" by Kate Raworth, and (3) The Economics of Ecosystems and Biodiversity (TEEB) – a pressing question arises: in the face of complex trade-offs, how would each of these three frameworks prioritise any one given component? Indeed, the conceptual model chosen would signal how one prioritises the dimensions of sustainability.

As the 'wedding cake' by SRC suggest, the biosphere is foundational to societies and economies: environmental sustainability underpins all other systems. Without a favourable and healthy environment for humans, humans risk their own survival as individuals and as a species.

22 It is, however, necessary to clarify that food systems go beyond agriculture production or activities and engage the whole process of producing food.

The SRC model does not state that social and economic sustainability are insignificant: to the contrary, they are represented in the SRC wedding cake. As the Doughnut Economics model points out, there are social boundaries below which, there is a shortfall, and people do not meet their basic needs. The bottom line is that our biophysical reality is such that if we do not have a sustainable biosphere, then even the best of societal structures or economies is not going to sustain humanity.

In this sense, and under the overarching frameworks presented by the SRC and Kate Raworth, we propose Fairtrade to use FAO's (1990) definition of sustainable agriculture as it covers, in a broad sense, the elements of sustainable agriculture discussed in this section:

> *"The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development (in agriculture, forestry and fishing etc.) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable."*

In other words, *sustainable agriculture* should meet the present and future generations' needs by efficiently managing resources (e.g. natural resources, technology and skills). At the same time, it should conserve and improve the quality of the natural environment, as well as farmer and societal quality of life.

While the cultural dimension is sometimes also considered the fourth pillar of sustainability, and particularly highlighted in indigenous and traditional communities representing a significant number of Fairtrade POs (especially in Coffee), the cultural dimension is integrated within the other pillar and is Coffee addressed within particular risks (e.g., Gender inequality and inequity, Land rights violations & lobbying regulation, Child Labour, and Social inequity).

B. Proposed sustainable agriculture risk framework

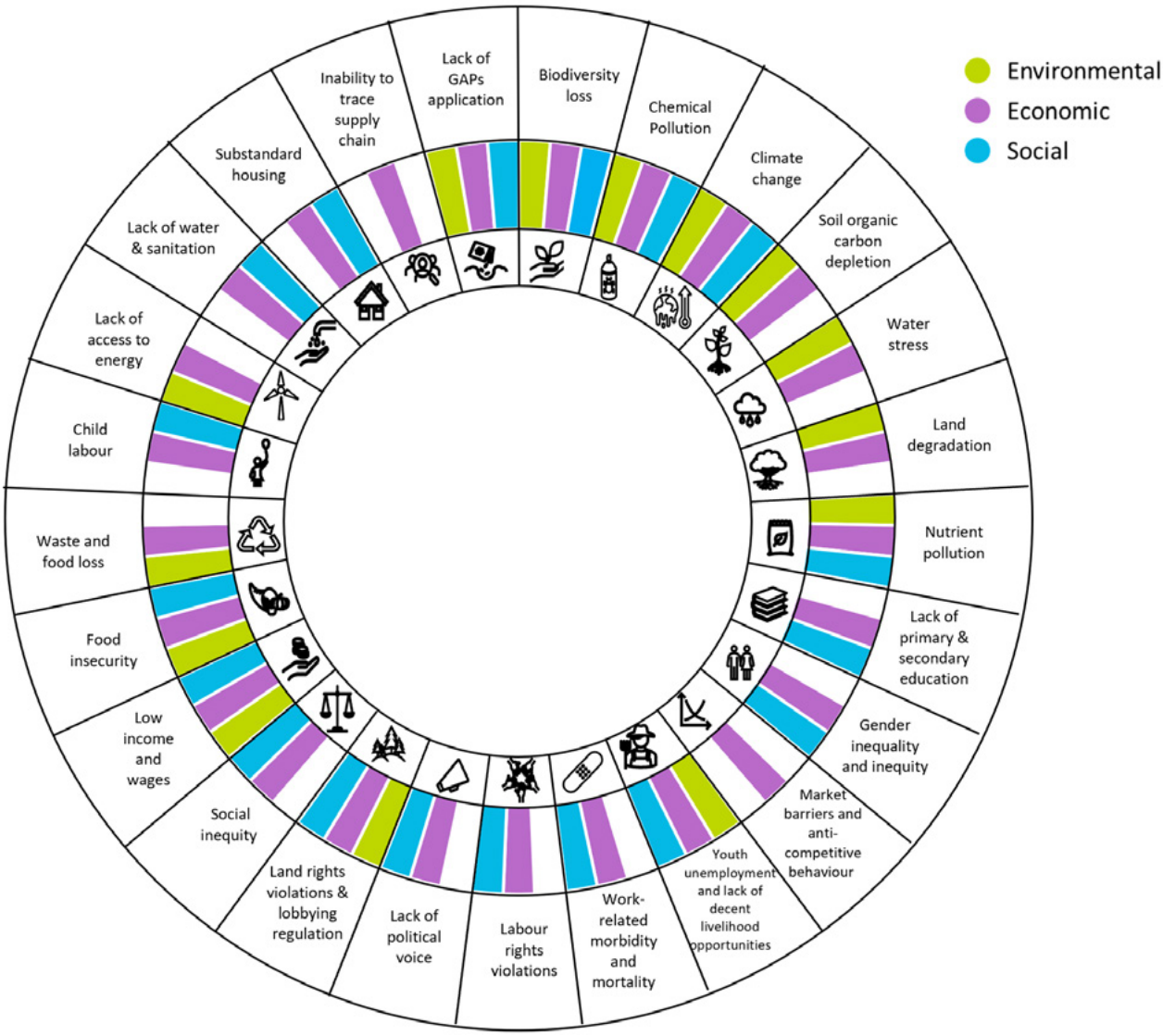
a. Links between risks and sustainable agriculture

Upon applying the methodology as per IV.3.A. Risk framework development, and carrying a gap analysis, we obtain an integrated risk framework that encompasses 25 risks categories identified as key sustainability challenges in Fairtrade-certified agriculture. These critical elements serve as a tool for analysing sustainable performance and as a blueprint for targeted actions. The framework aims for a more sustainable model than the status quo by addressing each of these risks through the adoption of sustainable practices.

b. Risk identified

Figure 13 reflects the 25 risks identified and the sustainability domains that underpin each of them: 'Environmental', 'Economic', and 'Social'. In the following section, we will work through each of the points and suggests policies to address each specific risk.

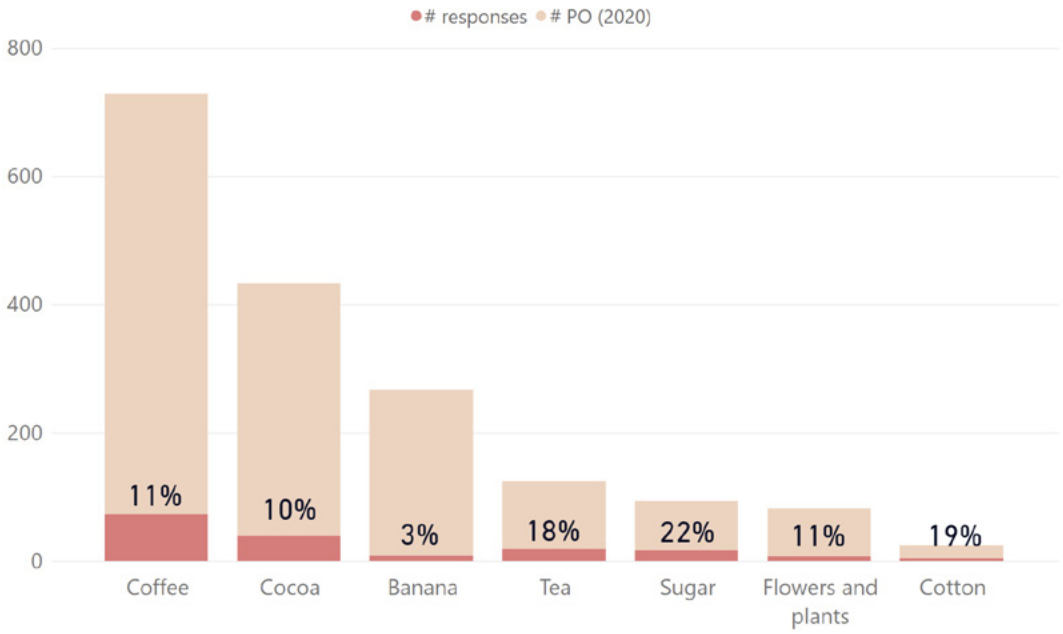
Figure 13: Fairtrade sustainable agriculture risk framework



c. *Results of Risk Prioritisation survey*

The survey recorded a total of 255 responses, of which 25 were received from selected key informants (Fairtrade staff, FLOCERT and NFOs) and 230 from POs. Based on the available information online on the number of PO for the year 2020 we calculated the percentage of participation for the top 7 crops (see Figure 14).

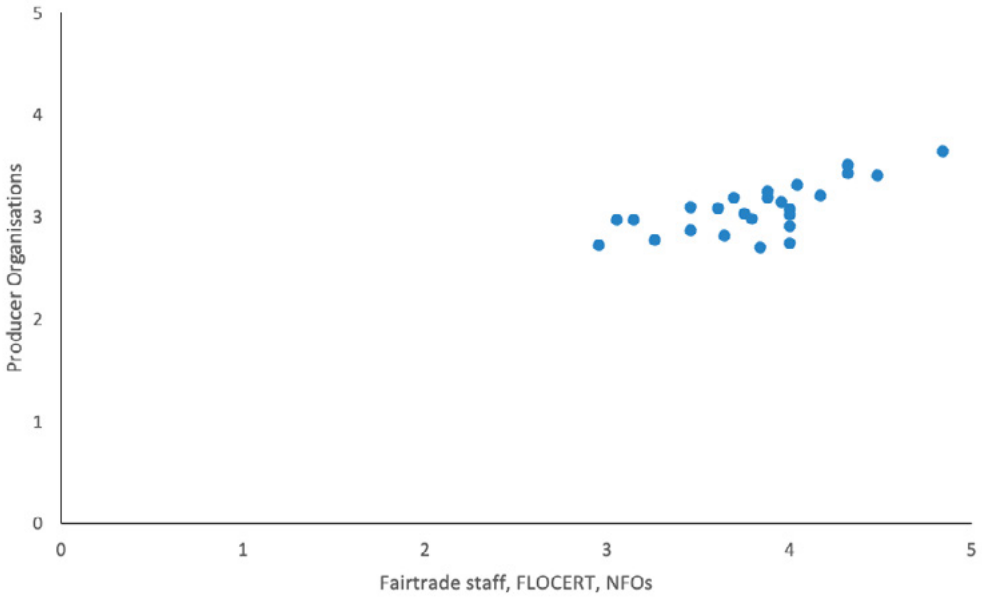
Figure 14: % of participation, top 7 crops



Even though participation was low, as the response rate per top Fairtrade crop was below 30%, we proceeded to elaborate the materiality matrix to compare the risk prioritisation by POs vs Fairtrade staff, FLOCERT and NFOs.

The overall results of the 'risk prioritisation' suggest that all risks included in the framework are material for Fairtrade staff, FLO-CERT, NFOs and POs, as none of the 25 risks received an aggregate score below 2.5 on a 5-point scale (see Figure 15). The dashed line across the chart indicates the degree of alignment between both groups (Y axis and X axis). Any risks on the line would mean that the perception of such risks by POs and Fairtrade staff, FLOCERT and NFOs' is the same.

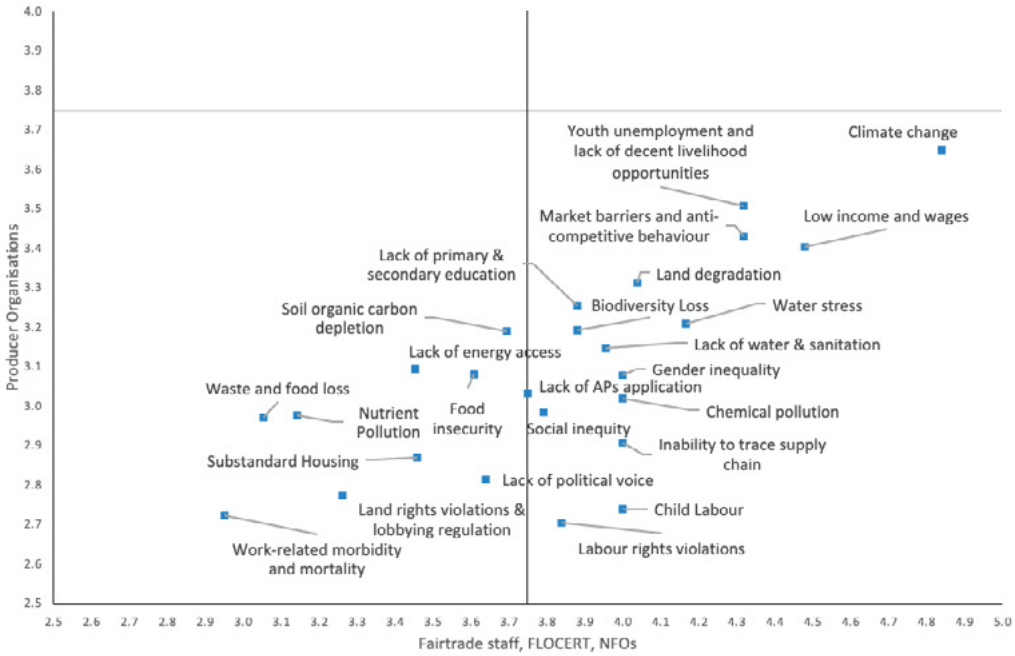
Figure 15: Materiality matrix – Risk prioritisation overview



Narrowing down the axes to zoom in, in the upper right corner and by drawing the same lines, Figure 16 reveals that there were no risks that POs considered significant but Fairtrade staff, FLOCERT and NFOs did not. The perception of the two cohorts was not far apart, as the risk prioritisation presented a rather homogeneous distribution concentrated below the dashed, 45-degree line. Where the points (risks) are closest to the line, the groups are more aligned; in this case: waste and food loss, nutrient pollution, and work-related morbidity. The cohorts did, however, notably differ on climate change, low income and wages, child labour and labour rights violations.

The top ten high priorities for both parties are: *climate change, youth unemployment and lack of decent livelihoods, market barriers and anti-competitive behaviour, low income and wages, land degradation, lack of primary & secondary education, water stress, biodiversity loss, soil organic carbon depletion, and lack of water & sanitation.*

Figure 16: Detailed risk prioritisation



Considering only POs responses and the prioritisation by crop,[23] Figure 17 shows the number of crops that flagged a risk as a 'Very high priority', 'High priority', 'Medium priority', 'Low priority', 'Very low priority'.[24] For example, climate change was flagged as a 'Very high priority' (between the first position and fifth position) by twelve crops and only once between the sixth and tenth position ('High priority'). This chart is another way to analyse the distribution of priorities.

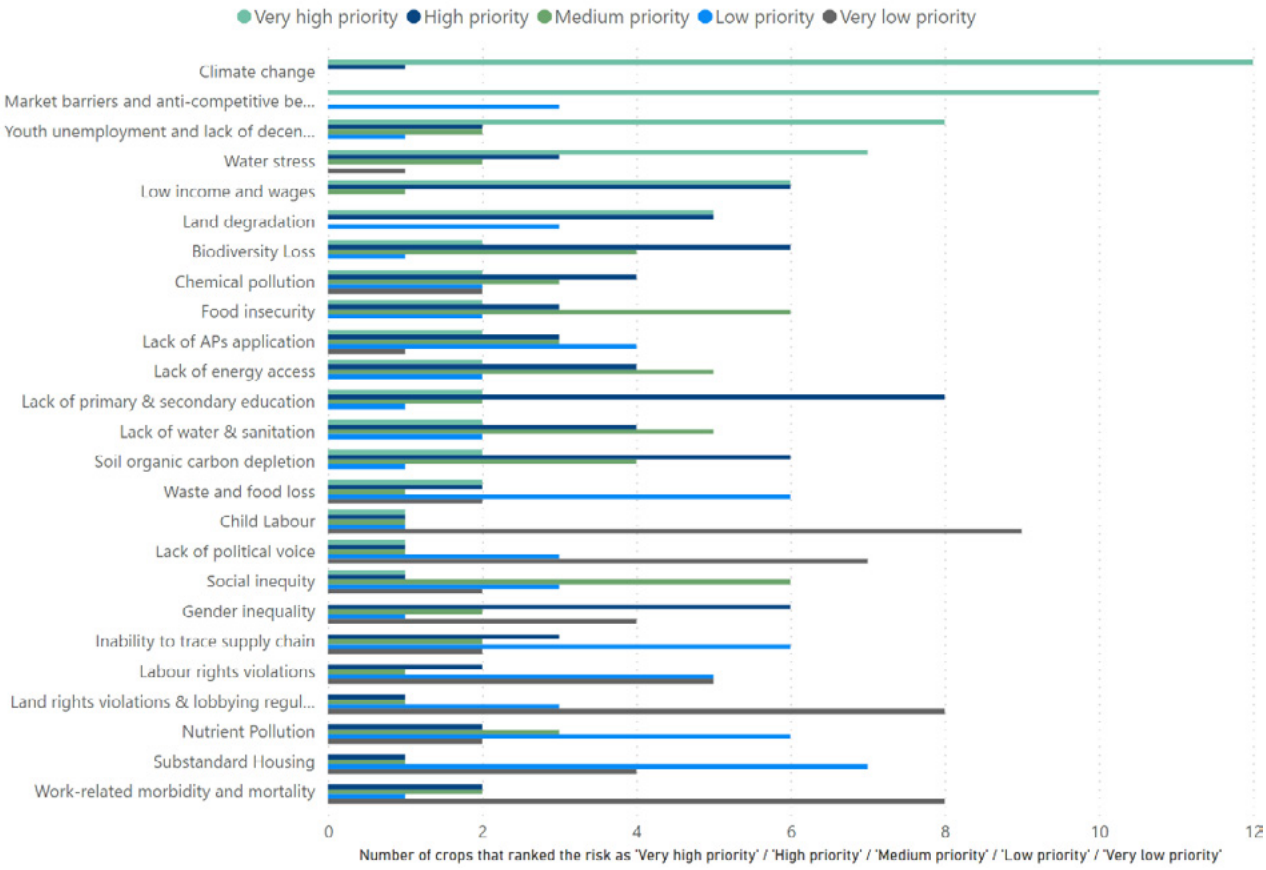
Risk showing only two lines are the most polarised, suggesting alignment between crops. For example, *climate change*.[25] Those risks showing 4 or 5 lines indicate a divided perception among crops, for example, *chemical pollution* and *lack of APs application*.

23 Crops identified in the survey: Banana, Cocoa, Coffee, Cotton, Flowers and plants, Fruit and juices, Herbs and spices, Nuts and oils, Quinoa, Rice, Sugar, Tea, and Others.

24 To develop the figure, first, the average score per risk and crop was calculated. The risks were then ranked by crop using the RANK formula available in excel. For example, for Cocoa, the prioritisation of the risks was as follows: Youth unemployment and lack of decent livelihood opportunities (first position with an avg. of 4,05); *climate change* (second position with an avg. 3,82); *low income and wages* (third position with an avg. of 3,815) … till reaching the twenty-fifth position *lack of APs application* with an avg. of 2,61. Then, positions were grouped into categories: 'Very high priority' → between first and fifth position, 'High priority' → between sixth and tenth position, 'Medium priority' → between eleventh and fifteenth position, 'Low priority' → between sixteenth and twentieth position, and 'Very low priority'→ between twenty-first and twenty-fifth.

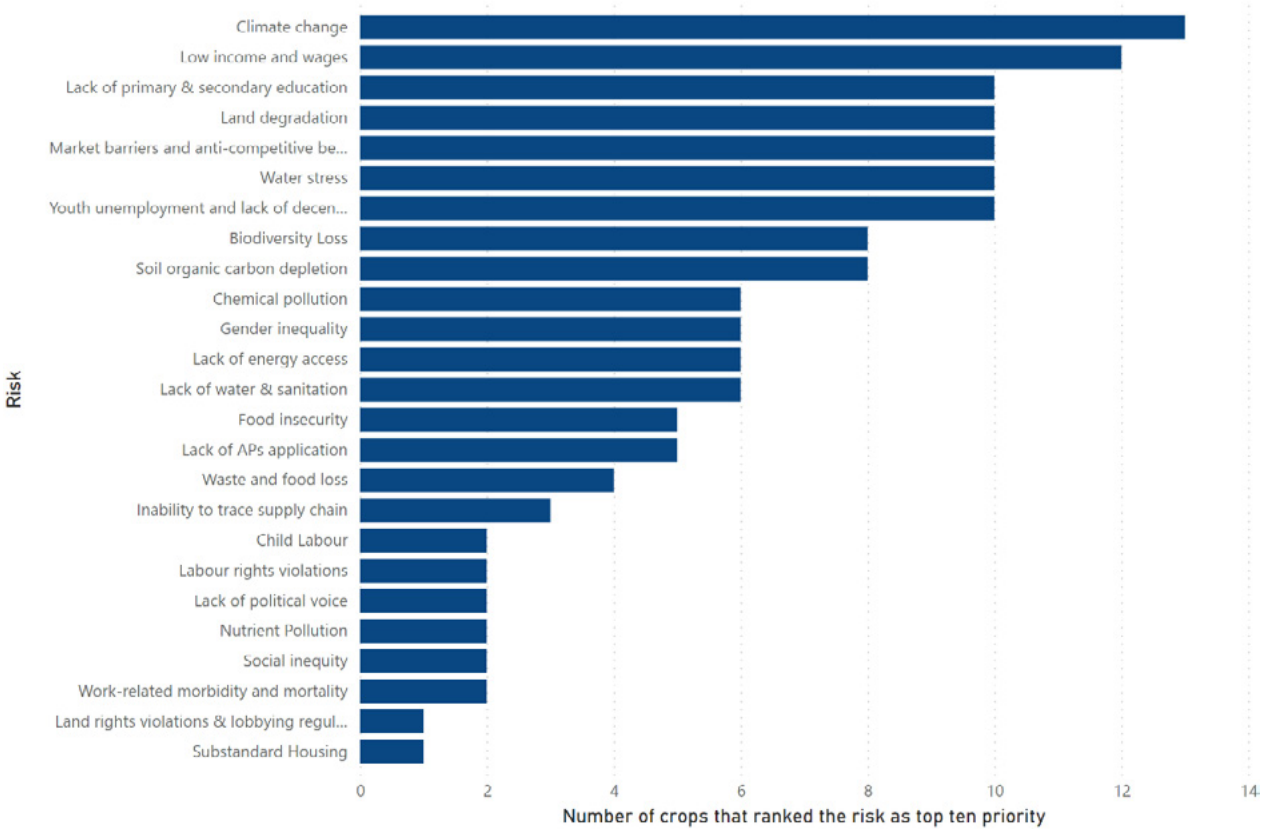
25 Another example could be low income and wages. Although it shows a third line as one crop ranks it as a 'Medium priority', the majority is concentrated between the top two categories.

Figure 17: Very high, high, medium, low, and very low priorities per crop



Similarly, Figure 18 displays the number of crops that selected a risk among the high priorities (between the first position and tenth position). In other words, for example, 'Climate change' was flagged as a top ten priority by thirteen crops, *Low income and wages by 12 crops*, *Market barriers and anti-competitive behaviour*, *Water stress*, *Lack of primary & secondary education*, *Land degradation* and *Youth unemployment and lack of decent opportunities by ten crops*. The risks that were flagged as a high priority only by one or two crops are *Child labour*, *Labour rights violations*, *Lack of political voice*, *Nutrient pollution*, *Social Inequity*, *Work-related morbidity and mortality*, *Land rights & lobbying regulation and Substandard housing*.

Figure 18: Number of crops that perceive the risk as a top 10 priority (only PO answers)



C. Mapping sustainable approaches to agriculture

a. Analysis of sustainable approaches to agriculture

After conducting the analysis described in the Methodology section *IV.3.D. Sustainable agriculture approaches analysis* it may be concluded that each of the approaches encompasses a set of principles, objectives, and a background to their evolution. They can also be applicable to a specific or a variety of production types/systems, regions or contexts. In general terms, all fourteen (14) approaches aim at a more sustainable farming system (please see Annex F, results of desk research). Principles vary, depending on the focus of the approach: regeneration of soils, enhancing biodiversity, eliminating the use of inputs, circularity, etc., but overall, to a lesser or greater extent, all have impacts on the three pillars: economic, social and environmental (see Table 2).

Table 2: Assessment of sustainable agriculture approaches

Approach/domains	Environmental	Social	Economic
Agroecology	✓	✓	✓
Organic farming	✓	depends[26]	implicit[27]
Permaculture	✓	implicit	✓
Sustainable intensification	✓	X	✓
Climate-smart agriculture[28]	partial [29]	✓	✓
Nature-inclusive agriculture	✓	X	X
Carbon farming	partial [30]	X	X
Biodynamic agriculture	✓	✓	X
Conservation agriculture	✓	X	X
Regenerative agriculture	✓	X	X
Low external input agriculture	partial[31]	✓	✓
Circular agriculture	partial[32]	X	X
Ecological intensification	✓	✓	✓
High nature value farming	✓	depends[33]	depends[34]

As previously mentioned, the purpose of the analysis is not to claim that specific approaches exclude integral elements of the three (3) pillars. However, the analysis does reveal the degree of alignment among principles associated with Fairtrade's vision, mission, theory of change, and understanding of sustainability. As principles serve as a guide or framework for the implementation or design of a system or a project, it is relevant to consider the gaps.

Another analysis of the principles underpinning each of the 14 approaches reveals overlaps among them. One example is agroecology, from which other schemes incorporate principles or practices, such as permaculture,

26 IFOAM includes social principles as part of organic approach.
27 Under IFOAM principle of "fairness" organic approach refers to the economic domain as it should contribute to the reduction of poverty.
28 Fairtrade already has a position on Climate-Smart agriculture (CSA).
29 The environmental pillar is covered in the principles by reducing or removing GHG emissions. It does not mention nature, soils, water or other environmental aspects.
30 Similar to Climate-smart agriculture, the environmental pillar is addressed by reducing or removing GHG emissions.
31 The approach focuses on minimising external inputs e.g., synthetic fertilisers to improve the ecological domain, which has positive knock-on effects in many areas of sustainability. However, it does not explicitly mention other environmental aspects like soils, biodiversity, and water.
32 Even though practices under the approach aim at improving many aspects of the environmental domain, principles do not specifically reflect them.
33 The EIP-AGRI group includes socio-economic principles as part of the approach.
34 Ibid.

organic, biodynamic, and conservation agriculture (Erisman et al., 2017; Oberč & Arroyo Schnell, 2020; Silici, 2014). Such incorporation is because the approaches share a common philosophical root or origin but differ in certain aspects that justify their standing as an individual scheme.

b. Fairtrade alignment with agroecology

Choosing or adopting an approach means at the micro-level it would determine the way farms are managed and the type of practices to adopt to achieve objectives. At a macro-level, for example for Fairtrade, it would mean adopting a direction for strategies, projects, objectives, partnerships, and advocacy. Of the 14 approaches reviewed, agroecology aligns most with Fairtrade's origins, mission, vision, theory of change, and the proposed definition of *sustainable agriculture* (in V.2.A Defining sustainable agriculture). The reasons are the following:

1. Concerning the proposed definition for sustainable agriculture, agroecology integrates all three pillars: environmental, economic and social. Moreover, agroecology is the most aligned approach to Fairtrade's origins, mission, vision, and theory of change, as it is a holistic approach to agricultural and food systems that explicitly addresses themes such as climate change, farmers' autonomy, land stewardship, food security and nutrition, biodiversity, social justice, and the peasant and indigenous knowledge (HLPE, 2019). Through an alignment with rights-based frameworks, agroecology also addresses an often-neglected aspect in the framings of sustainable agriculture: the empowerment of vulnerable or marginalised populations in rural areas (i.e., women, youth, indigenous people and minority groups that are systematically discriminated against). These topics are also foundational to the Fairtrade movement but are left out of many other sustainable agriculture frameworks.
2. Concerning the operational spread of Fairtrade-certified POs, agroecology is applicable to any plantation or smallholder farm independent of the type of crop, soil, climate, or any other condition, since it is based on a bottom-up approach that aims at contextualised solutions incorporating local contexts and constraints (HLPE, 2019). Therefore, POs need to have a strong voice in the definition of adequate agroecological strategies (which could be done through PNs), based on their specific context, risks, needs, and values.
3. Furthermore, Agroecology aims at the redesign of not only agricultural systems but entire food systems. In other words, it is not limited to the adoption of certain agricultural practices and technologies but extends into the universe of interactions, synergies and trade-offs among agricultural production for human consumption and natural

ecosystems. The approach is also part of the food sovereignty movement, which seeks to strengthen local food systems. Fairtrade, as well, takes a *systems approach* toward the relationship between agricultural production, trade and the environment and supports a food sovereignty framework for such systems.

4. Agroecology aligns with a substantial number of Fairtrade's sustainability objectives and outcomes current already achieved, particularly with organic farming, an approach that many Fairtrade-certified POs have already adopted.[35] Moreover, Fairtrade already works hand-in-hand with IFOAM, for instance, in order to increase its agroecology alignment.

5. Agroecology was endorsed by the recently amended French law on climate (cite), adopted in 2021 (Loi n° 2021-1104 du 22 August 2021). In addition to stipulating terms of trade requirements for companies using a 'fair trade' label, a French law (amending article 60 in Loi n° 2005-882 du 2 august 2005) also stipulates that each company working with the fair trade labelling industry "promotes production and operating methods that respect the environment and biodiversity, such as agroecology when it comes to food sectors, and is able to produce information relating to product traceability." Companies claiming to be involved in 'fair trade' must now use the label, and the label can only be used if the stipulated conditions are met.

c. Definitions and transitional pathways to agroecology

FAO (2018) defines agroecology as:

> *"an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimize the interactions between plants, animals, humans and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system."*

Wezel et al. (2009) and others split agroecology conceptually into three domains of activity: a science, a practice and a social movement.

35 Fairtrade does not directly track the number of POs producing organic. Instead, they have data on the total volume produced and sale organic. In 2020, organic production (in MT) represented: 49% of the total volume produced in Fairtrade bananas, 44% in Fairtrade cotton, 28% in Fairtrade coffee, 20% in Fairtrade sugar, 9% in Fairtrade cocoa, and 4% in Fairtrade tea. See in V.1.A. Mapping Fairtrade crops the evolution of Fairtrade sales and production of Organic products in banana, cocoa, coffee, cotton (seed), sugar and tea.

In addition to being referred to as a practice informed by science, promoted by social movement and guided by principles, agroecology is a process, or better stated, a plethora of such processes occurring at once. Agriculture is often referred to in a static sense, as a state waiting on a big push from scientists or activists. Instead, agriculture is dynamic as farmers constantly trial new practices learned from several sources, observe the results and tweak the practices in the future. How these processes of change occur is just as important as the actual practices that are adopted. These processes are ideally participatory, action-oriented, and transdisciplinary. They set farmers and rural workers as protagonists in defining what qualifies as viable.

A fuller realization of agroecology across the landscape and within food systems has been conceived in two inter-related and co-occurring ways: as transition and as transformation. While these are not mutually exclusive, there are important conceptual distinctions. It may be helpful to understand that perspectives on agroecological have evolved over time, as proponents of agroecology moved from an attention on how to apply ecological principles to farming; to how the same principles are applied to the distribution, preparation and consumption within food systems; and finally to the systems of governance and power that mediate how food systems operate (Anderson, Maughan, et al., 2019).

Agroecological transition involves both practices as well as the structures that condition them. For example, a transition to organic agriculture, while a step in the right direction at the farm level, does not fundamentally change the broader structures that constrain food system change. In short, the term agroecological transformation has gained considerable ground in describing how agroecological change toward more sustainable agri-food systems occurs.

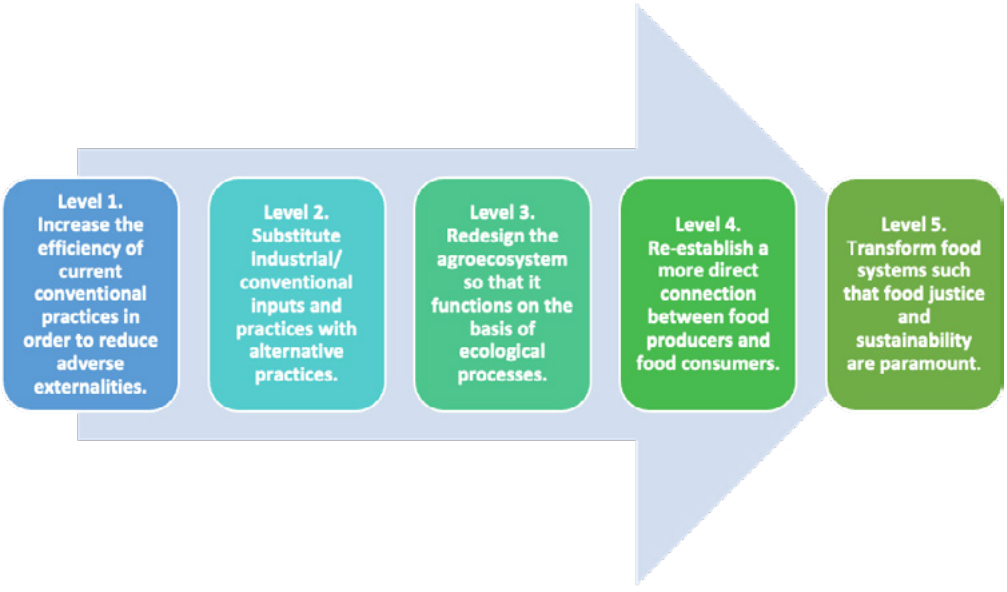
Alignment with agroecology is taken to mean alignment with broad system transformations including (or especially) those pertaining to international trade of commodities.

Gliessman (2015) proposed a popular framework that serves as a roadmap to agroecological transitions (that is, between conventional to sustainable agroecosystems and food systems) with five levels (see Figure 19). The first three levels proposed are framed on the steps farmers can take on their own farm to convert from conventional agriculture to sustainable agriculture, while the last two hint at what might be described as trans-formation and go beyond the farm scale and reach food system structures. Agroecology, according to Gliessman, really starts at level 3, as they require changing the design of farming systems (Personal communication, December 3rd 2021).[36] Even Level 2, which involves the substitution of inputs, still only constitutes an initial step on the path to full-fledged agroecology.

On the face of it, this framework is easily adapted to Fairtrade's existing approach: the milestones in the framework can be used to map Fairtrade-certified farms and POs along a continuum of sustainability in order to evaluate the breadth and depth of agroecology in a given area.

Below we will briefly review these levels and their application to Fairtrade's approach.

Figure 19: Levels to sustainable agroecosystems conversion



36 See Annex G to a detailed subcategorization for levels 1 to 4 provided by related research based on Gliessman's (2015) conversion framework (DeLonge et al., 2016)

In **Level 1,** chemical inputs are reduced as their use becomes more efficient and precise and agricultural pollution is mitigated. Efficiency can be achieved through timing of practices, cropping densities, new technologies (including GPS and robotics), integrated pest management and increased monitoring of soil conditions (Gliessman et al., 2019). This suite of practices has recently been categorised as Precision Agriculture; however, the net benefits of such practices are not fully understood and **given dire circumstances in which we find our agricultural future, such incremental change is unlikely to achieve sustainability**.

In **Level 2,** industrial/conventional inputs are substituted with environmentally-friendly or benign alternatives. The new inputs include biofertilizer products as well as renewable forms of energy. This does more to mitigate agriculture's impact on nature and human health, but it rarely re-designs conventional agroecosystems in a fundamental way that would mimic and take full advantage of ecological processes. While some organic-certified systems (especially those managed at large-scales with industrial-style processes) represent this stage – **organic certification may only serve as a proxy for agroecological alignment**.

In **Level 3**, the agroecosystem is redesigned and diversified so that it functions on the basis of a new set of ecological processes. This is the level in which practices begin to be referred to as "agroecological". The ecological structures and functions at work in these systems act to prevent problems (e.g. pests) commonly associated with agricultural production. Gliessman notes that such agroecosystems and their management plans never quite reach a static point, but are constantly adjusted with the primary focus on the design or structure of the system, rather than on introducing inputs that serve only as short-term solutions (Gliessman et al. 2019). The principal element in this stage is increasing diversification at various levels: the genetic diversity of a crop species, the number of species present in an agroecosystem (both crop and non-crop) and the diversity of community compositions across an agroecological landscape. However, this development along the agroecological continuum is where systems take on myriad context-dependent forms which can make them difficult to monitor and evaluate using conventional methods. For that reason, **an alignment with agroecology will encourage Fairtrade to rethink its approach to evaluation in order to make them more principles-based and participatory.**

Level 4 focuses on developing direct relationships with consumers and shortening supply chains both in terms of spatial distance and the number of intermediaries involved. Since Fairtrade tend to deal in food systems transaction across long distances, their most immediate effect on the current food system is reduce profiteering (by brokers, distributors, and

retailers) along the supply chain that lower producer incomes, which in turn can provoke extractive land uses and oversimplification of the agroecological landscape. Fairtrade also serves to connect consumers with producers who employ agroecological practices. However, despite these being in Fairtrade's wheelhouse they are an insufficient embodiment of Level 4, which strives to promote agroecological landscapes that are not simply committed to export commodities, but also produce food for local consumers**. Level 4, therefore, presents a real challenge for Fairtrade: how to increase incomes for export crops produced agroecologically without undermining the production and circulation of local, culturally appropriate foods**. In Western Europe and North America countries, this 're-localisation' movement has included supported agriculture schemes and consumer cooperatives and are basic to alignments with agroecology. To address this contradiction, Fairtrade policy must adjust to take a landscape- and food-system approach to **rural wellbeing, implying investments in local and regional food systems.**

In **Level 5**, food systems are transformed so that food justice and sustainability are paramount. These changes might be referred to as paradigmatic, involving new cultural relationships between humans, food and nature and an overhaul of institutions that ensure equity among humans, and between humans and non-human beings. It also involves holding society to more critical goals than maximization of productive output: mitigating and adapting to climate change, for one, involve a paradigmatic shift in how progress is measured at international scales. **This segment of Fairtrade's alignment with agroecology would occur through the use of its alliances with social movements on behalf of the rights of peasants and consumers: as a prerequisite for such alliances, Fairtrade policies might have to be adapted to demonstrate increasing democratic control over Fairtrade policies and resources**. Furthermore, alignment with agroecology presumes that **Fairtrade uses its platforms and networks to promote changes in governance that currently stymie agroecological transformations. As a transformative entity, Fairtrade may amplify niche approaches to agroecology across its networks and those of its partners**. Our recommendation is that Fairtrade also does not focus solely on agroecological practices, but on the shortcomings and contradictions of equity and sustainability within the prevailing systems of exchange, networks, access to natural resources and discourse (this idea is more generally explored in Anderson, Bruil, et al., 2019). Fairtrade, as a central actor, is especially well situated for this work, as it operates at multiple levels within the food system. **In sum, Fairtrade reorganizes its procedures such that its direction and its impact are informed by community-level control and bottom-up influence of international systems, rather than relying on reinforcing processes of top-down standard-making** (Anderson, Maughan, et al., 2019).

d. Agroecological principles informing the suggested policy positions

Agroecological approaches are context-specific and place-based. Instead of offering universally applicable solutions, an agroecological approach is grounded in principles that can be adapted to various contexts and on different scales (Bell & Bellon, 2018). As Patton (Patton, 2017) notes, "while the principles remain the same, in implementing principles there will necessarily and appropriately be adaptation within and across contexts." From an operational perspective, principles help guide the planning, implementation, and evaluation of agroecological transitions and transformations toward more sustainable agri-food systems (Caswell et al., 2020; Wezel et al., 2020).

Different sets of agroecological principles have been developed over the past decades (e.g., Altieri & Nicholls, 2005; CIDSE, 2018; FAO, 2018; HLPE, 2019), reflecting the multidimensional nature of agri-food systems and the diversity of actors practising agroecology. These sets incorporate a variety of ecological, economic, social, and cultural principles, addressing many key aspects of agri-food systems (Wezel et al., 2020). In this document, we will use two sets of principles to support the policy positions used: one by CIDSE (Coopération Internationale pour le Développement et la Solidarité) and another by HLPE (High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security) that builds on FAO's 10 elements of agroecology (see Table 3). These two frameworks offer comprehensive and largely comparable set of principles that address ecological, economic, and social dimensions of sustainability.

Table 3: In- and out-of-scope agroecological principles

		HLPE	CIDSE
Agroecological principles **in-scope**:			
	Recycling	Recycling	*(no direct equivalent)*
	Input reduction and elimination	Input reduction	• Eliminates use of and dependence on agrochemicals
	Soil health	Soil health	• Nourishes biodiversity and soils
	Biodiversity	Biodiversity	Nourishes biodiversity and soils
	Synergy	Synergy	Enhances integration of various elements of agroecosystems (e.g. plants and animals)
	Resilience and adaptation to CC	(no direct equivalent)	Supports resilience and adaptation to climate change
	Diversification	Economic diversification	Increases resilience through diversification of farm incomes and strengthens community autonomy
	Connectivity	Connectivity	Aims to enhance the power of local markets and build on a social and solidarity economy vision
	Fairness	Fairness	Promotes fair, short, distribution webs, producers and consumers working together
	Co-creation of knowledge	Co-creation of knowledge	Promotes farmer to farmer exchanges for sharing knowledge
	Social values and healthy diets	Social values and diets	Promotes healthy diets and livelihoods Strengthens food producers, local communities, culture, knowledge, spirituality
	Land and natural resource control	Land and natural resource governance	Aims to put control of seeds, land and territories in the hands of people
	Participation	Participation	Encourages new forms of decentralised, collective, participatory governance of food systems Encourages stronger participation of food producers/ consumers in decision making Encourages diversity and solidarity among people, encourages women and youth empowerment
Agroecological principles **out of scope**:			
	Animal health	Animal health	*(no direct equivalent)*[37]
	Public policies	*(no direct equivalent)*	Requires supportive public policies and investments[38]

ENVIRONMENTAL

ECONOMIC

SOCIAL

37 Irrelevant in Fairtrade context.
38 Highly relevant for Fairtrade, but outside production scope and the scope of this policy.

D. Defining agroecological practices (APs)

'Agroecological practices' (APs) is a term encompassing practices derived from principles that are the foundation of both resilience and sustainability. Agroecology's holism and multidimensionality are distinctive. In that sense, we named as 'agroecological' those practices that link with these multiple dimensions (see Table 2: Assessment of sustainable agriculture approaches) and principles (see Table 3: In- and out-of-scope agroecological principles). In doing this, we aim to distinguish 'Agroecological practices' (APs) from similar but distinct concepts, such as "Good Agricultural Practices", "Best Management Practices", "Good Handling practices" or "Agri-Environmental Practices". Even though these concepts do not necessarily contravene an agroecological approach, they often focus too narrowly on particular components (e.g. productivity, food safety or environmental harm reduction).

3. Suggested Fairtrade policy positions

A. Policy development and structure

Each of the policy positions is based on the empirical literature, developed with the input key informants through interviews and the review period. Feedback was furthermore received in the two workshops (held on December 7, 2021 and March 9, 2022), and by ten (10) external peer reviewers. DI's contribution involved analysing inputs, identifying convergence and divergence, and juxtaposing input with the relevant academic state-of-the art discourse.

For this Executive Summary, the suggested policy positions for each sustainable risk are structured in four parts:

1. Introduction of the topic which provides a brief background, reflects the relevance to why address the risk and linkages between the risk and potential outcomes.
2. Underlying agroecological principle(s) which reflects the leading agroecological principle or rules under which the specific sustainable issue lies.
3. FI general policy position which reflects the mainstream policy -- in the form of rules, principles or guidelines – which inform the basis for making decisions.
4. FI specific policy position, which reflects rules, principles or guidelines on specific topics under the main sustainable agricultural risk, further informs the basis for making decisions related to the topic.

B. Suggested Fairtrade policy position per risk

This section contains the suggested Fairtrade policy positions on each dimension (25) that underpins agriculture sustainability (see V.2.B.Proposed sustainable agriculture risk framework). The title of each sub-section is framed using positive language. However, the principal risks that its being addressed with each policy position is also identified.

1. Climate resilience
(risk: climate change)

1.1. Introduction to the risk

Although smallholder agriculture causes relatively few emissions, on a global scale, agriculture is a leading contributor to emissions that drive climate change. At the same time, climate change is already adversely impacting agricultural productivity, threatening global supplies. Recent years have seen extreme variability in temperatures and rainfall, inducing wildfires, drought, and desertification on the one hand and heavy rains, floods, and erosion events on the other.

1.2. Why is it relevant for Fairtrade?

Negative impacts of climate change can considerably affect farms, POs and communities economically, socially and ecologically. Eco-logically, changes in the weather and temperatures can cause shorter growing seasons, floods, soil erosion and increase the risks of pests and diseases. Socially it can endanger farmers' lives, health, food security and nutrition. Economically it can hurt the financial standing of the farm and households, contributing to poverty.

1.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, "farming solutions with a focus on Climate Change." It also addresses pillar 2, with the potential of new markets. To increase farms' resilience to climate change, this policy proposes adopting sustainable agricultural practices, especially agroecological practices, aimed at adaptation and mitigation, which can improve POs', farmers' and workers' positions to cope with external shocks and achieve decent livelihoods.

1.4. Agroecological principles

Synergy | Biodiversity | Resilience and adaptation to CC | Input reduction | Co-creation of knowledge | Diversification

1.5. Policy position(s)

a. Overarching policy position

Fairtrade joins efforts – and mobilises resources – to help POs adapt and mitigate climate change, increase and enhance resilience, and reduce their contribution to climate change. Fairtrade also promotes the implementation of agroecological practices that takes advantage of novel revenue streams such as the ones associated with carbon removal units.

b. Specific policy position(s)

GHG emissions	Fairtrade actively works with POs and supply chain actors to reduce GHG emissions under scope 1, 2, and 3, based on the 2001 Green House Gas Protocol. Scope 1: cover GHG emissions that POs and farms cause directly (e.g. burning, nitrate fertilisers, pesticides). Scope 2: includes indirect GHG emissions. Scope 3: includes the GHG emissions that the organisation is indirectly responsible for, along the value chain.
Carbon removal units	Fairtrade works to broaden its scope of projects to encompass carbon Removal Units (RMU) by applying agroecological practices (APs) and other sustainable practices that generate new sources of revenue for farmers and provide a measurable benefit to the environment.
Adaptation and mitigation	Fairtrade actively promotes and helps POs in the adoption of climate change adaptation and mitigation measures and practices that are beneficial to the farm, producers, workers and the community, taking into account their specific context (e.g. region, crop, capacity and knowledge).
Eco-friendly products	Fairtrade works to enhance, for all crops, POs' business models, differentiating them from conventional agriculture, and supports proven, market-driven initiatives on eco-friendly[39] products, taking care not to engage in greenwashing.

39 The term "eco-friendly" refers to products not harmful to the environment. The "ecological" reference implies that it includes not only activities or practices not harmful to the environment in agricultural production, but also in processing, transport, shipping etc.

1.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase farmers and farms resilience to climate change.
How can it be measured?	**Degree** of resilience to climate change within PO member and worker communities [Fairtrade 2019 TOC metric]. Develop for each crop a tool and methodology to measure the elements of the following metric "**vulnerability to climate change = (exposure + sensitivity) - adaptive capacity."**[40]

b. For the specific positions the suggested definitions of success are the following:

Policy title	Objective	How can it be measured?
GHG emissions	Reduce GHG emissions under **scope 1** annually [Fairtrade to choose an annual percentage]	**Emission factor estimates** a farm level and in the life cycle of the product from farm to shelf [Fairtrade to choose a methodology and tool, e.g., the CFT (Cool Farm Tool) digital calculator
Carbon removal credits	Increase the number of POs that participate in Carbon removal credits projects and monetise their positive carbon impact.	**Number and percentage** of POs able to monetize their positive carbon impact per commodity and region.
Adaptation and mitigation	Increase the number of climate change adaptation and mitigation projects and the number of POs involved in such projects.	**Number** of POs participating in climate change adaptation and mitigation projects. **Number and amount of funds allocated** for projects about climate change mitigation and adaptation.
Eco-friendly products	Fairtrade products to participate in new markets initiatives that reword or give preference to products with less or minimal impact on the environment.	**Percentage** of products sold as climate-friendly.

1.7. Direct linkages with other sustainability challenges

Land degradation; Soil organic carbon depletion; Chemical pollution; Water stress; Nutrient pollution; Low income and low wages; Food insecurity.

40 Soto et al., (2016) include in their manual an example to measure "vulnerability to climate change" in coffee.

2. Youth employment and decent livelihood opportunities
(risk: youth unemployment, poverty and lack of decent livelihood opportunities)

2.1. Introduction to the risk

The world faces considerable challenges in ensuring that young people are integrated into the world of decent work and have access to skills development and business opportunities. Challenges have become even more daunting over the past year as Covid-19 and its associated financial and economic crisis and risks hit youth hard, with discrimination and inequality hitting vulnerable and marginalised youth groups in agriculture particularly harder.

2.2. Why is it relevant for Fairtrade?

Youth play a critical role in sustainable agriculture for many reasons: they are the future of agriculture, and with the proper education, they could apply new technologies or management strategies to achieve sustainability. Nevertheless, due to dire perspectives (unemployment, unrewarded and laborious work, lack of youth political participation, etc.), youth are generally less interested in engaging in agriculture vocation, often migrating to urban areas in the pursuit of better opportunities. By notably addressing structural problems in agriculture, young people may see a future for them in the sector (e.g., decent opportunities, skill development, agency, and adoption of technologies).

2.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for "Supporting Women and Young People." To increase youth inclusion and involvement in Fairtrade POs and the system, these policies propose to work on the structural factors that would increase youth engagement. It also aims at helping them achieve decent livelihoods, such as access to decent employment opportunities, skills development and business opportunities, agency and participation in matters involving and affecting them. In addition, innovations and adoption of technology and agroecological practices.

2.4. Agroecological principles


Fairness


Participation


Co-creation of knowledge


Resilience and adaptation

2.5. Policy position(s)

a. Overarching policy position

To draw in the youth into PO structures and raise a new generation of farmers, Fairtrade champions the inclusion and decent employment opportunities for youth; the provision of resources, technologies, information and knowledge to youth; youth participation in decision-making and distribution of Fairtrade benefits; and the creation of safe and respectful workplaces for youth. Simultaneously, Fairtrade works against discrimination, abusive and exploitative conduct vis- à-vis youth.

b. Specific policy position(s)

Youth and innovation	Fairtrade supports youth inclusion through initiatives that incentivise youth to get involved in agriculture and increase adaptation rates to new technologies (as a higher rate of acceptance of blending of science and practice and diversification strategies are linked to youth members).
Youth employment	Fairtrade fosters decent youth (15-24)[41] employment and skills development through apprenticeship and vocational training while complying with international and national laws concerning child labour. By creating enabling and empowering inclusive learning environments for young people, they may be introduced to the field of agriculture instead of being excluded. Also, Fairtrade drives advocacy efforts to ensure every child has the right to attend quality education and be protected from exploitation and abuse.

41 There is not a universally agreed age range that defines youth. It might vary depending on regions and other actors, as in general, the relation between the period of youth and biological age can change across cultures. This research proposes using UN definition which sets youth as those persons between the ages of 15 and 24 years (United Nations, 1981).

2.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Annually increase the percentage of youth as producer members of POs, involved in apprenticeship, learning and vocational programmes and with decent employment in farms up to the desired level set up jointly by PO and PNs.
How can it be measured?	**Number and percentage** of youth in decent employment, business opportunities and/or learning/vocational in POs.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Youth and innovation	Increase the number of PO initiatives and innovative measures directed to attract youth, such as training and projects to adopt agroecological practices.	**Number and percentage** of POs with explicit initiatives and sustainable projects that include youth. **Number and percentage** of POs implementing innovative measures to enhance youth employment.
Youth employment	Increase the number of decent work and vocational opportunities for young farmers within POs.	**Number and percentage** of POs who offer non-agricultural vocational training and/or internships to youth. **Number and percentage** of POs staff who are youth (aged 15-24). **Number and percentage** of POs staff who are young women.

2.7. Direct linkages with other sustainability challenges

Climate resilience, Agroecological Practices (APs), Child rights, Agency.

3. Fair markets and trade (risk: market barriers and anti-competitive behaviour)

3.1. Introduction to the risk

Market barriers in the Fairtrade context include, for example, the fact that the Fairtrade label is costlier than other alternatives. Also, insufficient investments to measure and demonstrate attributable impact curtails the organisation's ability to justify higher price points to stakeholders. Moreover, in the context of industry practices that include misleading labelling and deceptive practices, there is a danger that the consumer trust gap would grow. Unfair trade practices include opaque pricing systems and asymmetric information, which further aggravate social inequalities.

3.2. Why is it relevant for Fairtrade?

Market barriers and anticompetitive behaviours can increase power imbalances in favour of larger organisations or companies, undermining POs' profits and ultimately endangering livelihoods. They can also place producers under stress, since producers are required by many supply chain actors to comply with environmental and social standards but they often lack support. On the contrary, reliable and equitable markets can increase income, reduce poverty, and positively impact farmers' and workers' livelihoods.

3.3. Link to Fairtrade strategy

The policy addresses strategic pillars 3 and 4, which call for working with business partners, consumers, and other actors for fairer and more transparent supply chains. To increase producer empowerment, these policies propose building PO capacity on trade, advocating for data ownership and sharing, and facilitating transparent access to information on prices and costs can potentially increase incomes, wages and overall market access.

3.4. Agroecological principles

Fairness

Connectivity

3.5. Policy position(s)

a. Overarching policy position

Fairtrade works with disadvantage producers and workers to balance power relations in favour of a fair value distribution.. Fairtrade also advocates for the sharing of information across supply chain actors to build fairer, transparent, and more accountable supply chains. Information on prices and terms of trade increases PO market access and reduces power imbalances.

b. Specific policy position(s)

Data access	Fairtrade works to enable PO (and SPO in particular) access to quality, timely, and transparent information on trade, such as prices, margins, terms of trade and specific regulation.
Data compensation	Fairtrade works to roll out technology that allows farmers and producers to get compensated for their HREDD data.[42]

3.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase market access and reduce barriers and anti-competitive behaviour in the Fairtrade context, such as lack of access to prices, bound contracts, and opacity in terms of trade.
How can it be measured?	**Fairtrade market share** in certified products (per country and crop).

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Data ownership	Increase the number of digitalised supply chains where the POs have access to quality data.	**Number and percentage** of digitalised supply chains aggregated, per region and commodity.
Data compensation	Pilot technologies that allow POs to monetise their HREDD data	**Number and percentage** of POs that are monetising their HREDD data

3.7. Direct linkages with other sustainability challenges

Social equity and equality; Traceable supply chain; Living income and wages.

42 See work done by Datastake (n.d.) which provides the technology that allows farmers to own their data and be compensated for producing and sharing it.

4. Living income and wages
(risk: low income and wages)

4.1. Introduction to the risk

Living incomes and living wages are central to achieving decent and sustainable livelihoods. Impoverished farmers generally lack the resources to improve their incomes, leading them to difficulties in paying decent wages and economic pressures that could result in child labour, other rights violations, and deforestation.

Living income's main challenges come from its components: price, volume, and cost, including costs of compliance with laws, regulations and standards. A fourth challenge could be the lack of diversification. Associated also are power imbalances, anti-competitive behaviours, market barriers and increasing costs, including those related to climate change adaptation and mitigation programs and practices. Concerning living wages, apart from being related to the prices, costs and volumes sold of commodities, they depend on factors such as unionisation and collective bargaining.

4.2. Why is it relevant for Fairtrade?

The issues associated with living incomes and wages are numerous and nuanced, involving other factors such as gender, vulnerability, inequality, and access to land. Yet, in terms of sustainability, living incomes and wages are imperative, as failure to achieve them would not only impair supply chain continuity and the flourishing of rural communities but also result in significant damage to the natural environment.

4.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for living income and wages, which are enablers of sustainable livelihoods. To reach the objective, these policies propose to work or better prices, strengthen bargaining power (see Labour rights and Agency), income diversification, increase markets access (see Fair markets and trade), value addition and productivity.

4.4. Agroecological principles

Fairness

Diversification

Connectivity

Land and natural resource control

Resilience and adaptation

4.5. Policy position(s)

a. Overarching policy position

Fairtrade takes a holistic approach to strive for living incomes and living wages, which involves the following interventions: advocating for paying fair prices and wages based on FLIRP; improving productivity through higher yields, cost efficiency, efficient use of inputs, input reduction, and introduction of sustainable technology; and diversification of income sources.

b. Specific policy position(s)

Prices	Fairtrade advocates, with supply chain actors, stakeholders, public policymakers, regulators, and the private sector, in the various (business) forums in which Fairtrade participates, for fairer prices that incorporate the environmental and social cost of sustainable production (agroecological) and enables living incomes and living wages; and for a fairer distribution of value creation in supply chains. Fairtrade takes special care not to create the wrong economic incentives that lead to unsustainable practices (e.g., overuse of chemicals).
Diversification	Fairtrade supports farmers and workers adopting income and farm diversification strategies (incl. farm and off-farm diversification) with the purpose of producing food for their own consumption, local markets, by-products or generating other sources of income.
Productivity	Fairtrade supports POs efforts to increase farm productivity that results from the adoption of APs (agroecological practices) fostering environmental, social and economic sustainability, and are at the same time profitable and beneficial to farmers; and financially supports SPOs to cover the transition cost from conventional/poor sustainable farming to sustainable farming systems in cooperation with supply chain actors and other stakeholders (e.g., NGOs and the government).
New organisations	Fairtrade works to minimise and eliminate unfair competition between new POs and older POs, and certifies new organisations when there is proof that they have a buyer for a certain percentage of production to avoid losing or compromising existing POs and certification costs.
Scaling up the value chain	Fairtrade supports and encourages POs to control more steps of the value chain (e.g. processing or exportation), growing the margin of value addition for the producer wherever possible.
GMOs	To ensure farm autonomy, Fairtrade prohibits the deliberate use of genetically engineered seeds or planting stocks.

4.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Achieve living income and living wages by 2030.
How can it be measured?	**Gap** between living wages and wages paid per crop, and region. **Gap** between prices that allows a living income and prices paid.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Prices	Achieve commodity prices that reflect the true price of production and that allow for decent livelihoods and wages.	**Gap** between prices paid vs the true price of production allows allowing for decent livelihoods and wages. **Number** of licensees paying FLIRP. **Number** of POs paying living wages.
Diversification	[Fairtrade to define a % of POs] POs have and implement a strategic/business plan to support income diversification [Fairtrade to define a year].	**Number** POs with strategic plans on agricultural diversification. **Number and percentage** of POs that advance on a plan to support income diversification and/or food security among members. **Number and percentage** of farmers that have other income sources that contribute with more than 10% of farmer's income besides the commodity.
Productivity	Increase POs and farmers' productivity giving priority to factors such as cost and external inputs reduction and technology infusion [Fairtrade to define a percentage and year].	**Number and percentage** of POs which took measures to improve productivity and/or quality in last the calendar year. **Total investment** by POs in productivity and quality improvement measures in last the calendar year.

New organisations	Introduce as a requirement to certify a new organization the submission of evidence that the potential certified organisation has a buyer willing to buy more than 20% of the Fairtrade production, in case the Fairtrade system does not have room for new certifications due to the low demand of Fairtrade products [Fairtrade to define a year].	**Percentage** of POs with (1) no buyers, (2) 1-3 buyers, (3) 4-6 buyers, (4) > 6 buyers in last the calendar year.
Scaling up the value chain	Increase the number of POs that scaled up in the value chain [Fairtrade to define a year].	**Percentage** of Fairtrade certified POs by highest position in the value chain in last the calendar year. **Percentage** of POs which have improved their position in the value chain since first achieving Fairtrade certification in last the calendar year.
GMOs	Zero intentional use of GMOs in Fairtrade POs organisations.	**Number** of non-compliances found in audits in last the calendar year.

4.7. Direct linkages with other sustainability challenges

Climate resilience; Fair markets and trade; Land restoration; Primary and secondary education; Agroecological Practices; Reducing, recycling, reusing, and sharing; Child rights; Labour rights; Food security and nutrition.

5. Land restoration (risk: land degradation)

5.1. Introduction to the risk

According to the FAO, "land degradation and soil depletion represent a real and escalating global threat and involves a number of processes, including erosion by wind, water and tillage, compaction, sealing, nutrient imbalance, loss of soil organic matter, acidification, salinisation and pollution" (FAO, 2014d).

One of the main drivers of land and ecosystem degradation is deforestation due to land conversion for economic purposes, which not only affects ecosystems it also contributes to climate change. A recent study commissioned by FI (Linne et al., 2019) reaches the conclusion that many Fairtrade-certified farmers are "expected to be at high risk of soil erosion."

5.2. Why is it relevant for Fairtrade?

Healthy and fertile land is absolutely imperative for long-term sustainability and agricultural production. For producers, degraded ecosystems could adversely affect their livelihoods since eroded soils, lack of biodiversity and other triggering effects endanger yields, crop productivity, and require more external inputs, increasing the cost of production. This also may affect living incomes and wages, increase food insecurity and expand the cultivated areas (e.g. forests or natural ecosystems).

5.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, "farming solutions with a focus on Climate Change." Fairtrade recognises that harmful agricultural practices can lead to less arable lands and biodiversity loss. To stop land and ecosystem degradation, these policies propose protecting and conserving natural ecosystems and protected areas and adopting good APs. In addition, the introduction of technology could monitor the fulfilment of these policies and pipeline regulations on deforestation and other land and ecosystem degradation activities.

5.4. Agroecological principles

Resilience and adaptation | Biodiversity | Soil health | Fairness

5.5. Policy position(s)

a. Overarching policy position

Fairtrade protects forests, ecosystems, natural areas and protected areas; and works against the unsustainable exploitation of natural, protected areas, forests, and other ecosystems by instituting plausible yield and remote sensing technology.

b. Specific policy position(s)

Land degradation	Fairtrade takes measures to enhance the systems' capacity to enforce any legal requirements on land degradation (including deforestation) and raises awareness to counteract land degradation.
Deforestation	Fairtrade aligns its position on deforestation with current and upcoming deforestation legislation in the various regions in which Fairtrade operates, always choosing the more rigorous standard that benefits the environment and does not excessively burden producers. Fairtrade also institutes systems in order to progressively eliminate the trade of deforestation-tainted goods in its system.
Conservation	Fairtrade supports the conservation of forest and native trees on the farm (except when these pose hazards to people or infrastructure), promotes sustainable forest management and supports reforestation/afforestation programs.
Unsustainable practices	Fairtrade will phase out and counteract practices that harm the land, soils, and biodiversity, such as burning, indiscriminate slash and burn,[43] and debris practices where there is strong and sufficient evidence of their unsustainability.

5.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase land and ecosystem resilience by adopting APs that aim at preventing further erosion and degradation; and restoring ecosystems and it services.
How can it be measured?	**Number and percentage** of farmers who sufficiently implement at least two soil conservation and ecosystem measures identified as priorities by the POs.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Land degradation	Partner with individual experts or organisations on land degradation to strengthen Fairtrade internal capacity [Fairtrade to define a year].	**Number** of partnerships and contact with experts or organisations on land degradation

43 In certain circumstances, however, burning may be practiced sustainably (Nigh & Diemont, 2013).

Deforestation	Zero annual net forest loss in PO area.	**Accurate mapping** of forest covered areas (forest extent) in PO area through Earth Observation with overall accuracy of > 90%. **Monitoring** of forested areas through tree cover change datasets, e.g. through WRI Global Forest Watch/ University of Maryland Tree Cover Change data, or any other tree cover change dataset in order to calculate forest loss.[44]
Conservation	Zero exploitation of protected areas and forests and increase of tree-covered areas in cultivation areas.	**Spatial extent** of Areas with Tree Cover loss within cultivation areas and forest land. [45] **Spatial extent** of areas with Tree Cover gain within cultivation and forest land. [46]
Unsustainable practices	Reduce where applicable and possible the number of producers practising burning, slash and burn and debris practices by 2040.	**Number** of producers identified using burning, slash and burn and debris practices and replaced them with APs.

5.7. Direct linkages with other sustainability challenges

Climate resilience; Agroecological Practices; Traceable supply chains; Efficient use of pesticides and agroecological alternatives; Efficient use of fertilisers and agroecological alternatives; Water use; Food security and nutrition.

44 GFW, while being an excellent global data source for indicating potential loss of forests, it needs to be treated with care. The GFW change products show tree cover and tree cover change. Trees do not necessarily mean forest. The GFW data would need to be combined with Forest Extent in order to measure forest loss. E.g. the cutting of Cocoa trees would be mapped in the GFW data as forest loss, which is technically not the case.

45 To measure consider (1) Monitoring of Tree Cover Density in Protected Areas, Forest and Plantation areas through Earth Observation. (2) Multitemporal comparison of Tree Cover Density maps to identify land areas with Tree Cover Gain and Tree Cover loss.

46 (ibid)

6. Primary & secondary education
(risk: lack of primary & secondary education)

6.1. Introduction to the risk

Education is a fundamental human right, and its deprivation can lead and contribute to social, economic, and environmental problems, such as inter-generational poverty and the absence of skilled, informed and empowered workers. It could also enable exploitation, abuse, and discriminatory and unfair practices between the genders. FAO also identified education as an enabler of rural people's capacity to be food secure and sustainably manage natural resources (Acker et al., 2009).

6.2. Why is it relevant for Fairtrade?

Education is in itself a means to exit poverty and hunger (De Muro & Burchi, 2007) and is crucial to preventing and fighting child labour. Knowledge acquisition allows for technological innovation, increasing incomes and improving livelihoods. Appropriate education also allows the understanding of the sciences, which can be applied to produce food sustainably. Furthermore, quality education could mean better access to decent work opportunities for youth. For POs the level of education is relevant as it can affect the way they do business, produce, and their ability to interface with the Fairtrade system.

6.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for "the empowerment of farmers and workers" by supporting young people, equality, and developing programs. Fairtrade recognises the importance of education and has worked in creating Fairtrade schools and universities. To continue with the ongoing work, this policy proposes advocating for resources from other actors and the Fairtrade premium towards equal and inclusive education.

6.4. Agroecological principles

Fairness

Social values and healthy diets

Co-creation of knowledge

6.5. Policy position(s)

a. Overarching policy position

Fairtrade recognises the centrality of education in the pursuit of sustainable agriculture and advocates for more resources and inputs towards education, including premium investments for educational causes. Fairtrade also advocates for equal access to quality to primary and secondary education in rural areas to reduce poverty and inequality.

6.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase the availability and access to quality and affordable education for Fairtrade producers' and workers' children.
How can it be measured?	**Percentage** of PO members' and workers' children and dependents aged 15 and above who have received (1) secondary education, (2) tertiary education by gender. **Percentage** of PO members' and workers' children and dependents aged 7 to 14 years who currently attend school, and percentage which are at the appropriate grade level for their age, by gender.

6.7. Direct linkages with other sustainability challenges

Youth employment and decent livelihoods opportunities; Child rights; Living income and wages; Climate resilience; Agroecological Practices; Gender equality; Social equity and equality.

7. Water use
(risk: water stress)

7.1. Introduction to the risk

Agriculture is one of the economic sectors with the highest rates (85%) of global water withdrawals (Project Drawdown, 2020). To produce, water is essential. Therefore, agricultural production is greatly affected by droughts and water scarcity, especially for crops in which water is used for different purposes. A recent study commissioned by FI to assess its impact on environmental protection, biodiversity conservation and adaptation to climate change revealed that in all except one case study (Cocoa) "the key environmental challenges are mostly related to water issues" (Linne et al., 2019).

7.2. Why is it relevant for Fairtrade?

Not providing plants with enough water can lead to loss of crop productivity and crop quality, affecting, among other things, food security. Furthermore, water shortages could lead to soil dehydration, resulting in production losses, plant losses or changes in the production cycle affecting the market and contract enforcement.

7.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, "farming solutions with a focus on Climate Change." Specifically, on water, the strategy recognises the overuse of water as a harmful practice and advocates for the rational use of water resources. To increase farms' resilience to climate change, mitigate the economic losses due to water stress, and to enhance water use and retention, this policy proposes managing water resources.

7.4. Agroecological principles

Resilience and adaptation

Synergy

Soil health

Connectivity

7.5. Policy position(s)

a. Overarching policy position

Fairtrade promotes the efficient use of water resources and the adoption of good practices (e.g., APs) that enhance water retention, water quality, re-use of water and reduction of water consumption for production.

7.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase efficiency in water use and increase water re-use, and show annual improvement in the metric.
How can it be measured?	**Measure** water use and water stress in periodic life cycle assessments.

7.7. Direct linkages with other sustainability challenges

Climate resilience; Land restoration; Soil organic carbon; Agroecological Practices; Biodiversity and agrobiodiversity; Efficient use of pesticides and agroecological practices; Efficient use of fertilisers and agroecological practices; Food insecurity.

8. Biodiversity and agrobiodiversity (risk: biodiversity loss)

8.1. Introduction to the risk

Biodiversity and species interactions are critical for agriculture production, climate change, human resilience, human health and well-being, food security and nutrition (Food and Agriculture Organization of the United Nations, 2019c). It is also part of the natural capital of the farm. Functional biodiversity in the farm is the one that maximises synergies and minimises trade-offs, and serves as a means to mitigate the effects of climate and enhance farm resilience. The main contributors to biodiversity loss are the conversion of natural ecosystems into production fields and the intensification of conventional agriculture (e.g., monocultures).

8.2. Why is it relevant for Fairtrade?

Biodiversity is a means to stabilise agricultural production. Poor biodiversity leads to unsustainable practices such as increased dependency on external inputs (fertilisers and pesticides) to sustain primary production. In the long term, it could reduce crop yields due to soil fertility loss and cause crop losses because of the poor resilience of farms to disturbances.

8.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, “farming solutions with a focus on Climate Change.” Fairtrade recognises the importance of biodiversity, and in particular agrobiodiversity. To prepare and adapt against the increasing risk of climate change and the deterioration of soils and ecosystems that affect productivity, these policies propose the protection and re-establishment of biodiversity and agrobiodiversity that is functional to the farm.

8.4. Agroecological principles

Biodiversity | Synergy | Resilience and adaptation | Social values and healthy diets | Land and natural resource control | Diversification

8.5. Policy position(s)

a. Overarching policy position

Fairtrade protects and maintains biodiversity above and below ground and prevents its loss; Fairtrade promotes and seeks the ecological advantages and productive synergies that support healthy agroecosystems, and that occur through complementary relationships as specie richness increases; and Fairtrade supports agrobiodiversity that adds economic, social and cultural value to farms and increases farms' resilience.

b. Specific policy position(s)

Alien invasive species	In order to protect native species and ecosystems, Fairtrade puts in place effective mechanisms to prevent the introduction of alien invasive species that are part of proven ecosystem-damaging activities.
Wild and endangered species	Fairtrade condemns hunting, killing, collecting, trafficking, and captivity of endangered and wild species, and utilises its leverage against such practices. Killing or hunting of wild species might be possible in some cases (such as proven risk to human lives), always for non-commercial purposes and according to national legislation (with the exception of endangered species included in the IUCN Red Lists or other relevant list which is always condemned). In the case of wildlife pests, population control is permitted in accordance with national wildlife laws and as a last resort but under a plan of "integrated pest management" / "ecological management," in agreement with a pest management specialist and FLOCERT. Exceptions (i.e. to apply Red List hazardous materials), e.g. in case of an existential threat to a producer, are granted on a case-by-case basis by FLOCERT.
Seeds and genetic resources	As part of agrobiodiversity, Fairtrade promotes seed sovereignty, variety, and counteracts possible dependencies on external seed purchases; helps farmers to increase seed autonomy; supports on-farm management of plant genetic resources; promotes the conservation and diversification of varieties on-farm and ecosystems; and participates in the development and implementation of plans and projects on crop genetic diversity conservation, diversification, exchange, and use.

8.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase annually the number of POs with an average score above 70% on agricultural biodiversity (proposed metric from TAPE tool) and reach zero POs scored below 50% by 2030 to increase farm resilience to external shocks.
How can it be measured?	**Average of the Gini-Simpson index** for crops and the Natural Vegetation, trees and pollinators index (TAPE tool).

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Alien invasive species	Implementation of phytosanitary and alien fauna control protocols with emphasis on organic practices rather than chemical control or prevention.	**Number** of phytosanitary and alien fauna control activities to contain invasive population species if those are already on the agroecosystem.
Wild and endangered species	Maintain a healthy and balanced community of wild and endangered species.	**Species monitoring** of key wild and endangered.
Seeds and genetic resources	Facilitate seed availability, diversity and access to quality and affordable seeds with a preference on local/landrace varieties to increase seed sovereignty and farm resilience to external shocks;[47] and increase the genetic diversity of farm species and ecosystems to increase farm resilience to external shocks.	**Number** of POs sourcing seeds from own breeding or in partnership with other producers or expert organisations. **Number and percentage** of farmers practising genetic diversification aggregated, per PO, commodity, region and type of organisation (HL and SPO).

8.7. Direct linkages with other sustainability challenges

Climate resilience; Land restoration; Soil organic carbon; Water use; Agroecological Practices; Efficient use of pesticides and agroecological practices; Efficient use of fertilisers and agroecological practices; Food insecurity.

47 The best way to keep a seed is not to storage it but rather to grow it.

9. Soil organic carbon
(risk: soil organic carbon depletion)

9.1. Introduction to the risk

Soil is the alpha and omega in agricultural production. Unsustainable practices include conventional intensive agriculture, and land-use change depleting the soil organic carbon stocks from soils. Apart from contributing to climate change, such practices can reduce soil health.

9.2. Why is it relevant for Fairtrade?

Without healthy soils, there are risks of reduced productivity and yields and increased vulnerability to pests and diseases. Conversely, healthy and fertile soils lead to more productivity, higher crop quality, and less external inputs, which could result in higher incomes.

Farmer investments in their own soils also add (commercial) value to their property and increase its longevity. Furthermore, healthy soils increase resilience to climate change.

9.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, “farming solutions with a focus on Climate Change.” Fairtrade recognises that harmful agricultural practices can lead to less arable lands and affect production. To increase soil health and consequently resilience of farms to climate change, these policies propose to focus on agroecological practices that can prevent and increase SOC and SOM-enriching soils. It also proposes supporting research on carbon sequestration in soils.

9.4. Agroecological principles


Resilience and adaptation


Biodiversity


Soil health


Fairness


Land and natural resource control

9.5. Policy position(s)

a. Overarching policy position

Fairtrade strives to raise awareness and care for soil health. Fairtrade also prevents critical soil organic carbon (SOC) and soil organic matter (SOM) losses due to unsustainable agricultural practices and promotes adopting Agroecological Practices and techniques that maintain and enrich soil health (including biodiversity, nutrients, and other organicism), increases water retention, reduces soil erosion, and that are functional to the farmers.

b. Specific policy position(s)

Carbon sequestration in soils	Fairtrade supports research, programmes/projects and partnerships with subject expert organisations and commercial partners related to soil improvement (e.g., biochar) and carbon sequestration projects in soils to the extent that is beneficial to farmers, is cost-efficient for POs and Fairtrade, and does not create perverse incentives, such as driving smallholder from their lands to implement afforestation projects.

9.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase soil health by including soil sampling and carbon measurements in the standards, as well as introducing criteria that prevent carbon depletion through mandatory APs that enhance soils.
How can it be measured?	**Fairtrade to select indicators** of 'SOCLA 10 Indicators of soil health or Gliessman indicators for soil health (all based on observations of the soil, they do not involve labs – see Annex H).

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Carbon sequestration in soils	Participate in pilot projects that aim at soil improvement and carbon sequestration on soils, with one top commodity that shows the best potential to evaluate the cost-benefits of the practice, degree of adoption, and scalability.	**Number and percentage** of producers participating in projects related to soil improvement and carbon sequestration projects on soils aggregated, per PO, commodity, region and type of organisation (HL and SPO). **Number and percentage** of Fairtrade-certified land area associated with such producers

9.7. Direct linkages with other sustainability challenges

Climate resilience; Water use; Land restoration; Agroecological Practices; Biodiversity and agrobiodiversity; Efficient use of pesticides and agroecological practices; Efficient use of fertilisers and agroecological practices; Food insecurity; Living income and wages; Reducing, recycling, reusing; and sharing.

10. Water and sanitation
(risk: lack of drinking water & sanitation)

10.1. Introduction to the risk

Water is a human right and access to clean water, sanitation services and water management are basic elements to achieve equitable, sustainable, and productive rural economies. Access to clear water is also associated with the reduction of poverty and other environmental, economic and social benefits.

In rural areas, adequate water and sanitation supply can be scarce. Limitations in access could be linked to "environmental fragility and relatively poor economic conditions," and the lack of or poor infrastructure and sources of "drinking water and safe sanitation" (UN Water, 2021). In addition, "to this lack of services, natural water sources such as wells, pumps, and rivers are often contaminated and provide an unreliable supply" (UN Water, 2021).

10.2. Why is it relevant for Fairtrade?

Poor sanitation is a source of contaminants which affects human health, especially workers health (e.g. water-borne diseases such as diarrhoea and dengue fever), increasing health care expenses and reducing economic returns. Improved management and access to fresh clean water and sanitation can reduce the cost of health for workers, save time which can be invested in education and other productive activities, and improve workers health potentially resulting in an increase of productivity.

10.3. Link to Fairtrade strategy

Fairtrade's focus is to achieve sustainable and decent livelihoods, and health is an essential factor in achieving it. The policy addresses strategic pillars 1 and 2, even if not directly reflected, and proposes improving sanitary conditions for workers.

10.4. Agroecological principles

Fairness

Social values and healthy diets

10.5. Policy position(s)

a. Overarching policy position

Good working conditions in the workplace – and housing in the case it is provided as part of the remuneration – includes adequate and proper access to quality freshwater and sanitations facilities, for all workers to manage their hygiene, health and dignity.

10.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Reduce potential health hazards at the workplace and reduce the number of workers suffering illnesses due to lack of clean, fresh water and proper sanitation.
How can it be measured?	**Number and percentage** of POs that have included in their policies criteria on inclusive working conditions in the workplace and housing (in the case it is provided as part of the remuneration), related to water and sanitation.

10.7. Direct linkages with other sustainability challenges

Living income and wages; Labour rights; Health and safety; Appropriate housing.

11. Gender equality
(risk: gender inequality and inequity)

11.1. Introduction to the risk

Women are crucial for rural development and "major agents for change" (FAO, n.d.-e). However, the gender gap in agriculture is still extensive. Women as producers face major constraints to access and own resources such as land, water and farm inputs. Also, they lack access to rural advisory and extension services, technology, timely labour, weather and climate, information, and access to credits and financial assets. Due to these constraints, women are often considered less productive (Tirado von der Pahlen et al., 2018). Another critical issue is gender-based violence (GBV), which affects women and girls, in particular, compromising their ability to work, generate wealth and as caregivers, perpetuating poverty and "jeopardising agricultural productivity, food security and nutrition" (FAO, n.d.-d).

11.2. Why is it relevant for Fairtrade?

The inclusion of women and other marginalised gender groups could be beneficial to sustainable agriculture production as enhanced net farm profitability and financial transparency is derived from more female ownership, management and participation.

11.3. Link to Fairtrade strategy

Fairtrade is improving gender equality and has notably developed a gender strategy (Fairtrade International, 2016). The policy addresses strategic pillar 1, which calls for "the empowerment of farmers and workers" by supporting young people, equality, and developing programs. Fairtrade recognises the importance of education and has worked in creating Fairtrade schools and universities. To continue with the ongoing work, this policy proposes advocating for resources from other actors and the Fairtrade premium towards equal and inclusive education.

11.4. Agroecological principles

Participation

Co-creation of knowledge

11.5. Policy position(s)

a. Overarching policy position

In order to increase fairness, Fairtrade strives to provide women with equitable access to resources and works to enhance their economic and social autonomy, agency and empowerment. Fairtrade strives for a balance of power between genders and furthermore embraces gender-sensitive approaches that include men, supports the rights of women and people with underrepresented genders, recognises their substantial role in agriculture, and generally champions their participation.

b. Specific policy position(s)

Gender participation	Fairtrade encourages gender-equitable inclusion and participation in POs, especially in decision-making and policy development at the PO management level.
Gender equality	Fairtrade works to increase gender equality, systematically mainstreaming gender throughout the organisation operations and addressing systemic issues that hamper the realisation of gender equality.
Women's empowerment	At the producer organisation level, Fairtrade emphatically supports women's ability to make strategic life choices by: (1) enforcing equal opportunities in agriculture, (2) challenging deeper gender norms and structures with the aim of rebalancing unequal power distribution between persons of various genders, (3) supporting the development of women networks that aim at strengthening the position of women, and (4) increasing the visibility of women's roles and contributions.
Societal engagement	Moreover, Fairtrade advocates for a broader transformation in political and social life and promotes gender equality and women's empowerment through work at all levels, and through a bottom-up and context-driven approach.

11.6. Definition of success

a. For the overarching position the suggested definition of success is the following:

Policy outcome objective:	Increase the inclusion and participation of women and people with underrepresented genders in Fairtrade POs
How can it be measured?	**Number and percentage** of women or other genders that are part of POs. **Number** of women that are part of the POs' board.

b. For the specific positions the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Gender participation	Increase broader gender participation in PO decision-making and policy development.	**Ratio** of participation, by gender, in PO decision-making.
Gender equality	Strengthen PO capacity to develop and implement gender-policies and programmes that aim at achieving equal treatment and opportunities.	**Number and percentage** of POs with policies and implementing programs on gender that aim at equality.
Women's empowerment	Increase women's access to agricultural resources and participation in decision-making.	[Fairtrade to choose or develop a cost-effective method to measure women's empowerment. Examples can be found in IFPRI].
Societal engagement	Increase visibility on gender equality and equity at all levels.	**Perception** of gender equality throughout the Fairtrade system.

11.7. Direct linkages with other sustainability challenges

Living income and wages; Labour rights; Health and safety; Primary and Secondary education; Social equity and equality; Agroecological Practices; Land rights; Access to energy.

12. Access to energy
(risk: lack of access to energy)

12.1. Introduction to the risk

The use of energy in agriculture is present throughout the supply chain. It includes from fuels to power up machinery or electricity for irrigation pumps to the energy used to produce off-farm inputs (agrochemicals), and firewood to cook and heat farm households. Currently, most of the energy used in agriculture comes from non-renewable sources, in particular fossil fuels, which contribute to GHG emissions. For agricultural sustainability, improved energy efficiency such as installing energy efficient cookstoves or the implementation of renewable energy sources such as solar panels and solar thermal collectors are "pivotal to achieving economic sustainability and GHG emission reductions" (Alluvione et al., 2011).

12.2. Why is it relevant for Fairtrade?

Energy efficiency can result in reduced dependency on external inputs, potentially lowering cost and increasing profits. In addition, efficiency and renewable options can be an opportunity to generate differentials, monetary incentives or premiums for reducing the impact on the environment – for example, through emission reduction units (ERUs).[48] The transition and implementation could require sizable investments, but with external funding, it can be an opportunity to provide farmers with another long-term source of income.

12.3. Link to Fairtrade strategy

Although not explicitly mentioned, the policy addresses strategic pillars 1 and 2: Pillar 1 with the adoption of farming solutions with a focus on climate change, and pillar 2 with the potential of new markets. The policy proposes energy efficiency and the transition to renewable energy.

12.4. Agroecological principles

Synergy

Resilience and adaptation

Diversification

12.5. Policy position(s)

a. Overarching policy position

In the quest to mitigate the effect and contribution to climate change, Fairtrade supports energy efficiency and values renewable energy alternatives that allow POs to reduce cost and dependency, e.g. by generating their own electricity. Lowering GHG emissions through less fuel consumption and the application of renewables further allows POs to earn income through emission reduction units (ERUs).

48 See Fairtrade efficient cookstove project.

12.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase energy efficiency and the use of renewable energy to 50% by 2030.
How can it be measured?	**Estimates** of non-renewable energy used in production/renewable energy.

12.7. Direct linkages with other sustainability challenges

Climate resilience; Water use; Agroecological Practices; Appropriate housing.

13. Food security and nutrition (risk: food insecurity)

13.1. Introduction to the risk

Adequate food is a human right. The deprivation or lack of food availability, accessibility, and adequacy may affect the exercise of other human rights and negatively impact the well-being of farmers and workers. Among factors of recurrent food insecurity for smallholder farmers are "age, size of the household, land tenure and technical education," and factors of episodic food insecurity are related to "short term availability of labour and capital to avoid the crisis" (Alpízar et al., 2020). Climate change is also a factor that exacerbates food insecurity in small farm settings.

13.2. Why is it relevant for Fairtrade?

Lack of sufficient, quality and nutritious food can have negative effects on the health, quality of life, profitability and productivity of farmers and workers. Small-scale farmers and farm workers, despite being responsible for a large part of the agricultural production, are also one of the "most food-insecure and poorest populations" (Alpízar et al., 2020). Workers in SPOs, CPOs, and some HLOs, are likely to be in this group. One countermeasure is diversifying agricultural production and introducing sustainable agricultural approaches such as agroforestry to increase the "variety of food and income sources", reducing the risks of chronic food insecurity.

13.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for the adoption of farming solutions with a focus on climate change and proposes to mitigate food insecurity and increase resilience by diversifying production and income sources.

13.4. Agroecological principles


Social values and healthy diets


Co-creation of knowledge


Fairness


Diversification

13.5. Policy position(s)

a. Overarching policy position

Every person has the right to healthy and culturally appropriate food and nutrition. Fairtrade recognises food sovereignty and works to protect Fairtrade farmers, and workers' right, availability, utilisation, and access to healthy, nutritious, diversified and enough food that are embedded in local ecosystems and food traditions, and that enable an active and healthy life.

b. Specific policy position(s)

Diversification	Fairtrade supports the development of farm diversification strategies and the adoption of agroecological practices (e.g., agroforestry) to strengthen food security and nutrition.

13.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Strengthen food security and sovereignty of PO members, producers and workers.
How can it be measured?	[Fairtrade to choose or develop a cost-effective metric to measure food (in)security. Examples can be found in COSA and FANTA].

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Diversification	In agreement with PNs, work with SPOs to a) dedicate on a voluntary basis approach a % of farmland dedicated to agroecological or sustainable diversification, [49] or b) introduce diversification within crop plots.[50] With HL a) dedicate on a voluntary basis approach a % of land for workers to plant vegetables, legumes and other nutritious sources of food in order to increase income, lower the spending on food, increase agrobiodiversity, and strengthen food security and food sovereignty.	**Number and percentage** of POs with strategic plans on agroecological diversification per commodity, region and type of organisation (HL and SPO). **Number and percentage** of farmers that consume on-farm food [Suggested, if possible, to measure the **estimated percentage** of food consumed by farmers that are produced on-farm (in kg)].

13.7. Direct linkages with other sustainability challenges

Climate resilience; Living income and wages; Gender equality; Social equity and equality; Agroecological practices; Health and safety.

14. Efficient use of pesticides and agroecological alternatives (risk: pesticide pollution)

14.1. Introduction to the risk

Synthetic pesticides are commonly used in conventional agriculture to control weeds and pest. However, only small amounts – less than 0.1% – of the pesticides applied reach the objective (Duke, 2017; Pimentel, 1995). Risk related to these chemicals are many and range from affecting the environment and impacting human health, to lower yields and reduced productivity in the long term.

49 There are many types of sustainable agricultural diversification, such as crops, farm animals, and beekeeping.
50 For example, coffee farmers grow multifunctional fruit trees in coffee plots that offer shade and food.

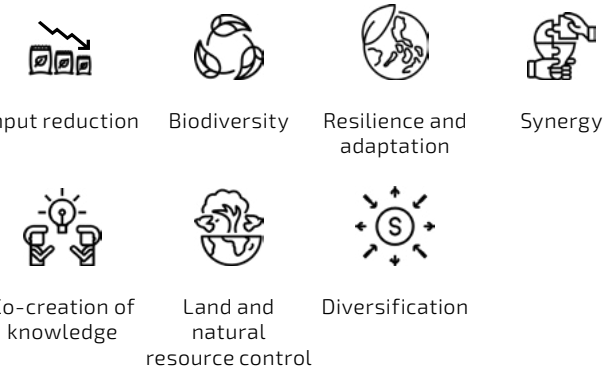
14.2. Why is it relevant for Fairtrade?

The overuse and miss appliances can adversely affect soil fertility, human health (from farmers, field workers and consumers), create dependence and affect the economic standing of farmers. Moreover, it can lead to biodiversity loss, pest resistance, and water contamination. Efficiently introducing alternative measures to prevent and protect crops from pests and diseases, such as enhancing soil health, using natural enemies or natural biopesticides (in the appropriate way), and adopting advanced mechanical weeding technologies can help farmers, their families, and workers, in the long term, to increase productivity and reduce costs. This can positively affect living incomes and workers' wages and health.

14.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for the adoption of farming solutions with a focus on climate change. The policy proposes adopting natural or agroecological alternatives, which, in combination with other practices and certification programs, can help POs access organic or other markets that source from environmental and social-friendly products.

14.4. Agroecological principles



14.5. Policy position(s)

a. Overarching policy position

Fairtrade pursues the reduction and elimination of chemical pesticides inputs, supports and promotes the efficient and appropriate use of agroecological practices to manage pests, and seeks the increase of self-sufficiency generated by the feedback loop between reduced use of pesticides and healthy agro-ecosystem.

b. Specific policy position(s)

Organic agriculture	Fairtrade promotes and supports the adherence to organic certification standards as part of agroecological practices to reduce and eliminate external chemicals inputs. Simultaneously, Fairtrade advocates for producers to obtain the organic differentials or price premiums for certified organic products [see also: Agroecological Practices (APs) policy].
Agroecological alternatives	Fairtrade promotes and supports the substitution of chemical and synthetic pesticides with agroecological alternatives, and the efficient and appropriate use of agroecological alternatives to minimise impact on the environment and society.
Management of pest	Fairtrade promotes the agroecological management[51] of pest and crop diseases to combat the overuse and misuse of pesticides, which consist mostly of preventive measures and involves the encouragement of natural pest predators.[52] Fairtrade also supports POs in the implementation of IPM (integrated pest management) plans with special emphasis on biocontrol and agroecological alternatives.
International legislation	Fairtrade supports the implementation of pesticides-related legislation and actively help and support farmers in pesticide phase-out transitions. No pesticides prohibited by legislation in the international markets where Fairtrade operates, or pesticides with robust evidence of adverse impacts on sustainability, shall be allowed to be used by Fairtrade producers.
Super-weeds	Fairtrade raises awareness and works to avoid the use of pesticide- and herbicide-resistant insects and weeds (i.e. "super-weeds"), and works with POs and stakeholders to replace herbicides with advanced mechanical technologies.

14.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Yearly reduce the overuse, use and misuse of pesticides and increase the efficient use of non-toxic bio / agroecological substitutes.
How can it be measured?	**Exposure to pesticides**, score based on FAO TAPE tool. **Number and percentage** of POs in each level of transition of agroecology (according to section VI.2.C.c Definitions and transitional pathways to agroecology).

51 The ecological management of pest is based on prevention measures (i.e. implementing natural measures, that leverage the ecological services, before pests events, such as increasing biodiversity, creating a natural habitat for natural enemies, etc.).
52 An example of agroecological pest management is mosquito management.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Organic agriculture	Increase the number of POs transitioning to organic agriculture certification and work alongside the creation, extension, or adoption of incentives that may would help farmers to transition to organic agriculture.	**Number** of producers who produce organic per crop. **Percentage** in volume of organic production per crop.
Agroecological alternatives	Increase annually the use of bio/agroecological alternatives starting in 2023. The amount of time to achieve 100% will depend on the crop.	**Number and percentage** of producers who adopted bio/ agroecological alternatives per crop. **Percentage** in volume of chemical pesticides per crop.
Management of pest	Train all POs on agroecological management of pest and crop diseases.	**Number and percentage** of producers who implemented agroecological management or integrated pest management plan with focus on agroecological practices.
International legislation	Align Fairtrade's hazardous material list with the pesticide legislation of the international markets it operates in.	**Number** of pesticides that are banned by the legislation in international markets Fairtrade operates in and are not included in Fairtrade hazardous material list.
Super-weeds	Deliver training on prevention of superweeds and seek resources to develop projects to replace herbicides with advanced mechanical technologies in super-weeds risk areas.	**Number** of producers who implemented mechanical technologies to eliminate weeds per crop. **Number** of producers who implemented other practices that herbicides to eliminate weeds per crop.

14.7. Direct linkages with other sustainability challenges

Climate resilience; Agroecological practices; Living income and wages; Water use; Biodiversity and agrobiodiversity; Soil organic Carbon; Land restoration; Food security and nutrition Land degradation; Soil organic carbon depletion; Reducing, recycling, reusing and sharing; Health and safety.

15. Agroecological practices (APs) (risk: lack of APs application)

15.1. Introduction to the risk

Conventional agriculture systems that apply unsustainable practices to maximise yields, such as overuse of synthetic pesticides and fertilisers, the use of GMOs, and monocropping (Stony Brook University, 2021), can lead to environmental degradation (e.g., soil erosion, loss of soil fertility and biodiversity loss) and socio-economic issues (Rodriguez et al., 2009). Sustainable agriculture, on the contrary, can generate environmental, social and economic benefits. However, APs adoption has not been widely mainstreamed yet. Key factors for APs application are: sensitisation; education; decent income and wages; support through peer learning and premiums; support for organic certification (or other types of sustainable agriculture production) through the organic differential, and payments for ecological services.

15.2. Why is it relevant for Fairtrade?

APs are linked to better ecological, economic and social outcomes, such as fertile and healthy soils, rich biodiversity, resistance to pests and diseases, adaptation to climate change, secure and quality yields. All ideally leading to better incomes and more equitable practices in terms of gender and increased opportunities for the marginalised groups. Economically it also means potentially having access to alternative markets such as organic or other new/emerging, differentiated markets that offer a fair economic incentive for the adoption of sustainable practices.

15.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, for among other things, “farming solutions with a focus on Climate Change.” It also addresses pillar 2, with the potential of new markets and sources of income. To increase farms’ resilience, these policies propose adopting agroecological practices. Furthermore, they suggest the endorsement of agroecology as an approach to sustainable agriculture.

15.4. Agroecological principles


Synergy


Biodiversity


Soil health


Input reduction and elimination


Resilience and adaptation


Co-creation of knowledge


Participation


Social values and healthy diets


Diversification


Fairness

15.5. Policy position(s)

a. Overarching policy position

Fairtrade progressively adopts and supports processes that lead to the adoption of Agroecological Practices (APs). Fairtrade also reinforces AP principles within the system and with supply chain actors. In order to transition towards sustainable agricultural practices, Fairtrade coordinates work on key factors for adoption (e.g., sensitisation, education, income, premiums, differentials).

b. Specific policy position(s)

Agroecology adoption	Fairtrade promotes and actively supports the adoption or inclusion of APs that increase the sustainability and resilience of the farm, producers and workers.
Farmer knowledge and science	Fairtrade engages with POs, PN and farmers, as well as local NGOs and researchers trained in Participatory Action Research or similar methodologies, to jointly drive the creation, consolidation, and dissemination of knowledge related to APs. Fairtrade invests in work that integrates local knowledge, skills, and traditions with science to maximise the synergies of practices and benefits to the farm, producers, workers and local community.
Payments for ecological services	Fairtrade supports payments for ecological services or environmental payment services that reward producers for agroecological practices such as reforestation or non-deforestation. Fairtrade joins proven initiatives and conducts research on methodologies to establish the system, taking care not to engage in greenwashing nor creating perverse incentives.

15.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase the sustainability and resilience of Fairtrade POs through the adoption of APs.
How can it be measured?	**List** of APs for all Fairtrade commodities and products that take into consideration geographic differences; revised bi-annually.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Agroecology adoption	All farmers gradually adopt APs until reaching at least the minimum set of APs defined by commodity/product.	**Number and percentage** of POs with a strategic list of priority APs to be implemented. **Number and percentage** of producers implementing 1/3/5+ practices aligned with agroecological principles per PO, commodity, region and type of organisation (HL and SPO). **Number and percentage** of projects that are categorized as disseminating and deepening agroecological practice relative to total projects.
Farmer knowledge and science	Implement focus and discussion groups locally between farmers to share expertise and generate shared knowledge combined with scientific knowledge that can be beneficial to production.	**Number** of POs linked to a farmer research network. **Number** of POs orchestrating or participating in farmer-to-farmer exchanges. **Number** of POs with active farmer-led experimental plots. **Number** of APs tested in the experimental plots.
Payments for ecological services	Increase Fairtrade participation in research and pilot projects on payments for ecological services in one top commodity that show best potential to evaluate cost-benefits of the model, degree of adoption, and scalability.	**Number and percentage** of producers participating in projects on payments for ecological services, per commodity, region and type of organisation (HL and SPO). **Number and percentage** of Fairtrade-certified land area associated with such producers.

15.7. Direct linkages with other sustainability challenges

The topic is linked to all sustainability challenges described in this piece.

16. Social equity and equality
(risk: social inequity)

16.1. Introduction to the risk

Social equity is a key element for sustainable agriculture systems as it recognises "people and their quality of life" as a central issue (FAO, 2014b; Tirado von der Pahlen et al., 2018). An equitable agriculture production system considers and benefits all social groups but brings particular attention to disadvantaged or vulnerable groups. In the agricultural context, social inequity is perpetuated e.g. through lack of financial inclusion, market barriers, misinformation, lack of infrastructure and investments and gender inequalities. Also, by an unequal share of responsibilities and profits in the supply chain.

16.2. Why is it relevant for Fairtrade?

By addressing the inequalities present among supply chain actors, in the workplace and in the Fairtrade system, POs, producers and workers' conditions may be improved.

16.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, 3 and 4. These pillars calls for, "the empowerment of farmers and workers," and working with business partners, consumer and other actors for fairer and more transparent supply chains. To increase producer empowerment, inclusion, non-discrimination and equality, these policies propose advocating and promoting equal access to resources, sharing responsibilities across the supply chain, and support for vulnerable groups.

16.4. Agroecological principles

Participation | Biodiversity | Land and natural resource control | Co-creation of knowledge | Fairness

16.5. Policy position(s)

a. Overarching policy position

Fairtrade generally promotes fair and equal access to resources and opportunities, regardless of age, disability, gender, marital status, race, religion or belief, sex, sexual orientation and origin. Equal access includes a fair chance of gaining employment and accessing markets, education, infrastructure, services (e.g., financial services), information, and technology. Fairtrade also promotes fair and equal treatment among workers and works to reduce existing gaps and inequalities within the system.

b. Specific policy position(s)

Sharing of responsibilities	Fairtrade advocates for sharing responsibilities between supply chain actors and involving them in cost-sharing towards the end of transitioning to more sustainable, equal and equitable forms of agricultural production.
Vulnerable groups	Fairtrade encourages POs to implement targets on hiring or recruiting minorities or the socially disadvantaged. For workers who suffered an injury and have a temporary or permanent disability and cannot perform the previous job, provide alternative work whenever possible.

16.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase equality and equity among supply chain actors and producers and farm workers in the Fairtrade system.
How can it be measured?	**Percentage** of farmers who perceive that their access to resources, markets, education, infrastructure, services (e.g. financial services, technical advice), information, and technology has improved since adoption of the policy. **Percentage** of farm workers who perceive that their treatment and working conditions have improved since adoption of the policy.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Sharing of responsibilities	Increase the number of commercial partners and other supply chain actors involved and sharing the transitioning cost to sustainable agricultural production, and increase the percentage in $/EUR of the contributions.	**Percentage** of contributions in $ (EUR) from commercial partners and other supply chain actors in transition cost to sustainable agriculture production. **Number** of commercial partners and other supply chain actors who are involved with POs providing funding or other resources to transition to a more sustainable farming system. **Percentage** of contributions in $/EUR from commercial partners and others to farmers invested (1) collectively (2) individually.
Vulnerable groups	Require POs to explicitly refer in their policies, codes and internal documents: non-discrimination, equal opportunities and access to resources, and support for vulnerable groups.	**Percentage** of POs that include in their policies, codes, and other relevant documents positive wording on non-discrimination, equal opportunities and access to resources, and support for vulnerable groups, relative to the number of POs assessed (sample-based).

16.7. Direct linkages with other sustainability challenges

Fair markets and trade; Gender equality; Labour rights; Land rights; Appropriate housing; Health and safety; Agency; Primary & secondary education; Living income and wages; Traceable supply chains.

17. Efficient use of fertilisers and agroecological alternatives (risk: nutrient pollution)

17.1. Introduction to the risk

The use of fertiliser can negatively affect soils if they are not adequately and efficiently applied (even the application of natural or bio fertilisers can be harmful if not done properly). Furthermore, over or untimely application can result in watershed contamination and decrease crop quality.

Due to the high prices of synthetic fertilisers, SPOs are more likely to apply less than required. However, there can be perverse incentives created by the government or other supply chain actors to encourage farmers to use more, for example, by subsidising prices or access to them. Also, an increase in incomes could potentially result in more application of fertilisers.

17.2. Why is it relevant for Fairtrade?

By building farmers' capabilities and understanding of the risk associated with fertilisers and by exposing the benefits of substituting chemicals with other practices that allow efficient and timely natural fertilisation e.g. organic/bio-fertiliser, or other preparations made with farm resources, producers can potentially benefit over time from a cut in cost, from richer soils and increased yields and productivity, as natural fertilisers are less expensive and applicability can be sustained in time.

17.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for adopting farming solutions with a focus on climate change. The policy proposes adopting natural or agroecological alternatives to reduce dependencies and increase self-sufficiency, resulting in more farmers' empowerment and long-term improvements in their costs and profits.

17.4. Agroecological principles

Input reduction and elimination | Biodiversity | Resilience and adaptation | Synergy | Co-creation of knowledge | Land and natural resource control

17.5. Policy position(s)

a. Overarching policy position

Fairtrade pursues the reduction and elimination of the use of and dependence on external synthetic fertilisers inputs, increasing self-sufficiency; the substitution of synthetic fertilisers with agroecological alternatives; the efficient and appropriate use of fertilisers; and reduction of chemical fertiliser contamination in soils, water bodies and food.

17.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Annually reduce the use and misuse of synthetic fertilisers and increase the use of agroecological alternatives.
How can it be measured?	**Number and percentage** of producers who adopted bio/ agroecological alternatives per crop. **Percentage** in volume of synthetic fertilisers per crop.

17.7. Direct linkages with other sustainability challenges

Climate resilience; Agroecological practices; Land restoration; Soil organic carbon; Reducing, recycling, reusing, and sharing; Health and safety; Efficient use of pesticides and agroecological alternatives.

18. Traceable supply chain
(risk: inability to trace supply chain)

18.1. Introduction to the risk

Introducing systems capable of collecting and monitoring the required elements will be costly, but there are distinct advantages. Depending on the proprietary nature of the data and the capacity of POs to collect it, POs can leverage their monopoly position over data collection in their favour to run their business and find other potential usages, including the very sale of the data. Their journey towards such professionalisation will, however need to be supported.

18.2. Why is it relevant for Fairtrade?

Unsustainable practices, such as leakage-in, could harm the Fairtrade system, PO, farmers and workers and could generate problems with suppliers due to the inability to assure "certified" crops did not contribute to illegal activities or that they did not contribute to extensive damage to the environment or workers livelihoods. Furthermore, tracing the crops' origin will become a key requirement due to pipeline regulation (EU CSDD). Not producing nor collecting traceability data could exclude POs from reaching certain markets, ultimately affecting PO's ability to trade and maximise revenue.

18.3. Link to Fairtrade strategy

The policy addresses strategic pillars 3 and 4, which call for working with business partners, consumers, and other actors for fairer and more transparent supply chains. To increase transparency, collaborations between actors, and producer empowerment, these policies propose building traceable supply chains in partnership with other actors. Also, by advocating for sharing responsibilities and not burden POs with pipeline regulation on HREDD.

18.4. Agroecological principles

Fairness

Connectivity

18.5. Policy position(s)

a. Overarching policy position

Fairtrade endeavours to create traceable supply chains in partnership with supply chain actors and expert organisations in the subject. Each supply chain actor participates in data generation and monitoring. Data at the production level is owned by POs, and data in further tiers of the supply chain is shared. Fairtrade works with POs to alleviate the burden of HREDD legislation.

b. Specific policy position(s)

Data ownership	Fairtrade supports POs to collect, process, analyse, and own the data that is generated through their internal management systems. Fairtrade also encourages POs to use the information generated for other purposes beyond auditing and compliance to run the business sustainably and take advantage of opportunities (e.g., carbon projects).
Leakage-in	Fairtrade takes action to prevent unfair trading practices and filters out products from the Fairtrade supply chain that were not produced under Fairtrade standards.

18.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase farmers and farms resilience to climate change.
How can it be measured?	**Degree** of resilience to climate change within PO member and worker communities [Fairtrade 2019 TOC metric]. Develop for each crop a tool and methodology to measure the elements of the following metric "**vulnerability to climate change = (exposure + sensitivity) - adaptive capacity.**"[53]

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Data ownership	All POs are owners of the data collected and information generated by their systems and processes.	**Number and percentage** of POs that (1) own and have running and functional IMS systems, (2) with geo-localisation points, remote sensing software in place and measuring polygons, and (3) in digitalised supply chains.
Leakage-in	Pilot projects in different regions and commodities in partnership with the supply chain actors to test traceability systems.	**Number and percentage** of POs with proven traceable systems. **Percentage** of deviation from possible yield and actual yield.

53 Soto et al., (2016) include in their manual an example to measure "vulnerability to climate change" in coffee.

18.7. Direct linkages with other sustainability challenges

Land degradation; Soil organic carbon depletion; Chemical pollution; Water stress; Nutrient pollution; Low income and low wages; Food insecurity.

19. Reducing, recycling, reusing, and sharing (risk: waste and food loss)

19.1. Introduction to the risk

Food waste and food loss are global issues and of great public concern. "Roughly a third of the world's food is never eaten, which means land and resources used and greenhouse gases emitted in producing it were unnecessary" (Project Drawdown, 2020). A concept related to food loss and linked to sustainability is circularity or circular economy. POs, can implement several practices that involve circularity, for example, turning into by-products crops that did not pass the quality control for export but are in good condition to be consumed locally after some processing. Another example could be using organic waste to cover the soil or creating green manure to fertilise.

19.2. Why is it relevant for Fairtrade?

Reducing food loss is vital to ensure sustainable consumption and production, as, among other things, it could potentially translate to using less water and chemicals and reducing GHG emissions. Also, it can be advantageous for producers since it is an opportunity to diversify (generating other sources of income) and reduce external inputs, reducing costs, increasing revenue and productivity, and ultimately impacting farmers' and workers' livelihoods.

19.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, "farming solutions with a focus on Climate Change." It also addresses pillar 2, with the potential of new markets. To reduce the POs footprint in the environment and leverage proven opportunities, this policy proposes adopting sustainable agricultural practices aimed at reducing, recycling, and reusing waste.

19.4. Agroecological principles

Recycling

Synergy

Diversification

19.5. Policy position(s)

a. Overarching policy position

In order to mitigate the side effects of waste on the environment and leverage proven opportunities that could lead to economic benefits, Fairtrade works to prevent and reduce waste, especially toxic waste, food losses and the inefficient use of resources waste generates at PO level in alignment with the other policies positions herein mentioned. Fairtrade also advocates for the same reduction of waste in supply chains.

19.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase the number of POs that adopts practices that reduces and recycle waste.
How can it be measured?	**Number and percentage** of POs that implement agroecological practices to reduce and recycle waste.

19.7. Direct linkages with other sustainability challenges

Climate resilience; Living income and wages; Agroecological practices; Efficient use of fertilisers and agroecological alternatives; Food security; Water use; Soil organic carbon; Land restoration.

20. Appropriate housing
(risk: substandard housing)

20.1. Introduction to the risk

The human right to adequate housing entails "the right to live in safety and dignity in a decent home"(OHCHR, n.d.-b). In rural areas, substandard housing is more prominent and lacks physical and social infrastructure. Poor housing conditions can affect workers' well-being. Likewise, inadequate housing for farmers, apart from affecting their well well-being, it could affect their profits with workers living in sub-optimal conditions. This could reduce their income and increase the cost of production if they require hiring extra labour, which is not often the case due to the poor economic situation of some small producers.

For workers, there are similar consequences, mainly when POs supply housing as part of compensation.[54] Thus, is crucial for the farm's performance to cover the basic living conditions such as drinking water and sanitation, as POs are at risk of a loss of productivity or a decrease in yields and efficiency since workers might not be at the best of their potential or could be unmotivated.

20.2. Why is it relevant for Fairtrade?

Poor housing conditions can affect workers' and Farmers health, well-being and work performance. Likewise, it could affect their profits/ incomes. In addition, workers and farmers who are unmotivated and/or face health issues would be less able to adopt Agroecological Practices, as they may be labour intensive or require time to be implemented.

20.3. Link to Fairtrade strategy

Fairtrade focus is to achieve sustainable and decent livelihoods and health is an essential factor to achieve it. The policy addresses strategic pillar 1, even if it is not directly reflected, and proposes improving household conditions for workers who are compensated this way.

20.4. Agroecological principles


Fairness


Social values and healthy diets

54 See ILO recommendations and guidelines for providing to workers housing R115 – Workers' Housing Recommendation, 1961 (NO. 115) and the ILO Helpdesk Factsheet No. 6, 2009.

20.5. Policy position(s)

a. Overarching policy position

Fairtrade works to ensure that workers, in the cases where employers include the provision of housing as part of remuneration, have access to decent housing that does not adversely affect their health and are aligned with ILO guidelines.

20.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase appropriate and adequate household provision for workers by integrating into the SPO Fairtrade standards core requirements on workers' housing and aligning with HL standards.
How can it be measured?	**Degree** of non-conformance with the new criteria.

20.7. Direct linkages with other sustainability challenges

Labour rights; Health and safety; Gender equality; Social equity and equality; Living income and wages; Water and sanitation; Agroecological practices.

21. Agency (risk: lack of political voice)

21.1. Introduction to the risk

Voices of POs, farmers and workers being heard across the supply chain and the Fairtrade systems are highly relevant for sustainability. For example, for workers, "self-expression in voice often results in feeling valued, increased job satisfaction, greater influence and better opportunities for development" (CIPD, 2021). However, agricultural workers often lack representation among the bodies that make decisions on the farm resulting in their interests often being neglected. Similarly, farmers or producers can be unrepresented or denied their right to be involved in POs' decision-making.

21.2. Why is it relevant for Fairtrade?

The incorporation of farmworkers in the dynamic of POs structure and other actors of the Fairtrade system could help build strong relationships and trust, and bring innovation, productivity, and organisational

improvement (e.g., inclusive and safe working environments). Similarly, the incorporation or fair representation of all actors in the Fairtrade system, POs and workers' fair and equal participation in PNs, and PNs being involved in the discussion and development of Fairtrade policies and strategies could bring added value, understanding and better acceptance and adoption of the changes.

21.3. Link to Fairtrade strategy

The policy addresses strategic pillars 1, 3 and 4. As already mentioned, these pillars call for "the empowerment of farmers and workers" and fairer and more transparent supply chains. To increase producer and workers' empowerment and political voice, these policies propose participatory approaches in POs to include workers and the representation of producers and workers in the Fairtrade system. It also suggests advocacy work to improve producers, workers' and PNs' agency with other institutions and governments in trade relationships and commercial relations.

21.4. Agroecological principles

Fairness

Social values and healthy diets

Participation

21.5. Policy position(s)

a. Overarching policy position

Fairtrade supports participatory approaches that involves farmers in decision-making, and works to provide also workers representatives with: agency to take part in POs decision-making where they are impacted and their freedom to participate in trade unions and collective bargaining. Fairtrade furthermore invites worker representatives to participate in the work of PNs and the system at large.

b. Specific policy position(s)

Participatory process for policy development	Fairtrade involves worker representatives, NFOs and PNs to participate in the design of higher-level policies and standards by taking a bottom-up approach and integrating them throughout the process, and incorporating their recommendations, comments, and ideas in the final product (through consultations). Fairtrade also advocates for Fairtrade actors (e.g., producers, workers, PNs) to be heard by other institutions, governments, in trade relationships and commercial relations.
Integration of workers	Fairtrade supports the integration of workers in POs governance structure and PNs to make sure they have the right agency and are able to participate in the decision making of those topics that could directly impact they their health, well-being and livelihoods, such as, the premium investments, or the chemicals or protection equipment used for production. Fairtrade also integrate workers into the Fairtrade systems by reinforcing the message through PNs that they are part of the movement and broader organisation.
Codetermination	Fairtrade fosters PO and PN co-determination in decision-making and policy development by allowing them to co-develop and co-direct their future and supporting producer-led advocacy.

21.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase agency of workers in POs and Fairtrade systems and the voices of POs in the Fairtrade system.
How can it be measured?	**Number and percentage** of POs that have an official protocol for incorporating farm workers or workers representatives (e.g., trade union) as part of the board. **Number and percentage** of PO members who provide input on annual monitoring and evaluation plans.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Participatory process for policy development	Involve NFOs, PNs, and workers representatives in the development of the policies when it concerns them.	**Percentage** of representatives per type of Fairtrade actor in the development of policies.
Integration of workers	Require all SPOs to set aside a certain percentage of premium annually to invest according to the democratic decision of workers.	**Number and percentage** of POs that include workers in Fairtrade Premium decisions. **Percentage** of workers in POs and PNs governance structure.
Codetermination	All POs perceive they have a voice and participate in codetermination by 2035	**Number** of policies, solutions, countermeasures and practices adopted by POs that are the result of discussions, co-development and co-direction between POs and PNs.

21.7. Direct linkages with other sustainability challenges

Labour rights; Gender equality; Social equity and equality; Agroecological practices.

22. Child rights
(risk: child labour)

22.1. Introduction to the risk

According to the ILO, child labour refers to "work that deprives children of their childhood, their potential and their dignity, and that is harmful to their physical and mental development" (ILO, n.d.-c). It includes work that "is mentally, physically, socially, or morally dangerous and harmful to children; and interferes with their schooling by depriving them of the opportunity to attend school or obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work" (ILO, n.d.-c). The definition and specification of child labour is premised on the minimum age of employment, as stipulated in ILO Convention No. 138 concerning the minimum age, and ILO Convention No. 182 concerning the worst forms of child labour, which includes the practice of hazardous child labour and child trafficking for labour purposes.

The agriculture sector accounts for approximately 70% of the world's working children in terms of individual child labourers (FAO, n.d.-a; ILO & UNICEF, 2021). One of the main root causes of child labour is poverty. However, other factors may also push children into exploitation, such as cultural beliefs and lack of school infrastructure.

22.2. Why is it relevant for Fairtrade?

Child labour affects the social, economic and environmental domains, impairing sustainable agriculture development. Starting with the effects on children, farm work (e.g., exposure to pesticides and working extensive hours under high temperatures) can endanger their health and well-being. Child labour that prevents children from pursuing a proper education may result in low-skilled labour, thus perpetuating intergenerational poverty.

The elimination of child labour and the protection of child rights improve human capital outcomes. In addition, its elimination has other economic ramifications. For example, adult wages are pushed up as the overall labour supply is decreased, and the more educated and skilled workers are in a position to properly adopt APs.

However, great care must be taken in withdrawing a child from child labour in line with the UN Convention on the Rights of the Child: if the child is not safely withdrawn and prevented from becoming engaged in even worse forms of labour, one is indeed not acting in the best interest of the child.

An integral part of successful child rights enforcement is the proactive, economic engagement of youth of the legal working age, which is squarely addressed in the section *Youth employment and decent livelihood opportunities*.

22.3. Link to Fairtrade strategy

Children are not specifically mentioned in Fairtrade's new strategy. However, the policy addresses children's rights indirectly through strategic pillar 1, which calls for "the empowerment of farmers and workers," supporting youth, developing programs and sustainable farming solutions. The policies propose a comprehensive and holistic approach to tackle child labour and uphold children's rights. The policies suggest taking child-centred and inclusive approaches in line with ILO international conventions and the UN Convention on the Rights of the Child.

22.4. Agroecological principles

Fairness

Social values and healthy diets

Participation

22.5. Policy position(s)

a. Overarching policy position

In the pursuit of upholding the inherent rights of children, Fairtrade promotes, protects and strives for the fulfilment of child rights, in alignment with ILO definitions and international conventions. Fairtrade counters violations to said rights in its standards and audits, and works to develop the structure and capacity for child labour monitoring and remediation systems (CLMRS). In the course of abolishing child labour, Fairtrade adopts child-centred and inclusive approaches, in line with the UN Convention on the Rights of the Child and fosters an enabling environment for joint social protection responses.

b. Specific policy position(s)

Duty of Care	In its withdrawal of children from child labour and coordination of tailored remediation, Fairtrade acts on its duty of care regarding the child's right to be protected against harm, as stipulated in the UN Convention on the Rights of the Child, by following four key principles: non-discrimination, best interest of the child, the rights of a child to survival and development, and respecting the views of the child in accordance with their age and maturity.
Child labour monitoring and remediation	In order to responsibly withdraw identified children from labour, notably ensuring that the child labour is sensibly 'remediated' without rendering the child worse off, Fairtrade endorses adopting effective systems that address wider risks to children's security and well-being. To this end, Fairtrade supports POs to implement CLMRS that integrates the best interests of the child, in particular its Youth-Inclusive Community-Based Monitoring and Remediation (YICBMR) system.
CLMRS funding	To build on the joint responsibility of supply chain and government actors and to co-finance CLMRS systems, Fairtrade rallies resources – and takes part in the development and implementation of (multistakeholder) programmes.
Grievance mechanism	Fairtrade establishes effective gender- and child-sensitive grievance mechanisms accessible to children and their representatives.

Sensitisation	Fairtrade partners with trade associations, industry initiatives, the public sector, NGO entities, as well as private actors to deliver sensitisation to communities with a high child labour incidence.
Family friendly policies	Fairtrade promotes and rally resources for the adoption of family friendly policies and initiatives that impact child labour outcomes, such as access to affordable child care, paid parental leave, child-friendly spaces in the place of work or full-time day care with professional caregivers in or near workplaces.
Child labour root causes	*Fairtrade works with POs, trade associations, industry actors, public sector or NGO entities, as well as private actors to develop interventions that tackle child labour root causes to the extent Fairtrade has leverage. Root causes include economic, cultural, and structural factors in different levels households and local context.*[55]

22.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Few to no child labour cases in Fairtrade POs. In the event that child labour occurs, 100% of the cases are remediated and monitored.
How can it be measured?	**Number and percentage** of child labour cases in Fairtrade POs by crop.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Duty of care	All POs have policies in place that recognize the *UN Convention on the Rights of the Child* and the four key duty of care principles.	**Number and percentage** of POs that have such policies in place.
Child labour monitoring and remediation	All POs have in place effective child labour monitoring and remediation systems.	**Number and percentage** of POs with child labour monitoring and remediation systems.
CLMRS funding	Increase POs adoption of CLMRS.	**Value** invested (EUR) in CLMRS relative to other funding investments of Fairtrade.
Grievance mechanism	Increase detection and remediation of grievances.	**Assessment** of grievance mechanisms.

55 According to Webbink et al.'s (2013) framework on child labour root causes.

Sensitisation	Reduce the number of child labour incidents by increasing understanding of child labour among communities of Fairtrade-certified POs.	**Number** of communities sensitised.
Family friendly policies	Reduce the number of child labour incidents through family-friendly policies.	**Number and percentage** of POs that have in place family-friendly policies.
Child labour root causes	Reduce the number of child labour by tackling the contextual root causes of child labour.	**Number** of multistakeholder projects with POs participation that aims at tackling root causes.

22.7. Direct linkages with other sustainability challenges

Youth employment and decent livelihoods opportunities; Primary and secondary schools; Labour rights; Gender equality; Social equity and equality; Health and safety; Agroecological practices.

23. Labour rights
(risk: labour rights violations)

23.1. Introduction to the risk

In agriculture, workers often face unsuitable working conditions and rights violations that can compromise their health to the exercise of their rights, for example, informal and exploitative arrangements, lack of legal and social protection, antiunion practices, gender discrimination, hazardous work without the proper PPE, force labour, low wages and debt bondage (Jacobs & Cotula, 2021). Furthermore, in some countries, it could include violence and harassment.

23.2. Why is it relevant for Fairtrade?

The risk of labour rights violations is particularly elevated in conditions of informality and where there is little societal recognition for agricultural work. Agricultural workers are often among the poorest and most marginalised groups in society, and they suffer from low levels of registration, recognition and protection. Low literacy and educational attainment are associated with a lack of knowledge about labour rights and trade union participation. Low trade union participation generally negatively impacts wage levels and workers' ability to positively influence working conditions. The result is a perpetuation of the poverty

cycle. The respect of – and support for – labour rights not only unlocks the potential for self-actualisation and self-determination, impacting labour output, but also fosters greater employee/worker engagement and retention.

23.3. Link to Fairtrade strategy

This policy addresses strategic pillar 1, which calls for, among other things, the empowerment of workers. Pillar 1 also mentions critical factors that help to empower workers, such as living wages, trade unions and collective bargaining. It also highlights the role of women and youth. To increase workers' empowerment, inclusion, and non-discrimination, these policies propose advocating and promoting sound industrial relationships approaches, increasing workers' agency and participation in POs, and the provision of healthy working environments.

23.4. Agroecological principles

Fairness

Social values and healthy diets

Participation

23.5. Policy position(s)

a. Overarching policy position

In order to uphold the positive and negative rights of all types of workers, Fairtrade explicitly enshrines worker rights, position, agency and potential in its standards; supports stronger participation and representation of workers throughout the Fairtrade system; and works to create safe and healthy work environments.

b. Specific policy position(s)

Forced labour	Fairtrade works against direct or indirect engagement with forced labour including bonded or involuntary prison labour, instead it supports compliance with all human rights.
Collective bargain and trade unions	Fairtrade: 1) works to ensure all POs workers (formal and informal) are free to execute the rights to negotiate the terms of their employment individually or as a group, adhere to an association defending workers' rights, and collectively bargain, without retaliation, especially in those regions with low unionisation and a history of anti-union animus; and 2) supports and formally recognises trade unions as the primary legitimate representation of workers and invites them to take part in the Fairtrade system to articulate worker interests.

Labour rights	Fairtrade promotes respect for labour rights in the workplace based on national and international labour standards, and works closely with members to guide POs towards adoption and compliance with those standards. In case of a conflict between national and international standards, Fairtrade promotes those that offer the highest level of rights and freedoms to workers.
Sound industrial relations	Fairtrade promotes '*sound industrial relations*' between certified entities and organised labour in order to promote decent work in workplaces across its system, to ensure collective bargaining, and to champion living wages.

23.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Few to no worker rights violations within Fairtrade POs. Where they occur, 100% of the cases are remediated and monitored.
How can it be measured?	Number and percentage of worker rights violations in Fairtrade POs by crop.

b. For the specific positions, the suggested definitions of success are the following:

Policy	Objective	How can it be measured?
Forced labour	All Fairtrade POs have a policy against forced labour, have a system in place to prevent force labour, and a plan to work in forced labour root causes.	**Number** of incidents of forced labour found through audits.
Collective bargain and trade unions	Increase workers' participation in trade unions and collective bargains and integrate trade unions in PN governance structure as the main force that articulates and defends worker rights.	**Number and percentage** of workers that are part of unions and participate in collective bargaining.
Labour rights	Increase alignment between international labour rights and Fairtrade standards.	Fairtrade alignment with international labour rights.

Sound industrial relations	Mainstream 'sound industrial relations' within the Fairtrade system.	The following criteria are measured to gauge Fairtrade's progress on "sound industrial relations": **Percentage** of workers in the Fairtrade system earning living wages. **Percentage** of POs with worker participation in OHS committees. **Percentage** of POs with worker representation in management. **Number** of trade union representatives are embedded in the Fairtrade system (PO, PN and/or Bonn). **Percentage** of workers in the Fairtrade system are part of a collective bargaining agreement. Mechanism in place for the settlement of labour disputes with trade unions **(yes/no).** Trade union representation on grievance mechanisms (including FLOCERT) **(yes/no).**

23.7. Direct linkages with other sustainability challenges

Labour rights; Gender equality; Social equity and equality; Youth employment and decent livelihoods opportunities; Health and safety; Agroecological practices.

24. Land rights
(risk: land rights violations)

24.1. Introduction to the risk

Land tenure security is a severe risk for farmers in some producing countries and key for sustainable agriculture as it encourages investments on land and on sustainable practices. For example, suppose farmers do not own the land or are at risk of losing it for various reasons such as regulations or because they do not have the proper certificates to prove farm ownership. In that case, they are less motivated to invest in the soil and Agroecological Practices. In addition, often women and other vulnerable groups suffer inequalities as they are prohibited from owning land affecting their rights, access to resources, food security and means to achieve decent livelihoods.

24.2. Why is it relevant for Fairtrade?

Land tenure is a key element in sustainable agriculture as people's perception of the protection and enforcement of their rights on land may influence investments and sustainable resource management (LandLinks, n.d.). It is also linked to inequalities in gender and other vulnerable groups such as indigenous communities and migrants, who often face unequal access to resources. By addressing structural issues linked to land tenure and security, such as unequal access, birth registration, and poor land ownership system, there could be better adoption of sustainable agriculture.

24.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for empowerment, equality, and the implementation of farming solutions with a focus on climate change. Land ownership is not directly referenced but is a key resource to achieving the Fairtrade strategy. This policy proposes to advocate for and help farmers to secure land.

24.4. Agroecological principles

Fairness

Social values and healthy diets

Participation

Land and natural resource control

24.5. Policy position(s)

a. Overarching policy position

In striving for secure land tenure for producers, including the formal documentation thereof, Fairtrade works with the private and public sector to uphold, in line with UN conventions (UNDROP and UNDRIP), equal access to land and resources as well as the protection of property rights, requiring the settlement of disputes wherever they arise. Fairtrade furthermore advocates that governments promote, acknowledge and respect land tenure certificates or comparable documents (e.g. demarcated indigenous lands), provide transparent, accountable and accessible land administration, responsible agricultural investment, and clear rules against land grabbing.

24.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Identify within the Fairtrade systems landholders without proper documentation and regularise their situation.
How can it be measured?	Percentage of Fairtrade landholders with proper land documentation.

24.7. Direct linkages with other sustainability challenges

Living income and wages; Biodiversity and agrobiodiversity; Water use; Agroecological practices; Access to energy; Food security; Efficient use of pesticides and agroecological alternatives; Social equity and equality; Gender equality.

25. Health and safety
(risk: work related morbidity and mortality)

25.1. Introduction to the risk

Occupational safety and health in agriculture are crucial for the social sustainability of employee relationships in all business sizes and types since “improving healthcare, fighting disease and increasing life expectancy” contributes to “economic growth and long-term success” (FAO, 2014b). Furthermore, the right to a safe & healthy working environment is now part of the ILO’s Declaration of Fundamental Principles and Rights at Work (International Labour Conference, 2022).

In general, inadequate and poor working conditions can impact workers’ health, quality of life and the household’s income. For example, agricultural workers are exposed to hazards by applying toxic chemicals, operating hazardous equipment, etc., and when workers are not provided or are not using appropriate PPE. Therefore, the working environment is key to the health and well-being of workers. This include providing clean facilities, the correct protective equipment, training and any other element or information that would prevent “health hazards originating in the working environment” (FAO, 2014b).

25.2. Why is it relevant for Fairtrade?

The lack of adequate or good labour practices in the agricultural sector impacts workers' health, quality of life and the household's income. In addition to direct social and economic impacts to workers, it could also have adverse effects on farms and POs productivity and crop yields,

causing, for example, breaches of contracts with customers, increasing administrative expenses, recruitment and re-integration efforts (FAO, 2014b) and non-compliance (standards and laws) cost. Therefore, productivity cannot be achieved or sustained if the labour force is suffering from significant morbidity and health issues.

25.3. Link to Fairtrade strategy

The policy addresses strategic pillar 1, which calls for, among other things, the empowerment of workers. The strategy also calls for decent working conditions. Workers' health is not directly referenced but, as mentioned before, it is a key element of sustainability. To increase workers empowerment, this policy proposes advocating for more equitable, fair and safe working conditions.

25.4. Agroecological principles

Fairness

Social values and healthy diets

25.5. Policy position(s)

a. Overarching policy position

Fairtrade strives for fair, equitable, and safe working conditions where workers and producers are able to uphold their physical, mental, and emotional health, as well as their social well-being, in line with international standards.

25.6. Definition of success

a. For the overarching position, the suggested definition of success is the following:

Policy outcome objective:	Increase the number of POs with plans on safe and healthy working environment.
How can it be measured?	**Number** of POs which have (1) developed a plan and (2) taken reasonable measures to ensure: (a) a safe and healthy working environment for workers (b) people are protected from harmful effects of chemicals.

25.7. Direct linkages with other sustainability challenges

Land degradation; Soil organic carbon depletion; Chemical pollution; Water stress; Nutrient pollution; Low income and low wages; Food insecurity.

C. Programmatic Action

Based on key informant suggestions as well DI observations, the following recommended programmatic actions were identified as possible steps to support and comply with the suggested policy positions on sustainable agriculture. The suggestions were grouped by type of actions. Those that do not fall in any category are featured at the end under 'Other'. The categories are: Standards; Awareness; Capacity; Funding & Insurance; Data collection; Incentives; Advocacy; Partnership; Other.

1. Standards

Fairtrade POs and agricultural workers benefit from standards, which are designed to support holistic sustainable development. In order to act on the recommended policies, the following suggestions for standards were made (in case it is not specified which standard is to be used, each major standard – HL, SPO, and CPO – is subject of the recommendation).

Main policies impacted	**Suggested requirements and other mentions in standards**	**Objective**	**Definition of success**
Agroecological practices; Climate resilience.	The mention of agroecology and organic farming as supported approaches to sustainable agriculture by the Fairtrade system.	Increase adoption of agroecological practices.	**Number and percentage** of POs adopting organic or agroecological practices0.
Water use, Land restoration, Biodiversity and agrobiodiversity, Soil organic carbon, Climate resilience.	The development and gradual implementation of a water management strategy plan targeting POs, based on exposure to risks (water scarcity), to achieve water use efficiency (including reduction and reuse of water within the production process).	Improve POs' water management to increase resilience.	**Number and percentage** of POs implementing a water management plan. **Yearly estimates** of water footprint.
Biodiversity and agrobiodiversity, Soil organic carbon, Climate resilience, Land restoration, Food security and nutrition.	The development and implementation of a biodiversity and agrobiodiversity plan according to the POs' capacity and context. The plan should also include metrics, steps to measure results, and corrective actions based on results.	Improve POs' levels of biodiversity and agrobiodiversity to increase resilience.	**Number and percentage** of POs 1) with an acceptable biodiversity and agrobiodiversity plan 2) implementing an acceptable biodiversity and agrobiodiversity plan.
Agroecological practices; Climate resilience.	The inclusion as a development requirement to do self-assessments on farms to identify potential agroecological practices that can be implemented to enrich soils, biodiversity, agrobiodiversity, and water, and are functional to the farmer.	Increase adoption of agroecological practices.	**Number and percentage** of POs adopting organic or agroecological practices.

Gender equality and equity, Social equity and equality, Agency.	The appointment of a person or committee in POs to address gender-associated risks such as lack of participation, inclusion in decision making, access to resources, discrimination, and gender-based violence. The person or committee will conduct regular analysis and risk assessments and set up a gender strategy that incorporates a plan, targets and roadmap on areas of improvement.	Increase the inclusion and participation of women and people with underrepresented genders in Fairtrade POs.	**Number and percentage** of POs with a gender strategy plan which is showing improvement on targets designed to address gender inequalities, safe environment and participation aggregated, per PO, commodity, region and type of organisation (HL and SPO).
Gender equality and equity, Social equity and equality, Agency.	The modification face-to-face meeting requirements for voting to include more inclusive mechanisms and technologies for internal voting and participation in POs (e.g., online meetings, remote voting, and other technologies that will be researched and studied in advance to select the most inclusive alternative for women and other participants, considering that technology access and skills could be a potential issue).	Increase the inclusion and participation of women and people with underrepresented genders in Fairtrade POs.	**Number and percentage** of POs implementing alternative and proven inclusive mechanisms and technology that allows online meetings and remote voting.
Food security and nutrition, Biodiversity and agrobiodiversity, Living income and wages.	The development and gradual implementation of a food security plan, which includes agroecological or other sustainable diversification practices.	Improve food security through the adoption of agroecological practices.	**Number and percentage** of PO 1) with an acceptable food security plan 2) implementing an acceptable food security plan.
Efficient use of pesticides and agroecological alternatives, Biodiversity and agrobiodiversity.	The compulsory development for intensive farming and HL producers of an agroecological management or integrated pest and nutrient management plan (which includes biocontrol and agroecological alternatives) to reduce, eliminate, and prevent the overuse of chemical pesticides and fertilizers. Compulsory knowledge for SPOs using other faming system that intensive on agroecological management and/or integrated pest and nutrient management.	Increase the adoption of agroecological practices and the knowledge.	**Number and percentage** of 1) HL settings and intensive farming producers i) with an acceptable agroecological management or IPM and INM plan ii) implementing an acceptable plan; 2) SPO using non-intensive farming systems compliance with compulsory knowledge on agroecological management or IPM and INM plan.

Traceable supply chains; Fair markets and trade.	The inclusion of evidence-based criteria on traceability (such as, procedures in place to manage incoming and outcoming transaction of Fairtrade certified products, procedures for identification of non-Fairtrade-certified production and removal, procedures on origin matching).	Increase supply chain visibility.	**Number and percentage** of POs with running and effective traceability processes.
Reducing, recycling, reusing, and sharing; Efficient use of pesticides and agroecological alternatives; Living income and living wages.	The develop a waste management plan (especially in SPOs standards) that involves reducing recycling, reusing, sharing, and disposal alternatives and requiring the identification of food loss causes on the production side such as the low or non-use of by-products.	Reduce and recycle waste and explore possibilities to generate other sources of income.	**Number and percentage** of POs: 1) with a waste management plan that fulfil Fairtrade requirements; 2) implementing the waste management plan that fulfils Fairtrade requirements.
Appropriate housing; Water and sanitation.	The inclusion in SPO standards the same requirements included in HL standards on housing conditions in the cases employers includes the provision on housing as part of the remunerations, independently of the number of workers.	Improve workers health and fulfil workers' rights.	**Degree of compliance** with new criteria found in audits.
Youth employment and decent livelihoods opportunities.	The inclusion of a section on decent youth employment to resolve bottlenecks associated with decent youth employment, skills development, and equal business opportunities for youth.	Improve decent work opportunities for youth.	**Degree of compliance** with new criteria found in audits.
Labour rights	The inclusion as a core requirement the implementation of workers registries, taking into account the type of labourer (e.g. permanent, casual, regular, seasonal, rotational, etc.), to start reflecting the number of workers employed by an organisation, and, in the case of SPOs, by its members.	Improve control on labour and the enforcement of other standards and workers' rights.	**Number** of PO members implementing working registries and reporting data to the designated focal body within Fairtrade.
Labour rights	Alignment of SPO standards with HL standards on criteria about collective bargaining and the right to organise for each major standard. Specifically: by escalating to core requirement "3.3.16 Electing a workers' organization" in SPO standards, and revise the concept of "Significant workers" / "10 workers" to make criteria applicable to all, independently of the number of workers.	Improve control on labour and the enforcement of other standards and workers' rights.	**Degree of alignment** between SPO and HLO standards on labour rights.

Labour rights	The inclusion as a development requirement the development of a Human Resources department with careful definition of its functions.	Improve control on labour and the enforcement of other standards and workers' rights.	**Percentage** of POs with an operational Human Resource office.
Labour rights	The institution Occupational Health and Safety criteria for all workers, regardless of the farm size and create Health and Safety Committees led partly by workers in all POs. The Health and Safety Committees will identify risks, train workers on hazards, monitor performance in the organisation, and keep a registry on injuries and diseases related or originated in the workspace.	Improve control on labour and the enforcement of other standards and workers' rights.	**Number and percentage** of PO that 1) formed a H&S committee; 2) that identified risks.
Land rights	The collection of copies of polygons and land rights certificates of farms under certification area and digitalise the information.	Improve control on the status of land rights.	**Degree** of compliance with new criteria.
Agroecological practices; Climate resilience.	Work on improving the Fairtrade Climate standard to broaden the scope of projects to encompass Carbon (Removal) Credits by applying APs and other sustainable practices that generate a measurable benefit to the environment and review the scope annually to include potential new technologies or APs.	Expand the scope of Fairtrade Climate Standards to provide POs with proven sustainable alternative sources of income.	**Number** of POs that emit Carbon Credits.
Labour rights; Agency	Submit to the Workers' Rights Advisory Committee well in advance of decision-making any new standard proposal with significant clauses related to labour, so that committee members can provide comments. Fairtrade ensures that prior to deciding on such proposals, its Standard Committee is informed in writing of WRAC comments.	Improve workers political voice and the fulfilment of their rights.	**Degree** of participation of the Workers' Rights Advisory Committee participate in the development of standard clauses related to labour.
Food security and nutrition	Cooperate with expert civil society organisations or NGOs to improve Fairtrade criteria and develop a standard add on food security for SPOs and CPOs.	Improve producers and farm workers level of nutrition, access to food, and availability.	**Degree** of compliance with new criteria.

2. Awareness

Fairtrade Organisations and agricultural workers also benefit from awareness-raising, as Fairtrade has the connections and the position to do it. In order to act on the recommended policies, the following topics were suggested:

Main policies impacted	Suggested topics for awareness	Objective	Definition of success
Agroecological practices; Climate resilience; Biodiversity and agrobiodiversity; Water use; Land restoration; Soil organic carbon	Climate change risks and potential effects on farms and their livelihoods; unsustainable agricultural practices that contribute directly to climate change or exacerbates its effects; and sustainable/Agroecological Practices that help to adapt and mitigate climate change effects. Suggested sub-topics to include on awareness to PNs, POs and other actors are: • the proper and efficient use of pesticides and fertilisers, the adverse effects of overuse and the benefits of eliminating or reducing chemical pesticides and fertilisers; • the negative effects of biodiversity loss and the benefits of biodiversity and agrobiodiversity; • the negative effects of soil degradation and aridification, and the benefits of soil health.	Strengthen farmers' awareness and understanding of climate change and its effects, and possible practices to mitigate the adverse impacts by 2024.	**Percentage** of POs which perceive they understand/ are aware of climate change risks, potential effects on the farm and their livelihoods, and the advantages of sustainable/ Agroecological Practices.
Gender equality; Youth employment and decent livelihoods; Social equity and equality.	Gender inequalities and its consequences for women and people with underrepresented genders. Reinforce the message that producer organisations have the responsibility to factor in gender inequalities in how they deliver training, making sure the way they deliver it is functional to women and ensures their participation.	Improve the understanding of gender equality and the consequences of inequality for women and people with underrepresented genders through interactive materials to all POs by 2023.	**Percentage** of POs which perceive they understand the extent of gender inequalities in their organisation and its consequences. **Number and percentage** of producers by gender attending workshops aggregated, per PO, commodity, region and type of organisation (HL and SPO).

Youth employment and decent livelihoods	Youth migration, unemployment status, inequalities and potential divestment in the sector. In particular to governments, supply chain actors, and the agricultural sector.	Improve youth conditions in agriculture to incentivise them to engage.	**Number** of campaigns, contacts with government or material released to raise awareness on youth migration, youth employment and inequalities.
Social equity and equality; Fair markets and trade; Traceable supply chains	The challenges and market barriers that pipeline regulation on HREDD can pose to POs, which are at risk of losing the power achieved and halting their growth within the supply chain.[56] In particular, directed to the government, and the industrial sector.	Improve understanding of the adverse effects that the upcoming regulation could cause in POs by 2023.	**Number** of campaigns, contacts with government or material released to raise awareness on challenges and possible market barriers that pipeline regulation on HREDD can pose to POs.
Labour rights; Health and safety	Raise awareness among POs on the importance of providing PPE to workers and the proper training to avoid undue exposure and accidents in the place of work. PPE is e.g. relevant in Sugar cane plantations in order to enable the transition to green cane harvesting, which however previously relied on pre-harvest slash and burn, a practice carried out, among other things, to prevent wild animal attacks in the field.	Improve labour safety and working conditions.	**Alignment between** value of PO members investment in PPE (including the premium) and estimated spending in PPE (in EUR).

56 The new regulation could envisage severe penalties for infringements that will drive market consolidation towards prominent established players since they have more robust systems that can ensure regulatory compliance, concentrating buyers who fear non-compliance by less experienced and small organisations.

3. Capacity

Fairtrade has the means to develop producers' capacity. Building capacity reduces differences and endeavours for more equality and social justice. The following recommendations are divided into internal capacity building within Fairtrade and capacity building for POs.

i. Internal capacity building

Main policies impacted	**Suggested areas of capacity building**	**Objective**	**Definition of success**
Agroecological practices; Climate resilience; Biodiversity and agrobiodiversity; Water use; Land restoration; Soil organic carbon	Climate change and its impact on the environment and POs. Data collection and analysis to be able to measure overall POs sustainable performance and resilience Demonstration of impact to commercial partners about Fairtrade actions, Fairtrade premium, and POs improvements on adaptation to climate change and overall sustainability. Recommended sub-actions: • the creation of 3 new full-time positions filled by: a soil scientist to understand the effects of climate change and agricultural practices on soils; a pesticide expert to understand the impact of pesticides and advantages of agroecological alternatives; and an expert in sustainable agriculture production; • the creation of an expert position on the ground in each relevant crop. The expert needs to have a technical background to support producers in the transition of sustainable agriculture and the effects on climate change; • improve the knowledge of FI, NFOs; PNs; and auditors on climate change, biodiversity, agrobiodiversity, water use, and soil health through internal training to key staff; • improve data collection and analytics skills through training to key staff; • the development of a resource platform that allows POs to receive and exchange information about APs' adoption and implementation.	Reduce the environmental knowledge gap within the Fairtrade system to facilitate POs' adoption of agroecological practices.	Fairtrade created and filled the positions **[Yes/No].**

Fair markets and trade; Social equity and equality.	Unfair and unsustainable trading practices through the creation and training of an auditing Team in each PN. Expertise will be built around each crop's business practices, such as the type of contracts and supply chain relationship between farmers, buyers, cooperatives and traders. The audit team will serve as a guide during audits to support FLOCERT auditors and provide further understanding when irregularities are identified.	Reduce POs exposure to unfair and unsustainable practices by traders and commercial partners.	**Number** of concerns raised through audits on unsustainable practices in trade such as bound contracts.
Labour rights	International labour rights of informal workers through appointing a task force or Team that includes labour experts. The team will protect the rights of informal workers in the systems, digesting the recommendation made by external experts and implementing changes in the Fairtrade system.	Increase protection and fulfilment of labour rights.	Fairtrade appointed a task force or Team that includes labour expert to monitor and protect the rights of informal workers **[Yes/No].**
Land rights	Build internal capacity in partnership with expert organisations on the risk associated with land and pipeline legislation on HREDD and deforestation. Recommended organisation to work with is FIAN international.	Increase understanding of land rights and linkages with sustainable agriculture to enhance the sustainability of farming systems.	**Number** of collaborations with expert organisations on: land rights protection.

ii. Capacity building for POs and farm workers

Main policies impacted	**Suggested areas of capacity building**	**Objective**	**Definition of success**
Agroecological practices; Climate resilience; Biodiversity and agrobiodiversity; Water use; Efficient use of pesticides and agroecological alternatives; Efficient use of fertilisers and agroecological alternatives; Soil organic carbon; Land restoration; Food security.	In partnership with qualified, knowledgeable NGOs and/or scientific institutes, deliver the proper and local context training on APs with interrelated modules on biodiversity, agrobiodiversity, agroecology, climate change adaptation and mitigation, pesticide and fertilised use, water use, energy efficiency, soil health, food security, etc., which includes a combination of training, exchanges of practices between producers, experimentations in the field within SPOs and PNs; innovation, exploration, experimentations, the share of knowledge between producers within the global Fairtrade systems; so that Fairtrade producers will be supported in the transformations of their farming systems into a more sustainable one.	Improve POs knowledge and adoption of APs that can help to adapt and mitigate the adverse effects of climate change, and to improve the sustainability of the farm through the development of a five-year plan on trainings on APs with interrelated modules on different areas.	**Number** and type of training delivered to PO members and workers on APs by different types of providers in the last year, and average number of participants in each type of training. **Number** of APs featured in trainings adopted 1/2/3 year after training was delivered aggregated, per PO, commodity, region and type of organisation (HL and SPO).
Fair markets and trade; Agroecological practices; Traceable supply chains; Social equity and equality.	In partnership with other expert organisations, capacitate POs in terms of data collection and technology to obtain and generate actionable and timely data that may enhance output and terms of trade, and to face the pipeline regulation related to deforestation and HREDD.	Support POs in the design, funding and implementation of IMS that assist them in collecting information about production (pests, weather, yield, markets), and that allows them to collect and process the information that will be required by the upcoming regulation in HREDD and deforestation in collaborating with stakeholders and donors.	**Number and percentage** of POs implementing Internal Management System (IMS).

Fair markets and trade; Living income and wages; Gender equality; Agroecological practices; Social equity and equality.	In partnership with other expert organisations, work on organisational strengthening of SPOs with the aim to increase their business performance e.g., long-term commercial relationships between buyers and POs,[57] increasing sales under Fairtrade or sustainable terms and overall business results, productivity, fair prices that allow farmers to reach a living income, and income diversification. Interrelated modules include negotiation skills, terms of trade, how to build relationships with buyers, access to timely and quality information (e.g., market prices, production costs, and any other data necessary to trade and to leverage their position), entrepreneurship, financial literacy, financial planning.	Extend the programs Fairtrade already has on organisational strengthening to other crops, such as the Fairtrade Coffee School, or search for partners who are already delivering training or that can work jointly with Fairtrade to develop targeted training for POs, on negotiation skills, prices, trade, and building relationships with commercial partners.	**Number and type** receiving training or mentoring in financial literacy and business planning **Number and type** of training delivered to SPO members on organisational strengthening. **Monitor** the performance of SPO who attended trainings on organisational strengthening modules.
Youth employment and decent livelihood opportunities.	Support and collaborate with other organisations, governmental or NGOs, to jointly deliver with the PNs leadership capacity building for young people, including economic, financial, climate change and risk management.	Deliver capacity-building in risk management strategies and offer support in accessing production resources so that young people may be better positioned to receive loans from banks.	**Number and type** of training delivered to youth on leadership and risks management.
Labour rights	Develop a labour relations programme that involves worker education delivered together with trade union representatives, trade union support activities and pathways to move towards collective bargaining.	Increase collective bargaining	**Number** of POs participating in labour relations programme

57 Between 2006 and 2013, Fairtrade International ran a successful organisational strengthening programme funded by Irish Aid for coffee SPOs in Central America, which showed the relevance of achieving better business performance to improve prices paid to producers and Fairtrade sales (evaluation report available).

4. Funding & Insurance

Fairtrade also has the position and connections to link POs to sources of funding. In order to act on the recommended policies, the following actions were suggested to increase fundings. The list also provides recommended areas for funding.

Main policies impacted	Suggestions	Objective	Definition of success
Agroecological practices; Climate resilience; Access to energy.	Develop strategies to gain access to increased funding from governments, international organisations and other NGOs to invest in climate change adaptation and mitigation. And search for possibilities of insuring producers against climate change on the regions where the effects are more severe. One strategy Fairtrade will pursue is the development of cross-cutting projects aimed at combining renewable energies with mitigation and adaptation measures to climate change.	Extend CLAC's strategy on renewable energies to other regions and make available funds for prevention and compensation from climate change losses and hardships in all the producing region Fairtrade operates and facilitate understanding and negotiation between POs and insurance companies.	**Number and percentage** of producers 1) benefited from funds instituted by Fairtrade (whether in alliance with other organisations or not), 2) insured against climate change losses. **Number and value** of funding raised for combined projects on renewable energy and adaptation and mitigation strategies vs # and value of funding raised only for projects on adaptation and mitigation strategies.

Agroecological practices; Climate resilience; Biodiversity and agrobiodiversity; Land restoration; Soil organic carbon; Access to energy.	Develop strategies to increase and secure funding to support the adoption and implementation of agroecological farming methods. Recommended areas in which to invest: • multipurpose projects that enhance soil, water retention, and reduce the need for irrigation and chemical pesticides such as the "Program for Increasing Productivity" (PIP); • investment in water infrastructure and related services in the farms and closer communities such as the creation of boreholes or drilling wells to secure access to clean drinking water, or investments in systems that allows rainwater harvesting, e.g., adapting roofs so water falls into a common point, and store water in ponds, or reservoirs; • the implementation of cost effective and inexpensive technology to purify and recycle water such as bio-sand filters or slow-sand filtration, anti-microbial metals, solar disinfection (it works if the water is clear, not turbid), boiling and distillation; • economic viability of agroecological alternatives and the implementation of ecological management practices; • afforestation and agroforestry projects: • biochar and carbon sequestration.	Increase the number of POs implementing APs with the ultimate purpose of increasing farm sustainability and resilience to external shocks such as climate change.	**Number and percentage** of POs adopting or implementing agroecological practices aggregated per PO, commodity, region and type of organisation (HL and SPO).

Primary and secondary school; Youth employment and decent livelihoods opportunities; Child rights.	Develop strategies to increase funding to support the development, sharing and adoption – across regions – of programs that enhance and motivate children to attend school or pursue an education.	Extend the Fairtrade Africa Alumni Network, e.g., which motivates the children of Fairtrade Flower plantation workers to learn, assist, and perform well in secondary schools to exit poverty to all Fairtrade regions with difficulty on accessing education by 2030.	**Number of projects** and programs in education domain implemented in the Fairtrade systems.

5. Data collection & upcoming regulation

Data is a valuable asset, among other things, it allows to take informed decisions, monitor performance and demonstrate impact. Fairtrade is also positioned to centralise and gather data from different Fairtrade actors, which could benefit POs to access information and at the same time to provide it to commercial buyers.

Main policies impacted	**Suggestions**	**Objective**	**Definition of success**
Agroecological practices; Climate resilience.	Develop and implement a centralized and systematic transparent process to capture, document and analyse data on Fairtrade impact and interventions in POs, farmers and workers (for the three sustainability pillars: social, economic and environmental). Fairtrade will also improve or leverage robust M&E to demonstrate impact primarily to commercial partners, donors and other stakeholders, producing high quality reports in a way that is compatible and compliant with the external frameworks such as pipeline regulation on Deforestation and HREDD Directive.[58]	Monitor Fairtrade impact and strengthen commitment of commercial partners by demonstrating impact.	Fairtrade developed a systematised process to capture and document analyse data on impacts in POs on climate change and the environment **[Yes/No].**

58 Pipeline regulation will probably require commercial partners disclosing information about their contribution to climate change.

Agroecological practices; Climate resilience.	Rally monetary and human resources to implement a transparent and systemised data collection of on-farm practices in 2023, that allows an analysis and development of production profiles per commodity and region. Data collection includes experiences, outcomes and lessons learned. Data generated will be shared with PNs, POs and producers with the aim of facilitating the process of selecting the best cost-effective course of action against climate change. Data will be systematized and standardised to allow peer exchange and innovative practices to be shared across producer organisations from different regions.	Reduce the knowledge gap on practiced production systems and APs application within Fairtrade system, to develop strategies to increase adoption of APs	**Number and percentage** of production profiles developed **Number and percentage** of POs adopting organic or agroecological practices.
Agroecological practices; Efficient use of pesticides and agroecological alternatives; Efficient use of fertilisers and agroecological alternatives; Climate resilience.	Analyse data collected required on standards on types of pesticides and fertilisers used: type of disease/ pest, period, crop, volumes applied, type (chemical, bio, etc.), outcomes, and the alternative chemical-free measures to prevent and control the pest, disease or weed, to implement and monitor the metrics proposed.	Monitor pesticides and fertiliser use for targeted actions to eliminate or replace with agroecological alternatives where applicable.	**Number and percentage** of producers who adopted bio/agroecological alternatives per crop. **Percentage** in volume of chemical pesticides per crop
Agroecological practices; Efficient use of pesticides and agroecological alternatives; Efficient use of fertilisers and agroecological alternatives; Climate resilience.	Conduct a review of imperative frameworks regarding hazardous and harmful pesticides, that will serve as reference to compare alignment with Fairtrade Material Hazardous list.	Increase alignment with the expert organisation's list of banned and hazardous chemicals must be above 90% annually.	**Degree** to which Fairtrade List of hazardous and prohibited materials aligns with PAN HHP list.

Agroecological practices; Biodiversity and agrobiodiversity; Water use; Soil organic carbon; Land restoration; Climate resilience.	Conduct life cycle assessments for top commodities that measures – applying common methodologies – the carbon, water, and biodiversity footprint. This information could be used to monitor sustainability of crops, compliance with policies, and to prove that Fairtrade crops are more sustainable than conventional crops.	Reduce the knowledge gap on the degree of sustainability of Fairtrade top crops. It also is another source to demonstrate impact primarily to commercial partners.	**Number and percentage** of POs with a positive carbon footprint per commodity and region. **Number and percentage** of POs with a positive water footprint per commodity and region. **Number and percentage** of POs with a positive biodiversity footprint per commodity and region.
Living income and wages	Develop a living income benchmark that includes the environmental and social cost of producing to calculate the real value of producing food. Alternatively, Fairtrade could participate in multistakeholder initiatives with the purpose of developing a methodology to calculate the real value of food, such as the True Value for Food Initiative.	Reduce the knowledge gap on cost of productions to increase leverage with commercial partners.	**Gap** between True Value of Food and prices paid **Number** of POs participating in living income projects.
Land restoration; Climate resilience.	Collect data and measure in a cost-effective way soil erosion, in order to identify degraded land spots that need urgent care e.g. regenerative practices.	Identify or generate rapid assessment tools that allow for trained local professionals and/or PO staff to estimate the percent of surface area with visual signs of splash, sheet, rill and gully erosion.	Fairtrade **certified surface area** (in ha.) identified as highly eroded or at risk of high erosion.
Land restoration; Traceable supply chain; Climate resilience.	Fairtrade will actively work to identify the sources of deforestation and land degradation by playing an active role in the identification, and joining efforts with producer countries, governments, NGOs, and other stakeholders to jointly map and identify the geographical sources.	Map Fairtrade hotspot areas on deforestation and seek partnerships with governments, NGOs, supply chain actors, and other stakeholders to join or implement programs that tackle or counteract the root causes of deforestation.	**Number** of implemented programs to tackle deforestation root causes

Land restoration; Traceable supply chain; Climate resilience.	In partnership with expert organisation, establish in FI a robust anti-deforestation system using geo-location and remote sensing monitoring technology that captures land use, biomass, and forest cover change. Fairtrade will identify hotspot areas on deforestation and monitor Fairtrade POs 1) compliance with the cut-off date for new certified organisation, 2) compliance with Fairtrade standards and upcoming regulation on deforestation in a sample basis and at regular intervals 3) leakage-in (combine with action in Inability to trace the supply chain).	Start monitoring and identifying hotspot areas on deforestation by 2024.	Fairtrade implemented in partnership with an expert organisation a monitoring system to ensure PO compliance with regulation and Fairtrade standards **[Yes/No]**
Land restoration; Traceable supply chain; Climate resilience.	Linked to prior action, to implement the anti-deforestation systems Fairtrade will build internal capacity to collect data from POs and analyse it. Fairtrade will require POs to submit 1) the polygons 2) yield data.	Have reached all POs with the request for polygons and yield data by the end of 2023.	**Number and percentage** of PO that inform Fairtrade with polygons and yield data (on schedule).
Land restoration; Traceable supply chain; Climate resilience.	Develop a strategy a plan and a roadmap to conduct plausible yield analysis of POs on a sample basis to detect anomalies and conduct pilot tests on new technology towards improving traceability by 2025.	Increase Fairtrade monitoring and transparency.	**Percentage** of deviation from possible yield and actual yield.

Land restoration; Traceable supply chain; Climate resilience.	Work with PN, POs and an expert partner to establish geo-location points and remote sensing in POs systems.[59] These technologies will be required to be able to trade and access specific markets by upcoming regulations on deforestation and HREDD. Fairtrade will also support and encourage producers to use data obtained from remote sensing whether 1) it is produced and delivered by Fairtrade or 2) produced by the POs for other purposes in addition to regulatory compliance, such as mapping and visualising the farms' landscape to assess risks and exposure related to the environment and climate change to design risk mitigation strategies. Fairtrade will also work for POs being able to own and produce this information that could also be a source of income.	Start working in 2022 in the design of plans for funding and implementation of geo-location and remote sensing technologies for POs. The plan should cover 1) collaboration with stakeholders and donors (primarily commercial partners), 2) research on best cost-effective suppliers accessible to POs, and 3) delivering capacity building for data, risk analysis, integration of systems, and compliance with the upcoming regulation.	**Number and percentage** of POs with geo-location and remote sensing embedded in their systems
Land restoration; Traceable supply chain; Climate resilience.	Develop and implement a system to collect data on KPIs, that measure the impact of the upcoming EU deforestation and HREDD regulation such that when the regulation hits, they can record unintended consequences. Conduct research focusing on the costs and capacities needed to enforce the upcoming EU regulation and other countries legislation regarding human rights due diligence and deforestation, to design capacity building for POs on compliance.	Search for cost-effective methods to collect impact data on the upcoming EU deforestation and HREDD regulation and conduct research focusing on the different barriers new upcoming regulation pose to POs and design strategic plans that include advocacy with governments and commercial partners.	Fairtrade developed a cost-effective method to record the impact of the upcoming EU deforestation and HREDD regulation **[Yes/No]**

59 The new cocoa standard which is under revision, will introduce requirements for POs to collect own geolocation data and to introduce systems that allows them to analyse the data point themselves. It aims at a self-sustaining system.

Primary and secondary education	Analyse the investments[60] in education made with the Fairtrade Premium and develop recommendations to help POs to sustainably increase their investments in cost-effective educational interventions.	Acquire and generate sufficient information and knowledge of the local context related to education and Fairtrade Premium investments on education to produce a guide with recommendations on the best cost-effective educational investments by 2025.	Fairtrade developed a recommendation guide on the best cost-effective educational investment **[Yes/No]** **Percentage** of Fairtrade premium invested in cost-effective educational interventions for children after the dissemination of the guide, aggregated, per PO, region and type of organisation (HL and SPO).
Gender equality; Social equity and equality.	Survey farmers, workers and PO staff on their daily activities differentiated by gender to do a qualitative socio-gender-economic and environmental diagnoses on where women spend their time and assess their access to resources, agency and decision making, to identify and understand the specific barriers women face and develop programs and initiatives to address the issue.	Start collecting data from women, man, youth and other demographics about their daily activities and perform qualitative analysis by 2025.	Fairtrade collects data form women, youth and other demographics about their daily activities. **[Yes/No]** Fairtrade conducts socio-gender-economic and environmental diagnoses based on the information collected (e.g., comparing answers to identify gaps and gender perceptions **[Yes/No]**

60 Investments in education is considered the most important investment area of the Fairtrade Premium.

Gender equality; Social equity and equality; Youth employment and decent livelihood opportunities.	Implement a fair voice mechanism across POs that collect data form women, youth and other demographics about their experiences for Fairtrade and what they would change, whether they have access to resources and agency to change their situation.	Design a develop a plan for the fair voice mechanism by 2025 and within ten years have the fair voice mechanism implemented across POs collecting data from women, youth and other demographics about their experiences for Fairtrade and what they would change, whether they have access to resources and agency to change their situation.	Fairtrade started collecting data form women, youth and other demographics about their daily activities. **[Yes/No]** Fairtrade conducts analysis based on the information collected **[Yes/No]**
Fair markets and trade; Social equity and equality.	Work on collecting and leveraging existing data in order to produce regular market reports on country-specific markets per relevant crop, to increase visibility on how the market works, the terms of trade and consumer profile, with the aim to share it with SPOs in order to reduce information gaps between market actors. Fairtrade will produce rich and high-quality reports to present to commercial partners in order to outline the benefits of being Fairtrade certified and paying higher prices. Also, collecting data on contracts that will provide producers with transparency in terms of cost and profit margins, and prevent unfair practices carried out by other supply chain actors.	Start collecting valuable data on trading and markets and producing reports to share with farmers by 2023.	Fairtrade produces regular markets reports on country specific markets per crop **[Yes/No]**
Child rights	Fairtrade will increase the level of reporting and requirement for monitoring and remediation systems in alignment with the reporting requirements of the initiatives for sustainable production, particularly in Cocoa, in many European countries, of which many Fairtrade commercial partners are already part.	Strengthen commitment of commercial partners	**Alignment** of Fairtrade's reporting and requirement for monitoring and remediation systems with the requirements of other initiatives especially mandatory.

Child rights	Incentivise POs and their members (farmers) to research and understand the local contextual child labour risks and set up structures to address, remediate, and enhance practices and systems. Fairtrade will also reinforce the understanding within the Fairtrade systems that the discovery of child labour is by no means a motive of decertification itself. After several failed attempts to continuous improvement, Fairtrade will only decertify POs that do not have systems in place or are dysfunctional.	All POs have the proper and sufficient support from Fairtrade and external stakeholders to carry out their responsibilities associated with child labour, especially remediation activities.	**Number** of (1) labour cases identified and (2) child labour cases remediated.

6. Incentives

Incentives are a driver to achieving objectives and goals. Fairtrade, through its position, can direct the flow of incentives (withing the Fairtrade system and external) towards PO (more specifically to producers and farm workers).

Main policies impacted	Suggestions	Objective	Definition of success
Agroecological practices; Climate resilience; Reducing, recycling, reusing and sharing	Exploring opportunities to market by-products in local community/ regional markets, working on branding and commercial strategies with POs and commercial partners. Also explore the possibilities to take steps further into the value chain bringing added value to producers.	Increase incentives in order to increase sources of incomes and support efforts to bring added value to producers.	**Number and percentage** of producers investing a proportion of the premium to create added value to agricultural production **Number and percentage** of POs commercialising value-added products in addition to their main commodity/product **Percentage** of POs which have improved their position in the value chain since first achieving Fairtrade certification.

Agroecological practices; Climate resilience;	In partnership with supply chain actors and other stakeholders, introduce a 'care for nature' differential or payment for environmental services. Fairtrade could alternatively join an existent program that reward proven good agricultural practises, to incentivise soils protection and soil health, that can integrate the cost or cover the yield decreases due to the adoption of practices that could potentially reduce productivity.	Conduct a market analysis and research to identify initiatives, projects or programs that reward producers for adopting APs and determine feasibility for Fairtrade system.	**Number and percentage** of APs implemented by producers after the care for nature differential or reward
Agroecological Practices; Efficient use of pesticides and agroecological alternatives; Efficient use of fertilisers and agroecological alternatives; Climate resilience; Biodiversity and agrobiodiversity; Soil organic carbon	Identify and counteract perverse incentives generated by governments, private actors, and common false beliefs among farmers that lead to unsustainable practices such as increased chemical pesticides and fertilisers application	Increase farm resilience to climate change and improve producers and farm workers livelihoods	**Ratio** total produced per harvest over type of pesticide (chemical /bio / organic pesticide) used in volume to produce, aggregated, per PO, commodity, region and type of organisation (HL and SPO).
Agroecological Practices; Climate resilience	Encourage premium investment in APs to reduce chemical pesticides use by updating the available best-practice list of premium money investments.	Increase the adoption of agroecological alternatives to chemical pesticides by including in next revision of the best-practice list of premium money investment APs as an alternative and link it to the agroecological guidelines already developed.	**Amount** of premium invested in APs to reduce chemical pesticides.

7. Advocacy

One of the ways Fairtrade works to share the benefits of trade more equally and achieve decent livelihoods for producers and workers is through advocacy. Advocacy is crucial to transform unfair and unsustainable practices, rules, and patterns.

Main policies impacted	Suggestions	Objective	Definition of success
Living income and wages; Agroecological practices; Climate resilience; Food security and nutrition	Advocate for recognising income and wages as part of the framework of due diligence as a human right itself or as a precondition for the fulfilment of other human rights, such as adequate housing or food.	Fairtrade producers and farm workers achieve decent livelihoods through living income and wages.	**Gap** between living wages and wages paid per crop, and region **Gap** between prices that allows a living income and prices paid **Number** of multi-stakeholder initiatives/ approaches on living income and wages that Fairtrade actively participates in **Number** of research collaborations on living income and wages that Fairtrade participates in
Social equity and equality; Fair markets and trade; Traceable supply chain	Advocate for a cost-effective due diligence legislation that would extend throughout the supply chain so that smallholder farmers beyond cooperatives are covered (individual farmers). Fairtrade will also advocate for the legislation itself to avoid unintended negative implications for smallholders and have a strong enforcement mechanism and supporting measures for Responsible Business Conduct (RBC) watchdogs or other formats of accountability.	Avoid unintended implications for smallholders and strong enforcement that cover producers and workers.	**Number and type** (advocacy/programmes/ messaging/campaigns) of strategic alliances/ joint actions with businesses, government and multilateral bodies, civil society organizations, sustainability initiatives, and funders at national, regional and international on HREDD and other due diligence legislation.[61]

61 Similar to Fairtrade Strategy KPIs metrics.

Social equity and equality; Fair markets and trade; Traceable supply chain; Living income and wages; Agroecological practices; Climate resilience	Advocate for supply chain engagement and cooperation to share the cost of transitioning to more sustainable farming systems. Examples of areas: i. water retention, irrigation systems, other measures involving the reservation of water (ponds drills) ii. food loss and waste along the supply chain, storge the crops iii.access to finance that is appropriate and affordable. iv.traceability systems v. APs adoption	Avoid unequal share of responsibilities in the supply chain.	**Number and percentage** of projects that are funded and cost-shared by supply chain partners (by type of actor trader, exporter, buyers, etc.) vs. total projects on sustainable agriculture.
Agroecological practices; Climate resilience; Efficient use of pesticides and agroecological alternatives	Advocate for more robust regulation at the national level to ban harmful and hazardous pesticides and to regulate the use of substitutes (organic or environmentally friendly) so products produced with these substitutes can be sold in markets without constraints.	Reduce the amount of chemicals pesticides used and increase the adoption of agroecological practices.	**Percentage** of successful intervention with governments (it includes multistakeholder initiatives or petitions).
Climate resilience; Fair markets and trade; Traceable supply chain; Social equity and inequality	Advocate for chain-wide collaboration, equitable access to services, and proper use of IT systems. In particular, IT systems implemented must improve the information flow towards farmers that support adequate decision making and inclusiveness. Furthermore, Fairtrade will work and collaborate with supply chain actors on the vertical integration of systems. The integration of systems has to be between Fairtrade itself, FLOCERT and other supply chain actors, with due consideration for the PO's information system. Fairtrade will also work with producer to align the type of data required, the level of rigor and the users of the data and will explore the possibilities of revenue stream from data ownerships that can be sold to other supply chain actors that need it to comply with the regulation.	All POs by 2030 have equitable, functional and effective IT systems integrated with FI and FLOCERT.	**Number and type** of strategic alliances/ joint actions (advocacy/ programmes/ messaging/campaigns) with businesses, government and multilateral bodies, civil society organizations, sustainability initiatives, and funders at national, regional and international on: access to infrastructure, services (e.g. financial services) and technology, especially internet.

Climate resilience; Social equity and inequality; Child rights; Youth employment and decent livelihood opportunities	Fairtrade will play an advocacy role to influence governments to play an active role in protecting children rights, providing basic infrastructure and social services, creating an enabling environment for monitoring and remediation, and enforcing upcoming and current due diligence legislation.	By 2030 increase Fairtrade the number of PO participating in programmes and campaigns Develop	**Number and type** (advocacy/programmes/ messaging/campaigns) of strategic alliances/ joint actions with businesses, government and multilateral bodies, civil society organizations, sustainability initiatives, and funders at national, regional and international on child labour.
Labour rights; Youth employment and decent livelihood opportunities	And advocate for improving living and working conditions in agriculture to incentivise young people to stay and get involved in the sector.	Engage youth and enable continued production in the future	**Number, percentage, type** and value of projects (premium projects and non-premium projects) specifically targeting youth in the last calendar year.
Labour rights	Formalise invitations to trade unions, such as through MOUs, to be part of the Fairtrade system and represent worker's interest 1) in PN and PO governance structure, and 2) in annual meetings held by the Executive Committee (to ensure that hotspot topics on workers' rights and human rights issues have a permanent spot in the agenda). In absence of direct trade union participation, use as a proxy to represent workers interest the Workers' Rights Advisory Committee and the Centre of Excellence HREDD.	Increase the number of trade unions involved in the Fairtrade system.	**Number** of trade unions that 1) participate in PN and PO governance structure and 2) FI - CoE (HREDD).

8. Partnership

Partnerships are crucial for Fairtrade work. Long-term partnerships with key stakeholders that work collaboratively towards a common goal enables positive change.

Main policies impacted	**Suggestions**	**Objective**	**Definition of success**
Agroecological practices; Climate resilience	In partnership with the private sector, governments and NGOs, pilot vocational training and apprenticeship programmes directed to youth in selected POs in major crops.	Incentivise and build youth skills. Also, add value to agriculture and introduce technology to produce in rural areas.	**Number** of POs involved in projects or that provide vocational training or apprenticeship programmes
All policies	In partnership with qualified and expert organisations, develop a detailed, evidence-based guideline and manual of Agroecological Practices available to POs. The guide and manual contain a list of good practices considering the regional context and commodities, steps and recommendations to implement each practice and how to deal with setbacks, monitoring, and expected benefits. Suggested *APs* areas to include: i. water-efficient use, water re-use and water-use reduction ii. biodiversity, agrobiodiversity iii. soil health and regeneration of soils properties iv. energy efficiency and renewable energy v. secure and regular access to nutritious and diverse food of farmers and workers vi. elimination and efficient use of pesticides, including a step-by-step on how to reduce dependency vii. elimination of synthetic fertilisers and efficient use of agroecological alternatives, including step-by-step guidance on reducing dependence and amounts used over the years. viii. waste and food loss reduction at farm level ix. inclusion and integration of farm workers and producer members in POs governance structure and decisions.	Increase the adoption and application of Agroecological Practices.	**Number and percentage** of POs adopting organic or agroecological practices.

Climate resilience; Biodiversity and agrobiodiversity; Living income and wages	Search for current and upcoming multistakeholder projects to participate in local seed production [including breeding projects, nurseries (non-GMO) and seedbanks to conserve and propagate resilient varieties. Also, to reinforce the local seed storage and reproduction systems to push forward seed sovereignty rather than market mechanisms for seed access. Seeds will be available for producers in case of need and as a mitigation resource to climate change.	Increase POs´ resilience to external shocks by making seed accessible at the right time, price, quantities, and qualities in the commodities where it's needed and applicable	**Number and percentage** of producers 1) with strategic plans towards native seeds protection and use 2) sourcing from own or joint breeding projects 3) sourcing from seedbanks aggregated, per type of organisation, commodity and region.
Climate resilience; Biodiversity and agrobiodiversity; Living income and wages	Recommend and encourage POs, where applicable, to collaborate with experienced parties to develop "mother garden", i.e. different varieties of live crop trees/ plants in plantations, to keep propagating and safeguarding old varieties. Genetic diversification enables POs to access crop varieties that are better adapted or resilient to climate change effects or the changing ecosystem.	Increase POs´ resilience to external shocks by adopting genetic diversification practices.	**Number and percentage** of producers 1) with strategic plans towards Mother gardens and 2) practising genetic diversification aggregated, per PO, commodity, region and type of organisation (HL and SPO).
Child rights; Youth employment and decent livelihoods opportunities	Participate in developing a diverse spectrum of programmes with the private sector, governments, NGOs, communities and other organisations on identifying local child labour root causes, and participate in creating environments that enable children to pursue education. For example, participate in programs that aim at poverty alleviation (reduction), community development, skill-building, children protection, quality and appropriate education, health insurance, infrastructure and gender equity.	Tackle child labour root causes.	**Number** of projects in which Fairtrade participates and collaborates that aim at alleviating child labour aggregated, per commodity, region and type of organisation.

Child rights; Youth employment and decent livelihoods opportunities	Work with commercial partners and other stakeholders to identify the main local issues that impede youth development, to design tailor-made plans and local strategies in collaboration with government, civil societies, and private actors to improve agriculture and production conditions (prices, wages, type of work, innovation, gender, access to resources, infrastructure, information, skills building, etc.) to incentivise and involve youth.	Increase youth engagement in agricultural vocation.	**Number and percentage** of youth involved in POs as producer members.
Labour rights	In partnership with an expert organisation, develop a model to validate and assess the POs' self-reported worker registry data on worker registry and put in place mechanisms to control and trigger actions in case anomalies are found. Example: • Model the labour requirements given a certain quantity of product, estimating how many person-hours (Full Time Equivalents) would be required at the input level to produce x quantity of crop. • Applications include the following: • Labour intensity values per crop can be used to conduct a feasibility check on PO-reported data. • Data would further inform the extent of workers in the entire system, and the overall "impact" of the organisation. • Conformance with the "significant workers/10 workers" could be assessed/"audited".	Improve control over labour and the fulfilment of workers' rights, and their overall well-being.	Fairtrade developed a Labour Intensity Per Crop model **[yes/no].**

9. Other

i. Policies and strategies

Main policies impacted	Suggestions	Objective	Definition of success
Youth employment and decent livelihood opportunities; Agency; Agroecological practices; Climate resilience.	Work to support committed POs to make a systemic change in their structures, processes, norms and policy frameworks by supporting the development of a youth inclusion policy with action plans by youth.	Increase youth engagement in agriculture.	**Number and percentage** of POs that developed a youth inclusion policy with action plans.
Gender equality; Social equity and equality	Support the development of women networks and programs[62] that aim at strengthening the position of women, promoting equality and equity of opportunities in agriculture and other environments or industries (such as capacity building in business management), and that increases the visibility of women's roles and contributions.	Extend the "Women School of Leadership" initiative to other regions by 2030.	**Number** of projects and programs that aim at strengthening the position of women, promoting equality and equity of opportunities in agriculture, and that increases the visibility of women's roles and contributions implemented in the Fairtrade systems.
Labour rights; Social equity and equality; Gender equality	Update Fairtrade Work Rights Strategy 2012, to incorporate concepts, labour standards and recommendations of the ILO, especially for informal workers. The Board will appoint a taskforce, including independent labour experts, with a mandate and a hard deadline to protect international labour rights of informal workers in the system. Part of the mandate will be to make informal workers in the system visible in annual reports and statistics. The Board also decides that international human rights /labour rights shall inform deliberations on rights-related topics in standards.	Revise the Work Rights Strategy 2012 to incorporate concepts, labour standards and recommendations of the ILO, especially for informal workers by year 2025.	Fairtrade updated Fairtrade Work Rights Strategy 2012 **[yes/ no].**
Social equity and equality	Policies should not place an excessive burden on POs. Whenever possible, Fairtrade should lead the implementation of the policies and be a tool to facilitate POs compliance.	Increase equity of fairtrade producers	Meta analysis of responsibilities of these policies.

62 For example: the Women school of Leadership.

Climate resilience; Agroecological practices; Social equity and equality	Consider the development of a 'Best Practice Manual' for Fairtrade Premium investments on Environmental and Climate Change projects, which will be provided to producers, particularly targeting areas of severe resource depletion (water, forests, biodiversity), and in relation to the top 7 Fairtrade products.	Increase Fairtrade premium invested in Environmental and Climate Change adaptation and mitigation projects	Development of a 'Best Practice Manual' for Fairtrade Premium investments on Environmental and Climate Change projects **[yes/no].**
Climate resilience; Agroecological practices	Consider in the future merging or combining Fairtrade certification with organic certification or incorporate key aspects of the organic certification model into Fairtrade standards. Merging the criteria could mean a significant reduction in certification costs for producers. But requires FLOCERT to either be accredited globally and against the various regulations, or manage a suite of collaborations with the most relevant organic certification bodies.	Conduct research on the feasibility, benefits and disadvantages of merging or combining Fairtrade and organic certification.	Fairtrade merged Fairtrade Certification and Organic certification **[yes/no].**

ii. Specific actions for flowers

Main policies impacted	**Suggestions**	**Objective**	**Definition of success**
Living income and wages	Advocate and work on the implementation of a mandatory additional payment made by commercial partners and traders. Such additional contribution could occur, either through: 1) an on-top contribution tool for Flowers to improve workers' wages[63], or 2) a % of Living Wage benchmark. To this end, Fairtrade will closely work with supply chain actors to include the mandatory contribution and by participating in market research on the impact of the buying price rise.	Work with the supply chain actors in the development and implementation of a plan to introduce a mandatory top contribution on Fairtrade Flowers commodity to improve wages by 2025.	**Gap** between wages perceived by Flowers workers and living wages for the sector.
	Seek cooperation with expert organisations in the use of pesticides for Flowers, leveraging their knowledge, experience on the field, and reputation.	Partner with MPS-ABC[64] and classify Flower producers according their use of pesticides by 2025.	**Number and percentage** of producers MPS certified aggregated, per PO, commodity, region and type of organisation (HL and SPO).

63 While the feasibility of the tool is currently being consulted, preliminary studies showed that to cover 70% of the Fairtrade living wage benchmark will require an 8% increase in the flowers buying price, and due to the low prices, the percentage represent cents.
64 Where pesticide use is measured with a self-reporting system that is audited afterwards. The auditing is an ABC approach, so the

iii. Specific actions for sugar

Main policies impacted	Suggestions	Objective	Definition of success
Climate change; Agroecological practices; Land restoration; Soil organic carbon	Advocate for more sustainable sugar production practices and join supply and multistakeholder (from farmers and workers at origin to the mill factories and governments) approaches to transition to green cane harvesting.	Increase the number of Fairtrade Sugar supply chains and POs implementing the green cane harvesting system and increase the amount of Fairtrade Sugar volumes produced through the green cane harvesting system. [Fairtrade shall set specific targets (% and timelines) to achieve this objective.]	**Number and percentage** of POs & supply chains implementing green cane harvesting aggregated, per region.
Climate change; Agroecological practices; Land restoration; Soil organic carbon	Consider dedicating internal resources (a complete FTE) to engage with partners in the Sugar industry, develop strategies, and plan for the transition from conventional sugar cane farming to green cane harvesting systems.	Increase internal capacity to facilitate the transition to sustainable agriculture.	Fairtrade commits a full FTE to work on the transition of Fairtrade Sugar POs to a green cane harvesting system **[Yes/No]**.
Climate change; Agroecological practices; Land restoration; Soil organic carbon	To cover the higher upfront investment of green cane harvesting in training, harvesting methods and technologies that overcome the nuances of conventional sugar cane harvesting (e.g., burnings and dangerous animals),[65] search for donors and opportunities for funding.	Increase the number of Fairtrade Sugar POs that transition to green cane harvesting and are financially supported.	**Number and percentage** of POs & supply chains implementing green cane harvesting aggregated, per region.

farms using fewer pesticides receive an "A".

65 Over time, the higher costs will be recovered by increased yields. Producers and mills/factory as well as governments should agree on a funded project (supported by FT) to increase sustainable yields of sugar cane for processors to produce increased volumes of bagasse (for electricity) and for biofuels. For their effort, producers receive a premium or a percentage of the revenue. At the same time, ethanol may be produced to aim at 0 plastic waste and produce bioplastics/materials by building smaller industries. These products could be sold locally or exported.

VI. Conclusion

The policy positions herein represent the view of Fairtrade – as a value-driven organisation – on how sustainable agriculture may be understood within its own system. This document responds to the objective set out in the new Fairtrade 2021-2025 Global Strategy to undertake a holistic approach to achieving sustainability and making progress in all spheres of development: social, economic and environmental.

The process of developing these comprehensive sustainability policies started with the review of the literature and the development of a sustainable risk framework tailored to Fairtrade. Key literature consulted included the "Planetary Boundaries" of the Stockholm Resilience Centre (2016), the related "Doughnut Economics" by Kate Raworth (2017), the COSA (n.d.) framework of sustainability, and last, "The Sustainable Agriculture Matrix (SAM)" by Zhang et al. (2021). As a result, 25 key challenges or risks faced by Fairtrade-certified POs to achieve sustainability were identified.

Second, to draw on knowledge within the Fairtrade system, a risk assessment was rolled out in the form of an online survey format, consisting of the prioritisation of the 25 identified risks. Respondents comprised Fairtrade staff, FLOCERT, NFOs and POs. In addition, key informant interviews were conducted to collect specific views and recommendations pertinent to the sustainability issues faced by Fairtrade.

In parallel, a third step was pursued, which involved identifying a sustainable agriculture approach that Fairtrade should adopt. Agroecology was selected after an extensive review, analysis with alternatives, and the internal (Fairtrade) and external (opinion leaders) endorsement of the approach. The five main reasons for adoption are the following:

First, the approach aligns with Fairtrade's origins, mission, vision, theory of change, and foundational topics to the Fairtrade movement, such as empowering vulnerable or marginalised populations in rural areas.

Second, agroecology is a bottom-up approach aiming at contextualised solutions incorporating local contexts and constraints, which means it applies to any plantation or smallholder farm independent of the type of crop, soil, climate, or other condition.

Third, the approach extends into the universe of interactions, synergies and trade-offs among agricultural production for human consumption and natural ecosystems.

Fourth, agroecology aligns with already achieved Fairtrade's sustainability objectives (e.g., many Fairtrade-certified POs have already adopted organic farming).

Fifth, agroecology was endorsed by the recently amended French law on climate change and was linked to the 'fair trade' industry.

The integration of all these steps and informed by the agroecological principles and the observation of relevant international conventions lead to the development of these comprehensive policies. These positions thus reflect the collective thinking of the system, while also taking into account experts' recommendations, the academic literature and traditional knowledge.

A common theme underpinning each of the policy positions are the corresponding agroecological principles. This allows adaptability, as instead of offering universally applicable solutions, principles may be adapted to differing contexts and scales. From an operational perspective, principles help guide the planning, implementation, and evaluate agroecological transitions and transformations toward more sustainable agri-food systems.

Moreover, agroecology's five levels of sustainable agroecosystems conversion are highly applicable to Fairtrade's sustainability transition.

In sum, by moving towards sustainable agriculture, Fairtrade has the potential to achieve positive impact, benefiting producers, workers, consumers, and the environment alike.

Annex A: Key informants

Table 4: Key informants

Name	Position	Organisation
Sajindranath A. K.	Certification Manager: Asia-Pacific	FLO-Cert
Javier Aliaga	Climate Expert	CLAC
Alina Amador	Head of Standards	FI
Tim Aldred	Head of Policy	Fairtrade Foundation
Monika Berresheim	Global Product Manager	FI
Chloé Curtet	Chargée d'études d'impacts	MH France
Marike de Peña	Member of the Standards Committee and Banana producer	CLAC
Melanie Dürr	Global Product Manager Flowers & Plants	FI
Martin Eichhorn	Senior Technical Advisor	FI UK
Wilbert Flinterman	Senior Advisor Worker's Right & Trade Union Relations (GPPP)	FI
Peter Kettler	GPM Senior Coffee Manager	FI
Andreas Kratz	Director, Director Products, Programs & Policy	FI
Agapeters Kubasu	Climate Focal Point	FTA
Matthias Kuhlmann	Senior Manager Advocacy	FI
Ranjith Kumar	Director NAPP India and Central Asia	NAPP
Sarah Lagente	Producer Support Program Manager, Pacific	FT Australia / New Zealand
Nicolas Léger	Consultant to Global Product Management Bananas	FI (external)
Margret Loeffen	Impact Evaluation and Learning Manager	FI
Elena Lunder	Policy and Project Advisor Consultant	Fair Trade Advocacy Office
Dr. Arisbe Mendoza	Director, Global Impact Unit	FI
Dr. Tytti Nahi	Lead, Business and Human Rights	HREDD Centre of Excellence, Hosted at FT Finland

Aaron Petri	Programme Coordinator Living Income & Living Wage	FI
Johnna Phillips	Director, External Relations	FI
Laurie Roubas	Head of Producers Relations	MH France
Emilie Sarrazin	Chair Standards Committee	MH France
Gudrun Schloepker	Director, Standards Unit	FI
Johanna Schmidt	Global Project Manager – Cocoa	FT Germany
Martin Schueller	Development Policies Manager, Senior Advisor CoE Climate & Environment	FT Germany
Anita Sheth	Senior Advisor Social Compliance and Development (Informal Sectors)	FI
Juan Pablo Solis	Senior Advisor Climate and Environment	FI
Naomi Somerville-Large	Senior Technical Advisor	FI UK
Alison Streacker	Coffee Manager	FI
Charlotte Vernier	Policy and Project Officer	Fair Trade Advocacy Office
Jon Walker	Senior Advisor, Cocoa	FI

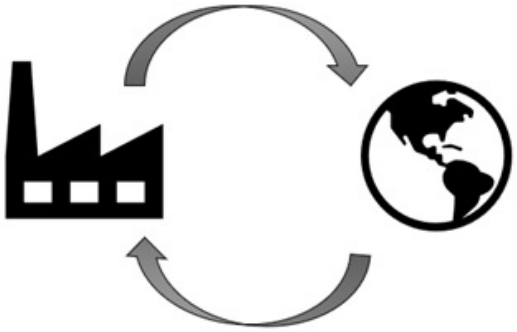
Annex B: Materiality assessment

As part of primary data collection, a double materiality assessment was conducted using a survey as a tool. The survey was targeted at FI staff (GPPP, Standards and Pricing Unit, GI, External Relations), FLOCERT, NFOs, PNs and POs.

A materiality assessment allows one to assess which matters impact the organisation's (financial) value, as well as prioritise these matters based on the perception of the respondents. In the context of sustainability, the concept of materiality has also been used with regard to – but not limited to – financial implications. For example, GRI (2020, p. 5) standards defined it as those "topics that reflect the organisation's most significant impacts on the economy, environment, and people, including impacts on human rights." Also, the SDGD (Sustainable Development Gold Direction) recommendations define material sustainable development information as the one that "is reasonably capable of making a difference to the conclusions drawn by: [a] stakeholders concerning the positive and negative impacts of the organisation on global achievement of the SDGs, and; [b] providers of finance concerning the ability of the organisation to create long term value for the organisation and society" (Adams et al., 2020, p. 9).

The double materiality approach combines both views and suggests a double analysis (see Figure 20): on the one hand, how sustainability issues could negatively impact the (financial) standing of the organisation, i.e. through an environmental, social, economic or governmental event which, if materialised, could cause a "negative material impact" on the organisation's value, and on the other hand, how the organisation affects the environment within which they operate. Determining this later effect commonly involves gauging the impact from the perspective of external stakeholders.

Figure 20: Double materiality



The double materiality concept was first introduced in the European Commission's (2019) Guidelines on Non-financial Reporting to assess materiality for non-financial information.[66] Moreover, it was also addressed along with dynamic materiality in two joint documents[67] by GRI, CDP (Carbon Disclosure Project), CDSB (Climate Disclosure Standards Board), IIRC (Integrated Reporting Council) and the SASB (Sustainability Accounting Standards Board). In these papers, materiality is described as double and dynamic, where the latter means that what "appears financially immaterial today can quickly prove to be business-critical tomorrow" (Calace, 2020).

As a result, by applying both materiality concepts: double and dynamic, identified material issues could be financial or non-financial (at the time of the assessment) and in different directions, one from the organisation to the surrounding environment and the other from the environment to the organisation. This approach incorporates topics in the materiality assessment that may have been left behind and are critical or relevant. First, because organisations do not operate in isolation and their effects on the economy, the environment and society must be considered, whether these impacts affect their value or not, and second because financial immateriality can change in the future.

For Fairtrade, the materiality assessment can help bring to light the most significant material issues to the producers and stakeholders linked to sustainability. These material topics will be addressed in the final policy position paper.

66 The EU guidelines specifies that in one direction, companies should disclose information "to the extent that such information is necessary for an understanding of the company's development, performance [and] position" and "in the broad sense of affecting the value of the company" (European Commission, 2019, p.4). For the other direction, the company should acknowledge "the environmental and social impacts of the company's activity on a broad range of stakeholders" (Adams et al., 2021).

67 Documents are: "Statement of Intent to Work Together Towards Comprehensive Corporate Reporting" (CDP et al., 2020b) and "Reporting on enterprise value Illustrated with a prototype climate-related financial disclosure standard." (CDP et al., 2020a).

Materiality Assessment Steps

The following steps were employed to conduct the materiality assessment:

Step 1 – Identification of stakeholders: producers, field workers, Fairtrade staff, NGOs and others (providing unique perspectives on the identified risks).

Step 2 – Outline the sustainability material issues based on data collected, insights provided, and research. Each material issue poses or is associated with a risk either for the organisation or the surrounding environment. In other words, double materiality will be applied to define issues and the associated risks, analysing how certified farming activities (Fairtrade) are impacting the environment and, bi-directionally, how the environment impacts Producer Organisations (POs).

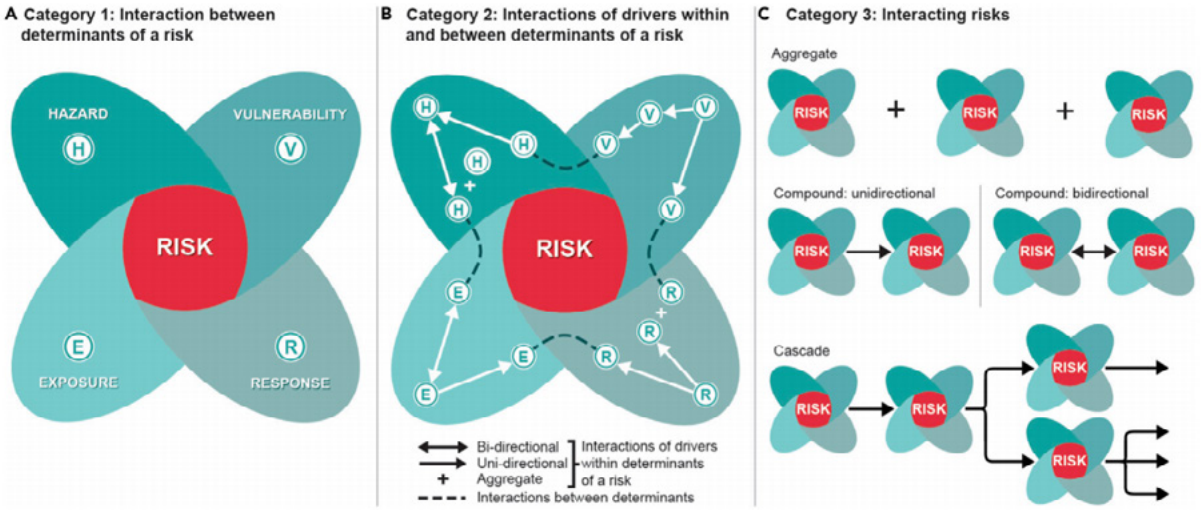
Related considerations include:

- The term "risk," for the purposes of this analysis, refers only to negative or adverse impacts.
- As a determinant of a risk, hazards are linked to the consequences of such risks to humans, the ecosystem and the organisation. For example, "soil erosion risk" caused by a soil erosion hazard should be considered along with the adverse consequences such as loss of biodiversity, food insecurity, etc.
- Responses to the identified issues (natural or human) can entail risks when there are negative side effects, "potential trade-offs", etc. (Reisinger et al., 2020).

Regarding the complexity of environmental risks, a recent paper dives into the interactions of "multiple drivers of climate change risk and of how multiple risks can aggregate, compound or cascade" (Simpson et al., 2021). Figure 21 summarises the layers and types of interactions. 'Category 1' reflects the determinants of risk: 1) *hazards* refers to dangers, e.g. droughts, cyclones, floods, and heavy rains; 2) *exposure* refers to the frequency, place or region related to hazards; 3) *vulnerability* refers to other concurrent or pre-existent conditions that interact with hazards; and 4) *responses* are the measures taken against the hazard that could have positive or negative effects or trade-offs. Category 2 reflects the holistic approach to analysing and understanding complex risk with multiple hazards, exposure conditions, responses, and vulnerabilities. The type of interactions among the components can be simple aggregation (sum), compound, and cascade.The analysis of how drivers and risk interact together can improve the understanding and help make better decisions.[68]

68 An example of the interactions of drivers and determinants of risks cab be found in "A framework for complex climate change risk assessment" (Simpson et al., 2021).

Figure 21: Complex climate change risks



Source: Simpson et al., (2021), URL

Step 3 - Design the materiality survey where stakeholders can evaluate the double impact (double materiality approach) of each risk and judge its significance. Calabres et al.(2019) suggest using a five-point Likert scale to graduate importance, from 1 for "no importance" to 5 for "very high importance."

For the purposes of this research, the term 'importance' is replaced with the term' significance.' According to GRI (2020) guidelines, "significance of an actual negative impact is assessed by considering its severity, [and] the significance of a potential negative impact is assessed by considering its severity as well as its likelihood." What determines severity is the scale, scope and the irremediable character.[69] When the guide refers to likelihood, it "refers to the chance of the impact happening."[70] Regarding negative human rights impacts, a distinction is made as severity takes precedence over its likelihood, and they are not only limited to physical harm.

Step 4 - Launch the survey and collect the data.

Step 5 - Build the materiality matrix.

69 "Scale: how grave the impact is. Scope: how widespread the impact is, for example, the number of individuals affected or the extent of environmental damage. Irremediable character: how hard it is to counteract or make good the resulting harm" (GRI, 2020).

70 "The likelihood of an impact can be measured or determined qualitatively or quantitatively, and can be described using general terms (e.g., very likely, likely) or mathematically (using a probability, e.g., 10 in 100 or 10%, or a frequency over a given time period, e.g., once every three years)" (GRI, 2020; ISO, 2018).

Materiality Assessment Risk

The Materiality Assessment features the principal issues, which represent risks, and sub-issues or topics, along with descriptions, and prompts the respondent to rate the principal risk through the double materiality perspective.

Respondents

In a materiality analysis, both, the internal and external stakeholders define and contribute to identifying the main factors that represent a risk to the organisation. Including external stakeholders in the review of risks and considering their expectations and interests may help create more shared value (Harrison & Wicks, 2013), and permits a more accurate picture of the organisation's conduct (Crane & Livesey, 2003; Unerman, 2007). To carry out the assessment and determine the material factors, we apply a 'Materiality Matrix' approach where two dimensions are taken into consideration (Calabres et al., 2019).

For this research, stakeholders are separated into two groups: the first features producers and field workers (e.g. represented by trade unions), and the second features Fairtrade staff (technical experts, directors, etc.), PNs staff, NGOs and others. The main reason for this division is to compare and contrast the perception of the risks and the significance assigned to them by each cohort: producers who are in the field have a very practical perspective, and may perceive risk differently than experts who may have a more technical approach to prioritising risk. In this typology, POs were assigned to the latter group.

The technical expert cohort will also include representatives from the various FI units, who were invited to participate in the Materiality Assessment. This cohort also included non-Fairtrade respondents, which was borne out of the reality that not all risks and issues are necessarily on the FI radar, or currently considered to be low prioritisation. Issues were thus considered, that, if left unaddressed, may actually pose a threat to Fairtrade's reputation.

Annex C: Peer reviewers

Table 5: Peer reviewers

peer reviewer	discipline	expertise
Janica Anderzén, Ph.D. Candidate in Agroecology, University of Vermont	Agroecology	smallholder Coffee agroforestry systems in Mesoamerica, agroecology, ecological economics
Dr. William Bertrand, Endowed Chair, Tulane University	Public Health	transmissible diseases, DALY, morbidity and mortality, IMS
Andrew Gerlicz, Ph.D. Candidate in Agroecology, University of Vermont	Agroecology	economic viability of agroecology in small-scale production
Dr. Anna Laven, Founder, Rokit Science Associate, Royal Tropical Institute (KIT)	Gender	women's rights, gender-sensitive development, inclusive development, gender, Cocoa value chains, social entrepreneurship
Dr. Alejandra Guzmán Luna, Researcher, CONACyT, Instituto de Investigaciones en Educación, Universidad Veracruzana (México) and Agroecology and Livelihood Collaborative, University of Vermont.	Agroecology	agroecology, livelihoods, small-scale Coffee farming
Dr. Susanne Neubert, Director, Seminar für Ländliche Entwicklung (SLE), Albrecht Daniel Thaer-Institut, Lebenswissenschaftliche Fakultät, Humboldt-Universität zu Berlin	Agricultural-economics, Ecology	rural and agricultural development, water resource management, adaptation to climate change, evaluation and impact analysis of development policy
Barbara Pia Oberč, Policy and Project Officer at IUCN	Sustainable Development	conservation, sustainable land use, the circular economy, renewable energy, and climate change
Dr. Marc Parren, Senior Project Manager and New Projects Developer, WeForest	Forestry	forestry, agroforestry
Ana Prieto, Policy Officer at the IUCN European Regional Office	Land and water management	Sustainable land and water management, agricultural and environmental policies, sustainable agriculture

Prof. Dr. Matin Qaim Director, Center for Development Research (ZEF) University of Bonn	Agricultural Economics	sustainable food systems and food security, nutrition-sensitive agriculture, transformation of agri-food systems, economics of biotechnology and agricultural research systems, sustainable land use
Alberto Arroyo Schnell, Head of Policy & Programme, European Regional Office of the International Union for Conservation of Nature (IUCN)	Forestry	forestry, forest engineering, biodiversity, agriculture, fertilisers, bioeconomy and biomimicry, climate neutrality, conservation, soil health, water
Dr. Didier Snoeck, Researcher and Author, CIRAD	Agronomy	biodiversity, regenerative agriculture, certified agriculture, conventional agriculture, soil fertility, plant nutrition, fertilisers, nutrient management, soil analysis (chemistry), sustainable agriculture, organic farming, crop management
Dr. Piera Waibel, Consultant	Economics	Natural capital, living wages/income, bottom-up development, empowerment, regenerative agriculture & supply, inclusive business

Annex D: Sustainability risks

This section contains the documentation and brief literature review of each sustainability risk to build the suggested policy positions on sustainable agriculture.

1. Climate change
(challenge: climate resilience)

1.1 Relevant definition(s)

Climate change is a long-term shift or change in global or regional climate patterns (National Geographic Society, 2019b). It includes changes *inter alia* in temperature, precipitation, and wind patterns to the extent that may be catastrophic for crop cultivation.

The associated topics are:

- *GHG Emissions (CO2, N20, CH4)* are greenhouse gases that absorb energy and trap heat in Earth's surface (EPA, n.d.).
- *Global warming* refers to the ongoing rise in global average temperature due to human activities (Climate NASA, n.d.).
- *Extreme weather events* such as tornados, hurricanes, heat waves, freezes, flood (National Geographic Society, 2019b).
- *Change in rainfall & wind patterns* refers to changes in the distribution of rain and wind, geographically, temporally and seasonally (National Geographic Society, 2019b).
- *Wildfire* refers to unplanned fires, in forest or range lands, burning vegetation (National Geographic Society, 2019c).
- *Accelerated spread of fungus diseases* in warmer and wetter climates (e.g. Coffee rust) (source: Fairtrade and expert review).

1.2 Background

It is estimated that agricultural activities are responsible for 19-29% of total GHG emissions (CCAFS, 2012). Similarly, IPCC (2020) estimated that agriculture, forestry and other land use contribute 23% of the total anthropogenic GHG emission (including pre- and post-production activities). Therefore, agriculture is in one way a contributor and a cause of climate change. From a systems perspective, emissions from

agricultural production and consumption are sourced in land use and conversion, on-farm production (including the operation of machines), and off-farm machinery and inputs manufacture. In food supply chains, GHG emissions not only occur at the farm level but also in transportation and in other stages of the chain (e.g. packaging) (Brandmayr et al., 1967; Otto-Portner et al., 2021).

While agriculture is a main contributor to the emissions that foster climate change, climate change is already having dire impacts on agricultural productivity, threatening global supplies. Recent years have seen extreme variability in temperatures and rainfall, inducing wildfires, drought, and desertification on the one hand, and heavy rains, floods and erosion events on the other. Negative impacts of climate change on farms can vary from crop losses due to extreme weather events to the loss of nutritional quality of some crops (World Bank, 2021a). It could also lower yields, decrease productivity and increase pests and diseases outbreaks (Otto-Portner et al., 2021), all these changes ultimately affecting farmers, workers and community livelihoods. Changes in weather and temperatures can also cause shorter growing seasons, floods and affect soil health (through accelerated soil organic matter decomposition). Furthermore, along with extreme events, it puts in danger human lives, human health, food security and nutrition. Moreover, it may cause displacement and migration.

The economic consequences of climate change are also ample. Apart from contributing to extreme poverty, impacting revenues or leading to additional expenses, it may cause, for example, crop failure or production delays due to rain pattern changes (especially for rain-fed crops), potentially impeding contract fulfilment with suppliers.[71] The loss of productivity, e.g. through crop losses or a decrease in yields, could affect living incomes, living wages and endanger the Fairtrade premium.

At this stage, both reducing the effects producers inflict on the environment and adopting adaptation/mitigation strategies[72] to enhance farm, crops, workers, farmers and community resilience to climate change are necessary. Climate change underlines the vulnerability faced by smallholder farmers, but agroecological practices have been shown to increase the resilience of agroecosystems in the face of climate change (Altieri et al., 2015), as well as to increase the resilience of livelihoods.

71 A recent study commissioned by Fairtrade International to assess its impact on environmental protection, biodiversity conservation and adaptation to climate change, revealed that in banana plantations in Panamá "water shortages lead to dehydration of soils and banana plants, ultimately resulting in production losses and sometimes plant losses" and for flowers in Kenya "prolonged dry spells lead to water shortages, resulting in changes to the production cycle" (Linne et al., 2019) that ultimately affected the market as when there was demand, there was no supply and vice versa.

72 A collaborative report between IPBES and IPCC suggested that climate change and biodiversity loss should be tackled together as both are "driven by human economic activities and mutually reinforce each other" (Otto-Portner et al., 2021).

1.3 Linkages between social, economic, and environmental outcomes

Climate change poses ecological, social, and economic risk. Changes in weather and temperatures cause shorter growing seasons, floods, affect soil health (through accelerated soil organic matter decomposition) and increase the risks of pests and diseases. Furthermore, along with extreme events, it puts in danger farmers' lives, health, food security, nutrition, and economic standing (e.g. contributing to extreme poverty). The economic consequences associated to the impacts of climate change could be, among others, decreased revenues, additional expenses, crop failure or production delays, potentially impeding contract fulfilment with suppliers. Crop losses or a decrease in yields, could affect living incomes, living wages, endanger the Fairtrade premium and aggravate social inequalities.

By adopting good and sustainable agricultural practices that are aimed at adapting and mitigating climate change, PO members will be more resilient to climate impacts.

1.4 Relevant operative framework (s)/standard(s)

Relevant operative frameworks:

- IPCC;
- Fairtrade Standards (HL – SPO – Climate Standards);
- GHG Protocol Corporate Standard;
- European Union's Greenhouse Gas Emissions Trading System (EU ETS);

1.5 (potential) countermeasure(s)

Sustainable practices

Agricultural management practices to increase soil organic carbon; carbon sinks; cover crops and mulching, no deforestation; reforestation; agroforestry or organic farming systems; alley cropping, non- or minimum tillage; carbon credits projects such as cookstoves, biogases, carbon sinks, solar panels renewable energies, etc. Fairtrade Carbon Credits contribute to sequestering CO_2 and can be sold to compensate unavoidable carbon emissions. Certified emission reduction units (CERs); Incorporating green manure in the fields and increasing organic matter in the soil contribute to the increase in carbon sequestration. Training/ awareness on climate risks and its impacts on agriculture and farmers and workers livelihoods; carry risk assessments on farms to determine which climate change practices could enhance resilience. Improve soil

health; adopting green technologies such as solar dryers (e.g. to dry Coffee), solar technology to power houses and for other production purposes (irrigation). Using precipitation data from closer weather or building meteorological stations to monitor advances of climate change.[73]

Observations

- See observations made in biodiversity loss and chemical pollution.
- For Sugar[74], suggested countermeasures are: adopting green cane harvesting, incentivising by-products such as biomass (with which ethanol is produced and further down products produced with ethanol such as bioplastics), intercropping, cover crops or mulching, leaving the leaves in the field to improve soil matter.
- Renewable sources of energy should be increasingly relied upon, phasing out fossil-fuel-based energy sources.

1.6 Other relevant metric(s)

See selected metrics on B. Suggested Fairtrade policy position per risk

Metrics – Theory of change:

- Percentage of SPOs where members report barriers to using APs for Fairtrade production and processing, by type of barrier.
- Percentage of SPO member households where training on APs (AP) was received in the last calendar year by (1) Male PO members, (2) Female PO members, (3) Other males in the household, (4) Other females in the household, by AP training topic.
- Percentage of POs which have taken reasonable measures to ensure highly hazardous substances are not used on Fairtrade products.
- Percentage of POs which have taken reasonable measures to ensure sustainable water use.
- Percentage of POs which have implemented reasonable measures to ensure waste is managed in an environmentally responsible way.

73 The Adaptation Fund (2016) funded a project in Argentina to install meteorological stations. The stations provide farmers with information on weather variables (e.g., temperature, humidity, rainfall, soil temperature, atmospheric pressure and wind). This information can help farmers to adapt to weather changes caused and precipitated by climate change.

74 Sugar is a special case as producers to harvest burn the sugarcane first. Fairtrade has conducted studies over the carbon foot print of sugar but also for bananas and flowers.

- Percentage of POs which are involved in GHG reduction/sequestration activities, type of activities they are involved in, and number of carbon credits sold, in the last calendar year
- Number, type and value of environmental improvement and climate change adaptation measures in communities funded by the Fairtrade Premium, and estimated number of people benefiting, in last calendar year.
- Degree of resilience to climate change within PO member and worker communities
- Average yield for Fairtrade production in last calendar year, by type of production (organic/ conventional), according to (1) PO management data, (2) [SPOs only] SPO members (performance).
- Volume of Fairtrade Carbon Credits sold and retired.

Strategy KPI:

- Number and % of POs that apply APs and/or good agroecological environmentally sustainable practices and/or implement risk mitigation and climate adaption plans.

Other indicators proposed by key informants and other literature

- Balance between emissions of GHGs and carbon sequestration
- Total greenhouse gas emission from agriculture activities per harvested area (greenhouse gas) (one earth);
- Number of mitigation practices to treat crops under extreme temperatures
- Average of crop production
- Rainfall calculator (slight rain/moderate rain/ heavy rain).
- Number of prevention measures against wildfires
- Productivity in terms of how many kg of crop (per type) a Fairtrade producer can obtain compared to the volume produced per hectare from a non-Fairtrade producer.
- Numbers of hectares impacted or involved by a specific development project or a project related to APs or sustainable agriculture
- Number of POs that switch into organics
- Number of POs with certification on other schemes strong in environmental criteria
- Number of personnel in PO in charge of the environment area

- Growth in biomass: farmers measure the difference in biomass–how much CO2 a farm has produced and how much has been sequestered (with the help of remote satellite sensing and AI algorithms. If the farm has sequestered more CO2 than it has produced, the delta can be sold to companies needing to offset their own CO2 emissions (Rabobank ACORN).

Metrics/Indicators proposed by COSA (n.d.-b)

- Carbon stock: Number, size, type of trees and other perennial woody plants

1.7 Recommendations/amendments

Other recommendations related to climate change:

- Participate in computer modelling and simulation projects with other organisation and experts to identify possible scenarios and map the different courses of action, especially for the Fairtrade crops and certified areas identified as unviable to produce in the future. Initiate an internal discussion to include the possibility to help POs transitioning in advance to other crops (e.g. from Coffee to Cocoa).
- Refine and review Fairtrade environmental and climate change criterion to shift focus on impact instead of only output compliance.
- Upgrade environmental-related "development criteria" in standards to core criteria and shorten timeframes to achieve those requirements which are crucial for mitigation, adaptation and adoption of agroecological practices. For example, identifying slopes prone to erosion.
- Conduct climate studies per region and crop, considering microclimates and other relevant characteristics that affect production, such as altitude, type of soil, topography and pre-existent conditions. Recommended steps to take:
    1. Collect data to perform a comprehensive situation/problem analysis per commodity on climate change and the environment, including synergies with other elements of sustainability such as living incomes.
    2. Collection of basic data on practices adopted and applied, classifying them based on their sustainability
    3. Collection of basic data production to obtain basic metrics such as productivity

1.8 Credible verification / Impact assessments

- Credible verification includes monitoring by remote sensing, biomass assessment, land use assessment, and crop classification. In addition, global datasets of forest cover, agricultural production areas, deforestation need to be validated at the ground/farm level.
- Fairtrade should introduce self-reporting assessments where producers input the data online. Self-recording risk should be mitigated by a third-party verification system. Data input will be audited and validated in the ground following a risk-based approach or when the data input shows signs of incongruency.
- Certification against Fairtrade climate standard is an indication of credibility on POs climate action, as it requires compliance with international methodologies and criteria (provided by the GoldStandard Foundation).
- To measure the effects of afforestation, the number of shade trees (e.g. non-Cocoa tree / non-Coffee trees in plantation) is relevant, as shade trees should cause lower sub-canopy. temperatures, higher humidity and higher soil humidity, this is readily measured. Ultimately, case-control studies are needed to demonstrate the impact on shade trees for the vitality of certain species.
- GIZ geographical verifying systems could be one way to verify land use, also by implementing remote sensing.
- NASA radiations monitoring can also assess land-use changes, and then it transmits data to show how the climate is changing.
- Fairtrade should develop baselines for measurement purposes and impact assessments. If Fairtrade wants to analyse the impact it should compare the baseline with the final line and see the causal effect attributed to the intervention. In terms of climate change, one fundamental baseline is land use; others could be income.
- Cool farm tool

2. Youth unemployment, poverty, and lack of decent livelihood opportunities
(challenge: youth employment and decent livelihood opportunities)

2.1 Relevant definition(s)

Youth generally refers to people aged between 15 and 24 years old. This generation constitute one of the largest demographic groups with almost 1.2 billion people worldwide or 16% of the global population (UN, 2019). Other statics show that young people are three times more likely to be unemployed than adults, and that rates of idleness can be up to 50% depending on the country (World Bank, 2018).

The associated topics are:

- *Inclusive and equal participation* refers to equal access, participation and consideration of input on the part of youth in decision making that involves them, regardless of age (+15 years) and gender (Adapted from: Borkowska-Waszak et al., 2020).
- *Inclusive Management* refers to young people's involvement and contributions to farming and Producer Organisation development, management and strengthening (source: Fairtrade and expert review).
- *Enabling the next generation of Fairtrade* refers to policy, programs and partnerships to provide equal opportunities for enabling input from youth (source: Fairtrade and expert review).
- *Rural flight:* refers to rural depopulation due to migration from rural areas to urban areas (also referred to as "rural exodus") (Johnson & Lichter, 2019).
- *Access to land:* in general, young people lack the economic resources to access to land. There are also some other constraints when youth have to work on the family farm, as production might not generate enough income for the parents (if alive) and all siblings (if any) (source: Fairtrade and expert review).

2.2 Background

The word faces considerable challenges in ensuring that young people are integrated into the world of decent work and have access to skills development and business opportunities. While many world leaders have committed over the past two decades to lowering youth unemployment

and poverty, including barriers to information, market and financial access, evidence indicates most youth have been left behind. These challenges have become even more daunting over the past year as Covid-19 and its associated financial and economic crisis and risks, hit youth hard, with discrimination and inequality hitting vulnerable and marginalized youth groups in agriculture, particularly harder.

The future of farming depends on young generations, especially when it comes to implementing innovative agricultural practices or management practices as the uptake increases exponentially when young people are involved. However, youth in rural areas often lack access to education and particularly to programmes that are appropriate or tailed to their needs. The education, if they do receive one, is often urban-oriented which fails to give then the right knowledge, skills and tools to succeed in agriculture (produce food, apply technologies and APs) and add incentives to migrate to cities (FAO, n.d.-g). Furthermore, this situation, combined with the need of some families to ensure their economic standing, could lead to youth to drop out school and not receiving basic education. In youth, there is also a gender component as young girls face more constraints to accessing education than boys.

Regarding education and sustainability, FAO (n.d.-g) highlights that youth "knowledge, skills, attitudes, and behaviour are of vital importance in the implementation of sustainable agricultural and rural development programmes". Nevertheless, due to the constraints[75] youth find in agriculture to make a living, the high rated of unemployment in rural areas, and the perceptions they have of rural work being unrewarded and laborious, young people prefer to migrate to urban areas pursuing better opportunities.

Access to decent employment opportunities, skills development and business opportunities, including being heard and to participate in matters involving and affecting them, are necessary preconditions for youth to consider agriculture as a viable vocation. Also, innovations in agriculture can work as an incentive for youth to get involved as they might see it as a new opportunity.

Fairtrade POs could deter youth from engaging in agriculture by involving them in work that is exploitative, abusive, and/or in jobs that are not targeted to them and their abilities. Furthermore, POs could accelerate unfair treatment towards young people and enable income gaps based on age if they are not trained and aware on their rights. Youth should

75 This also includes youth issues to access resources such as lands to produce. One reason is the lack of financing, and the other family problems (parents producing until advanced ages, not giving the space to younger generations, and inheritance problems, when the land needs to be divided in many parts and it is not enough to obtain a production that allows for decent livelihoods).

rather be regarded as active citizens and a resource if Fairtrade Producer Organisations want to reduce farmer and farm worker poverty, and enable thriving farming households, communities and ecosystems.

2.3 Linkages between social, economic, and environmental outcomes

Youth in rural areas face several challenges related to poverty, education, and employment opportunities. Education is in particular a key issue as it is supposed to provide youth with the necessary tools to produce or perform a job. However often in rural areas education, if available, is not fit for purpose and youth do not acquire the necessary skills, which, together with the lack of opportunities, are part of the main reasons for the increase in unemployment (FAO, n.d.-g).

Another linkage concerns child labour, as children are at times preferred over young labourers as they may more easily exploited (European Commission, 2021b). In this regard, an inverse relationship exists between child labour and opportunities for youth: where child labour increases, youth face "high levels of unemployment, poor jobs and a lack of opportunities for skills development"[76] (European Commission, 2021b).

There are also linkages to income, wages, and labour rights violations as "some young workers are unpaid, have very low wages and have no protections. Others are subjected to forced labour and human trafficking, with young migrant workers at particular risk" (European Commission, 2021b).

Moreover, as stated above, youth play a critical role in sustainable agriculture for many reasons, one could be because they are the future of agriculture and also because with the proper education, they could apply new technologies or management strategies to produce more sustainably. "The challenge is to develop the rural areas to make them attractive to young people in terms of employment prospects, education and training opportunities, health services and social life" (FAO, n.d.-g).

2.4 Relevant operative framework (s)/standard(s)

Operative framework:

- United Nations Youth Strategy 2030
- Fairtrade Youth Strategy

76 The upcoming EU HREDD regulation there will be even more pressure to reduce child labour.

2.5 (potential) countermeasure(s)

Targeted policy, programs and partnerships at Producer Organisations to ensure inclusive, diverse and participatory access to and distribution of benefits, resources, technologies, information and knowledge, decent employment and business and trading opportunities, communications and advocacy, including decision-making and management, and right to safe and respectful workplaces; innovations in agricultural practices; advocate for vocational education[77] and technical training in rural areas instead of general education; funds for youth; diversification strategies (on income); vocational schools.[78]

2.6 Other relevant metric(s)

Metrics Theory of Change:

- Percentage of young adults (under 25 years old) among: (1) SPO Board members, (2) SPO management and salaried staff (excluding staff employed in processing), (3) Committee members (by type of committee), (4) participants in the last AGM

Metrics Strategy KPI

- Percentage of youth among: (1) PO Board members, (2) PO management, (3) Committee members, (4) [HLOs only] Trade Union/ worker organization representatives, (5) participants in the last General Assembly

Other indicators proposed by key informants and other literature

- Youth participation in Producer Organisation;
- Average of youth workers in Producer Organisations (15-24 years old);

77 The new global coffee strategy introduces the idea of a 'next generation' coffee project. The project involves producing countries which rely on foreign earned dollars through their commodities, commercial partners and POs. The aim is to take action against the foreign revenue loss due to climate change and other issues by incentivising the next generation. Cooperatives will identify between one and three members of their community or within the cooperative, who have demonstrated skills or facility in certain areas, e.g., financial literacy, community building, educational practices or agricultural practices and would offer them a scholarship to an advanced level of education (university level, technical school or specialty training). Support will be shared with stakeholders, the governments will cover the scholarships, and commercial partners who are already buying out of that supply chain will provide support for their living expenses as an investment. When the beneficiaries of the program graduate, contractually, they would be obligated to come back and work for the SPO or in the cooperative in order to gain real world experience and put into practice what they have learned, but most importantly to build capacity among producer organisation on the area where they gained education. When the contract's period ends, beneficiaries could either continue in the cooperative or they could go out in the marketplace, but at least there was an increasing in the capacity of the organisations to meet the demands of business commercial relationships or to tackle, for example, climate change.

78 'Fundación Paraguaya' is an NGO that has founded several vocational schools that bring value addition and introduce technology to produce in rural areas. It gives children the skills that then they will be able to apply. Children learn about hospitality agriculture, how to run a business, about basic accounting.

- Youth participation in decision-making roles;
- Age average of workers;
- % of participants in training that are young persons (male/female);
- % of young trainers;
- % of young farmers with access to land.

2.7 Recommendations/amendments

Overall recommendations related to youth unemployment, poverty, and lack of decent livelihood opportunities:

- Work on creating conditions for youth to be perceived better from banks. This could be achieved by POs adopting better risk management strategies. Managing risk will assure banks and credit institutions that the business is robust. For example, if there is a risk of a drop or fall in production due to climate change that could affect commercial relationships, then actions to mitigate the risk should be taken, such as investing in soils to counteract climate change effects. In addition, healthy soil means more quality in the products. Covering the risks give a clear sign that the business would not be severely affected by climate change. Contrary to popular belief, climate change could be favourable for producers when it creates the conditions to increase productivity. In the case there is a risk of potential oversupply which could depress prices, reducing farmers profits, storage silos can be set up to cover the risk.
- Work to improve production conditions (living income and living wages) as younger generation get the feeling that agriculture is at the lowest level and the hazardous work is deterrent.
- Cooperate with the government, communities and civil societies to incentivise youth. Incentives may include improved working conditions, livelihoods and access to resources.[79]

2.8 Credible verification / Impact assessments

No comments.

79 For example, the government of Colombia created a pension fund for producer that allows them to retire at an adequate age leaving a space for young people to produce.

3. Market barriers and anti-competitive behaviour (challenge: fair markets and trade)

3.1 Relevant definition(s)

Markets are where the exchange of goods and services occur. Farmers often face difficulties to trade their goods, as there are many barriers, particularly for SPOs. These include distance, infrastructure, transportation costs, lack of transparent information, lack of knowledge, lack of capacity and business skills, and lack of market power.

Associated topics:

- *Market access* refers to an organisation's ability to sell goods and services locally or abroad (Kenton, 2021).
- *Access to market information* refers to an organisation's ability to access information about prices, market conditions, terms of trade, and other trade information (source: consultants based on understanding on the subject matter).
- *Price transparency* refers to available information on prices (Hayes, 2021).
- *Greenwashing* involves intentionally or unintentionally misguided bogus sustainability claims that can mislead consumers, producers, and investors (Adapted from: Becker-Olsen & Potucek, 2013).
- *Price volatility* refers to price fluctuations (FAO, 2021).
- *Trade barriers* refer to obstacles to trade, that are stopping or slowing down the commercial flow of exporting food or services (Department for International Trade, 2020). Barriers could be natural, introduced by governments, or other actors.
- *Anti-competitive behaviour* refers to actions that could be detrimental to competitor and could restrict fair competition (source: consultants based on understanding on the subject matter).
- *Unfair trading practices* refer to multinational traders or other supply chain actors within the Fairtrade system who are taking advantage of the system in way that does not benefit the producers (source: consultants based on understanding on the subject matter).
- *License fee income* is the fee that Fairtrade gets paid by companies who use Fairtrade Mark in their products (source: consultants based on understanding on the subject matter).

3.2 Background

- Reliable and equitable commodity markets (exchange) can increase income, help in the reduction of poverty, mitigate the impacts of price volatility, and positively impact farmers' livelihoods (Eba, 2021). In addition, they can reduce or prevent power imbalances that some market actors exploit to the detriment of POs and producers (e.g., bound contracts, low prices).
- Market barriers and anti-competitive behaviour such as unclear market rules, lack of information on prices and cost of production, and lack of business skills can undermine POs empowerment. For example, anti-competitive behaviour, such as dumping (setting prices below market price) can reduce the number of customers willing to source Fairtrade products. This can negatively impact farmers' incomes, wages and livelihoods. This unfair competence on prices, if not monitored, could occur among Fairtrade POs and between regions producing the same products, as some POs can offer lower prices (e.g. lower than market price but above the Fairtrade minimum price) or special deals to increase their sales, affecting other POs capacity and ability to do business (source: Fairtrade and expert review).
- Other unfair trading practices are bound contracts where traders or commercial partners require by contract an extra amount of Fairtrade products to be sold under no Fairtrade terms as a prerequisite to buying a certain amount under Fairtrade terms. Prices in this type of contract are usually below the minimum and producers do not receive the Fairtrade Premium. POs might find themselves at the mercy of traders, as they lack the market power to refuse such practices, and at the risk of losing the sale, they will accept the terms. There are also some cases where the initial establishment of a PO is closely connected to traders since they are the ones who organize the farms and productive resources, pay for certification and farm transformation to meet requirements. Traders are behind the process because they need the commodity, and Fairtrade can increase their profits with the minimum prices and premiums and also satisfy some customer requirements. In such cases, POs are powerless as they fit the purpose of the traders. If traders leave POs are likely to dissolve too, as they are not in a position to pay for certification and find other buyers or traders with whom to work. Furthermore, traders can have a significant influence on the adoption of APs as some could be detrimental to their business such as diversification or moving up into the value chain (source: Fairtrade and expert review).

From the perspective of POs, Fairtrade label and price also act as a barrier to trade, as it is more expensive than other certification schemes.

The barrier might exist because consumers are not aware of the differences between the various certification types. This can generate supply and demand imbalances, as Fairtrade producers have plenty of stock to sell, but demand falls short due to prices. An issue related to the short demand could be the difficulties Fairtrade faces to show impact to buyers (source: Fairtrade and expert review).

Greenwashing can be another barrier since it generates a deep mistrust to sustainability practices and verified Fairtrade products, potentially driving away investors and consumers harming Fairtrade farmers (resulting in e.g. lower income, less investment in new technologies or better production techniques, etc.).

3.3 Linkages between social, economic, and environmental outcomes

Market barriers and anti-competitive behaviours along the supply chain may increase a shift in power to larger organizations or companies, undermining SPOs profits, and ultimately endangering livelihoods. Practices including unfair terms of trade, opaque pricing systems, and lack of information may further aggravate social inequalities, inequities, and place producers under stress, since producers are required by supply chain actors to comply with environmental and social standards but suffer anti-competitive behaviours in return.

Empowering producers by building capacity on trade and helping transparent access information on prices and cost can potentially increase incomes, wages and overall market access. After covering the basic farmers' needs, the income surplus can be invested into the transition to sustainable agriculture. Furthermore, upcoming regulation in the EU (deforestation and HREDD) can become a market barrier since non-compliance with requirements may lead to market share loss in some regions or a barring of access to specific markets.

3.4 Regulation Relevant operative framework (s)/standard(s)

Operative framework:

- Fairtrade Standards (Trader)

3.5 (potential) countermeasure(s)

Facilitate access to prices information and trading conditions; Empower producers to access the market by capacity building80, delivering training for farmers on business administration and management, delivering training in marketing and providing marketing support to Producer Organisations; digitalization of supply chain that captures data on trade such as type, amount, location, quality, FOB expenses, that can provide producers with transparency in terms of cost and profit margins; connect POs systems with Fairtrade's, to be able to see stocks, quality per type of products; audit contracts (under Fairtrade terms and no Fairtrade terms); enhance data collection systems in other to have timely quality data, cost-efficient, richer in content, that can be presented to commercial partners with the aim to reduce unfair practices such as bound contracts practices; collect information on country specific markets: how they work, different terms of trade, what consumers buy and look for.

3.6 Other relevant metric(s)

Metrics Theory of change:

- Increased proportion of Fairtrade products are sold under Fairtrade terms in Fairtrade markets, by country
- Facilitating linkages between Fairtrade-certified organizations and buyers.
- Degree to which SPO has formed relationships with other SPOs, or participates in higher level organizational structures, in order to create synergies, share knowledge and/or improve negotiation power

Other indicators proposed by key informants and other literature

- Improvements in the percentage of sales over the years (answers the question if producers are increasing their economic gain because of Fairtrade certification)
- Metrics/Baseline on how much premium does a five-year SPO in the Fairtrade system generates and where is it spent on.
- Measure the PO 'journey' how much it started selling and how much is selling now under Fairtrade terms.
- See production trends/changes over time (did they come into the

80 The "Fairtrade Coffee School" going live in January 2022 for the Africa region will offer courses on building and engaging commercial relationships with clients and green coffee trading. There is another incentive in the making that aims at training POs on how the seed market works and how to buy futures and other options to offset risks.

system and only sell 10% of Coffee on Fairtrade terms? Did they come in and already have a buyer commitment and then continue to grow that commitment?)

- See variations between older and new certified organisations (this type of information would target efforts in those POs that are underperforming compared to others and often can barely pay the certification costs.)
- Market challenges (SMART): "Is the farmer aware and informed about futuremarket challenges?"

3.7 Recommendations/amendments

Overall recommendations related to market barriers and anti-competitive behaviour:

- Analyse POs farm stratification. This exercise may serve as an indicator to identify when there are risks of traders or other powerful market actors being the managers behind the operations instead of producers themselves. POs with dispersed farms and long distances among producers are less likely to have been created by members who live in a geographically constrained area with the purpose of work for the benefit of the membership and having more power of negotiation.

3.8 Credible verification / Impact assessments

Digitalisation of the supply chain, including contracts.

4. Low income and wages
(challenge: Living income and wages)

4.1 Relevant definition(s)

Living income is defined as sufficient income to afford a decent standard of living for household members – including a nutritious diet, clean water, decent housing, education, health care and other essential needs, plus a little extra for emergencies and savings – once farm costs are covered. A living wage is a wage that covers the basic needs of workers and their families, including food, clothing, shelter, healthcare, education, transport to work and a little extra for unforeseen circumstances. Extreme poverty is characterised by low or poor incomes.

Associated topics:

- *Poverty / extreme poverty* refers to people living on less than USD 1.90 a day (The World Bank, 2022).
- *Costs of standard of certification* are the cost associated with complying with all standards to be Fairtrade certified (source: consultants based on understanding on the subject matter).
- *Sustainability costs* are the cost associated with moving towards and maintaining sustainable agriculture practices, e.g. planting and reforestation, renewable energy, training (source: consultants based on understanding on the subject matter).
- *Farm revenue, crop revenue* refers to the income from farmed goods (Adapted from COSA, n.d.-a).
- *Fairtrade premium* is the sum of money, in addition to the price, paid into a communal fund for farmers to improve their social, economic and environmental conditions (source: consultants based on understanding on the subject matter).
- *Dependence* refers to dependence of farm income of one or multiple crops (source: consultants based on understanding on the subject matter).
- *Agricultural Insurance* refers to farmers having insurance against crop losses, due to external shocks (source: consultants based on understanding on the subject matter).
- *Producer Organisation size* refers to the organisation's structure in terms of membership (source: consultants based on understanding on the subject matter).
- *Access to new technology* refers to available infrastructure and means to adopt new technologies (source: consultants based on understanding on the subject matter).
- *Aftermath of COVID-19* refers to disrupted supply chains (source: consultants based on understanding on the subject matter).
- *Income smoothing* refers to the opportunity to access resources to make up for insufficient income during parts of the year (source: Fairtrade and expert review).
- *Access to finance* refers to access to loans for farm investments or other expenses (source: consultants based on understanding on the subject matter).
- *Investment, assets and saving* it related to economic upgrading

and improvement of livelihoods (source: consultants based on understanding on the subject matter)

- *Collective Bargaining* (see 12. Labour rights violations)

4.2 Background

Living incomes and living wages are central to achieving decent and sustainable livelihoods. Although the concepts are related, they do not mean the same. As per the above definition, living income is "about households having the ability to afford a decent standard of living", and the sources of living income could be multiple. In the case of SPOs, they could come from farms, off-farm and other activities. A living wage is a remuneration perceived by workers that allows a decent standard of living.

The relationship between the two is that living wages mainly depend on the producers' income, primarily derived from crops' sales in farms. Living income's main challenges come from its components: price, volume, and cost. A fourth challenge could be the lack of diversification, and secondary challenges under the three general components, among others, could be power imbalances, anti-competitive behaviours, market barriers and increasing cost, including those related to climate change adaptation and mitigation programs and practices.

In international commodity trading, where most Fairtrade POs sales occur, prices are subject to supply and demand forces. Therefore, the price equilibrium does not correspond, one-to-one, with the cost of inputs (such as labour, equipment). Consequently, farmers producing cash crops may struggle to earn sufficient net income in order to afford a decent standard of living for the household members ("living income"). Furthermore, POs, especially SPOs, do not have control over global markets and prices and lack the negotiating power to close better deals, becoming vulnerable to external market shocks, such as price volatility and being at the mercy of other bigger players. In addition, commodities prices tend to decline compared to the prices of manufactured goods over time, "which causes the terms of trade of primary-product-based economies to deteriorate" (Harvey et al., 2013), influencing the amount of capital that a certain commodity will be worth, and the financial capital that may flow to SPOs, SPO members, and, ultimately, workers.

Volumes sold under Fairtrade terms, which setups mechanisms and tools to address the disparities such as minimum prices and Fairtrade premium, also face constraints. Buying Fairtrade often results being more expensive than buying uncertified crops or crops under other certification schemes, which creates an excess of Fairtrade supply products and a shortage in demand.

The third leg, costs, are also increasing. It includes the cost of certification and its maintenance, the cost of compliance with other regulations, the cost to transition to sustainability, and the basic cost of production (labour included). If an increase in prices does not accompany the increase in costs, living incomes and wages are at risk with all that entails (lack of decent livelihoods, food insecurity, etc.).

Concerning living wages, apart from being related to the prices, costs and volumes sold of commodities, they depend on a number of other factors where unionisation and collective bargaining come into play to guarantee wages that could afford decent living standards (see labour rights violations). Lack of income from part of the producers can trigger non-compliances, particularly with labour rights, including wages, but higher incomes do not immediately translate to better wages. Often other actors or incentives have to interfere, such as the union trades.

The issues with living incomes and wages are far more comprehensive and involve many other factors than the ones already exposed such as gender, vulnerable groups, inequalities, land, etc. Yet it can be concluded that in terms of sustainability, they are a must, as they could limit the sustainability of the supply chain, rural communities' prosperity, and could mean damage to the natural environment (Fairtrade International, n.d.-a).

4.3 Linkages between social, economic, and environmental outcomes

Living income and living wages allow farmers (members of POs) and workers to achieve decent livelihoods, and a decent standard of living can be seen as a must condition for sustainability. Farmers often struggle to earn sufficient net income in order to afford a decent standard of living for the household members ("living income"), they often have to resort to saving, if they are available, and sometimes they could compromise their children education by requiring them to work and contribute to the economic standing of the household. A related matter to income is the ability of farmers to pay living wages to hire farm workers. Insufficient payment is associated with poverty, malnutrition, limited access to essential services, lack of education, and marginalisation. Lack of living incomes also have similar social effects for farmers but also pose a risk to the environment, as farmers may feel pressure to increase productivity by overapplying fertilisers or pesticides and society (especially workers). Furthermore, with low income and wages, the relevance of complying with the law and other voluntary requirements decreases and farmers may cut wages or rely on poor labour practices such as exploitation, illegal migrant labour, and child labour. Insufficient

income also means limited investment in sustainable practices, methods, new technologies in soils, other infrastructure in the farm (related to water and sanitation, housing, etc.), impacting Fairtrade POs' and its members' access to new markets and better livelihoods.

Taking a holistic approach to living incomes and living wages, which involves strengthening long-term commercial relationships between buyers and POs, increasing sales under Fairtrade or sustainable terms and overall business results, increasing productivity,[81] achieving fairer prices that allows farmers to reach a living income, diversifying income and activities, and by stronger advocacy with buyers and consumers, could make a great impact in all sustainability domains and risk identified. As it will, among other things, enhance producers and workers livelihoods, food security, nutrition, health, education, and incentives to adopt gaps.

In addition, forthcoming regulations on human rights due diligence, such as the EU's, are an opportunity to achieve living incomes and wages by requiring responsible purchasing practices from supply chain actors to reduce poverty. The inclusion of living incomes and wages as part of the supply chain framework and instruments will have an impact in many domains as mentioned below since income and wages can enable the exercise of other human rights (Kobak, 2016).

4.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- Global Living Wage Coalition - Living Wage Reference Values
- Forum for the future - The Five Capitals
- UNSDG (1, 2, 8, 10 and 17)
- UN Food Systems Summit - True value of food initiative
- IDH - Roadmap on living income & Roadmap on living wages
- Fairtrade standards (HL - SPO)
- The Economics of Human Rights: Using the Living Income/Fair Price Approach to Combat Poverty

81 Increasing productivity should not be understood as increasing production, productivity could be achieved by being more efficient in the use of resources and inputs.

4.5 (potential) countermeasure(s)

Fairtrade seeks to mitigate these risks in its strategy and has designed a roadmap to reach the objective to ensure living incomes and wages. Fairtrade can deliver business training to farmers; programmes focussing on organisational strengthening to improve business results; support women development; support the creation of workers organisations and collective bargain; co-determination (workers influence in the decision making); help producer organisations to participate in new markets; help farmers to create strong relationships with suppliers; introduce technologies that improves the relation cost/benefits; involve suppliers and consumers to get better benefits for POs; income diversification, entrepreneurship, advocacy for access to finance that is appropriate and affordable; financial planning, financial services, financial literacy; introducing nurseries which produce seedlings that are sold or provided for free to members to produce vegetables; fishing ponds; poultry; increase or work on farmer assets[82]; include in the online premium platform projects that POs would like to implement but due to the lack of funding they are unable to; Flower Enhancement Program[83]; becoming organic; review of minimum prices and include in the calculus the true cost of production (true cost economics) to determine the true price.

4.6 Other relevant metric(s)

Other indicators proposed by key informants and other literature

- True price: differential between income and living wage.
- True price of commodities: in terms of at what price to commodities have to sell in order for a living wage to be obtained.
- Continuous improvement: number of Farmers/workers moved out of extreme poverty - Number of Farmers/workers moving out of poverty - Farmers/workers who are receiving living income.

Metrics Theory of Change:

- Average yield for Fairtrade production in last calendar year, by type of

82 By increasing and balancing out their assets, farmers can become more resilient towards climate change; in practice, this means for example increasing off-farm income, keeping savings, attending farmer trainings, or participating in cooperatives.

83 For flowers, there is an FTA team on the ground supporting flower farms. The program has been proven successful to reduce the risk of premium misused and in stabilising the business. The project help building a basis for offered business programs or taking advantage of government fundings to improve gender, or environmental aspects. The team also reports back to Fairtrade with identified areas that need work and potential projects that could benefit farmers, e.g., in the case of flowers projects on carbon sequestration to reduce the carbon footprint generated by flower transport, which can then be invested into trees planting or combine with social impact as well and generate food provision for workers.

production (organic/ conventional), according to (1) PO management data, (2) [SPOs only] SPO members

- Percentage of SPOs which made a net profit in the last calendar year
- Percentage of POs for which the lowest 'real' (adjusted for inflation) wage paid to general workers increased in the last calendar year, by type of contract and gender
- Percentage of POs which think being Fairtrade certified enables their organizations to achieve higher prices
- Percentage of PO member and worker households with reduced poverty levels, by gender of member/worker and [for HLOs only] by type of contract
- Increased proportion of Fairtrade products are sold under Fairtrade terms in Fairtrade markets, by country
- Percentage of HLOs which either paid a living wage or demonstrated progress towards living wages in the last calendar year
- Average (1) gross revenue (2) net revenue for SPO members from sale of Fairtrade certified product to SPO in last calendar year, by gender
- Percentage of SPOs in each category of (1) low, (2) moderate and (3) high financial sustainability, for the last calendar year
- Per capita sales/ premium generated, by country

4.7 Recommendations/amendments

Overall recommendations related to low income and wages:

- Take a holistic approach to living incomes, which involves, strengthening long-term commercial relationships between buyers and POs, increasing sales under Fairtrade or sustainable terms, and fair prices that allows farmers to reach a living income.[84]
- Include in the definition of living incomes the cost to mitigate and adapt to climate change.
- Create Regional price differentiation
- Encourage income diversification to achieve living income and as a resilience strategy, e.g., producing second or third crops/products

84 Between 2006 and 2013, FI implemented an organisational strengthening programme funded by Irish Aid for coffee SPOs in Central America, which showed the importance of an organization strengthening focus for achieving better business performance. The program resulted in better prices paid to producers and improved FT sales.

or having a second activity. The election of the second or third crop should be smart and maximise value. In the mix of options producer have to consider plant or crops that will enrich the soil, but that at the same time can be sold in the local market and increase food security.

- Incentivize diversification by offering a premium for these products (even if sold in local markets). Diversification can include animal production. For example, adopting salvo-pasture, and offering in the local market organic products, such as eggs or chicken can smooth income. Also, if there is sufficient collective action connecting and negotiating with exporter, products could be also commercialized internationally. However, it requires capacity building and sometimes getting further in the supply chain, meaning processing or secondary processing.
- Scaling up the value chain and bring the value addition to the origin, can help and increase income,[85] achieve economic freedom of small farmers, and make the business more economically sustainable. It can also be an opportunity to apply the circular economy.[86] Suggested steps:
  - Fairtrade to provide in capacity building by working in partnership with management schools or other organisations that could train SPOs on how to develop a business plan, how to be a CEO, and how to run a business.
  - SPOs to develop a business plan for the organization that includes plans on areas to invest the premium and external funding.
  - PNs could look for funding and introduce producers with investors. Also, after capacity building SPO themselves should be able to find a donor, look for government programmes or apply for bank credits.
  - Fairtrade should acknowledge that POs becoming industrialised, could face some barriers[87], particularly if producers are sponsored by business or commercial houses, who support their operation (see: Market barriers and anti-competitive behaviour').

85 For example, where cotton ginning is performed by the farmers, the result is that farmers do not sell cotton, they sell lint. The technology does not require major investment if it is shared between farmers. The project could be co-funded, partly by the premium and partly by a loan bank. In coffee, the next step in the value chain would be pulping (make green coffee) or roasting the beans (Fairtrade International, 2013; Grindle & Barraza, 2011).

86 For example, surplus production, or production that could not be exported due to a defect, but is suitable for consumption, can be processed into a second product, which generates more value for producers (with climate change often high amounts of crops cannot be exported). The waste can also be converted to organic compost.

87 In the case of cotton, for example, certain traders fabricate fabrics. They therefore look for farmers who have formed small producer organization, so they receive help form the outside. And this help has motive being producing the seed and not the lint. Farmers do not have indication to move up the supply chain, because the promoter or sponsor is already there, and we won't like competition. Producer in this situation become captive suppliers of raw material.

Fairtrade could consider introducing a requirement in the standards to move in the value chain but first should analyse the consequences for the SPOs, exporters, traders and licensees.

- To address saturation of certified producers:
  - Request that either new producers have a market or that those buyers who are already in the system, consume more on Fairtrade terms (increase sales under Fairtrade terms) rather than broadening the system and making the benefits shallower.
  - Require new Fairtrade certified organisations to demonstrate they have a buyer to get certified
  - Monitoring the number of POs in the system to have a deeper impact and when new commercial partners come on board, then is the time to broaden the system
  - Analyse developing an exit or disengagement strategy of the Fairtrade system or taking a less interventive approach with POs which meet certain criteria such as market access, professional capacity, agency and market power to achieve the right prices, in essence, those which are able to sustainably manage the business without the intervention of Fairtrade. From one perspective, organisations disengaging Fairtrade because they meet the criteria would mean that Fairtrade achieve its goal, and from another angle it could mean more space for other organisations that are in need for Fairtrade's work.

4.8 Credible verification / Impact assessment

- Base line analysis Credible verification includes monitoring by remote sensing, biomass assessment, land use assessment, SOC stock assessments should compare the baseline with the final line and see the causal effect attributed to the intervention. In terms of climate change, one fundamental baseline is deforestation; others could be income

5. Land degradation
(challenge: land restoration)

5.1 Relevant definition(s)

Land degradation is a negative trend in land condition caused directly or indirectly by humans, which results in a long-term loss of any of the following (Olsson et al., 2019): biological productivity, ecological integrity or value to human. Land is a crucial component to many activities and services humans, plants, and animals need to survive, e.g. food, energy, water and nutrients. As soils are not renewable, the effects of soil degradation jeopardise the future of next generations.

The associated topics are:

- *Soil conservation* refers to the preservation, reduction of soil erosion (Earth Observing System, 2020).
- *Deforestation* is the conversion of forest to another land use (ClientEarth, 2019).
- *Land conversion* refers to the transformation of natural ecosystems to agricultural lands or other use. It is one of the major drivers of biodiversity loss, land degradation and CO2 emissions (source: consultants based on understanding on the subject matter).
- *Slash and burn* is the practice of cutting down or burning vegetation, e.g. forest for farming.
- *Reforestation & afforestation* is the human-induced conversion of non-forested land to forested land (source: consultants based on understanding on the subject matter).
- *Land-use change* is the transformation of the natural landscape to use the land for economic activities (source: consultants based on understanding on the subject matter).
- *Aridification* is the process of a region becoming dry and refers to long term changes, not short-term periods such as seasons (Blanka et al., 2013).[88]

88 See also (Phelan, 2022; Roman et al., 2022)

5.2 Background

Soils are essential for sustainable agriculture development and ecological sustainability (FAO, 2014d). Furthermore, land is the key component to many activities and services humans, plants and animals need to survive, e.g. food, energy, water, and nutrients.

Soils are heavily impacted by climate change and also contribute to it. According to the FAO, "land degradation and soil depletion represent a real and escalating global threat and involves a number of processes, including: erosion by wind, water and tillage, compaction, sealing, nutrient imbalance, loss of soil organic matter, acidification, salinization and pollution" (FAO, 2014d).

As soils are a non-renewable resource (FAO, 2015), the effects of soil degradation jeopardise the future of next generations. "Current demographic trends and projected growth in global population (to exceed 9 billion by 2050) are estimated to result in a 60 per cent increase in demand for food, feed and fibre by 2050" (Gardi, 2017), which poses a problem as there is little land left for agriculture and 25% of the current land used is "highly degraded" and another 44% "is slightly or moderately degraded" (Gomiero, 2016).

A recent study commissioned by FI (Linne et al., 2019) states that Fairtrade-certified farmers are "expected to be at high risk of soil erosion" as FAO underpinned "lands on steep slopes that is not rested or under permanent pasture (e.g. because the land is needed to secure food self-sufficiency or to earn cash income)" as the most affected by erosion due to water (e.g. heavy rains) and "within the Fairtrade systems [lands] more often than not meets the criteria."

Furthermore, FAO estimated that the world has 60 cycles left, as soils won't be fertile enough to produce food for human and animal consumption (Arsenault & Reuters, 2014). Furthermore, 25% of the Earth's land is already degraded and "12 million hectares topsoil are lost every year"(IPBES, 2018). The reversal and reduction of land degradation "could provide more than a third of the most cost-effective greenhouse gas mitigation activities needed by 2030" (IPBES, 2018).[89]

89 See potential of regenerative agriculture in Muse (2021).

5.3 Linkages between social, economic, and environmental outcomes

Healthy and fertile soils are essential for long-term sustainability, as land is a key component to agricultural production. Land degradation affects people and ecosystems, and is also both affected by climate change and contributes to it.

Land degradation adversely affect farmers and workers livelihoods as eroded soils could endanger yields, crop productivity and require more external inputs, increasing the cost of production, affecting living incomes and wages, increasing the risks of food insecurity and encroachment of cultivated areas on other lands (forest, natural ecosystems, etc.).

Beyond Fairtrade POs activities, there are multiple factors of land degradation such as demographic pressure, use of charcoal for the households' energy, etc. However, by sustainable caring and investing in land, biodiversity, ecological services, and soil health can be enhanced in the long term, improving crop productivity, yields and resistance to pests and diseases. This could result in higher incomes and wages.

5.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- IPCC;
- ICRAF Agroforestry: an effective multi-dimensional mechanism for achieving Sustainable Development Goals
- Fairtrade standards (HL - SPO - Climate Standards)

5.4 (potential) countermeasure(s)

Sustainable practices

Non or minimum tillage, crop rotation, cover crops and mulching, agroforestry; carbon sinks; landscape management such as terracing on steep terrain; avoid cultivation on peatland; soil regeneration; sustainable agricultural land mechanisms such as shade trees; sustainable intensification of agriculture to re-forest land that would not be used. Avoid conventional agriculture intensification practices such as monoculture and overuse of fertilisers and pesticides; vegetation restoration assessment; replacing old tress with new ones to increase productivity and prevent deforestation; creating of focus groups with farmers of the same area to discuss and share which are the good practices, experiences and knowledge; practice sustainable agriculture intensification.

Observations

- Non- or minimum tillage, depending on the type of soil could require the usage of herbicides such as glyphosate generating a trade-off between risks and potentially causing a major harm to the environment.
- The replacement of trees should be gradual. For example, Cocoa trees take three to four years to become fully productive. A good practice is to plant new trees and remove old ones when the young ones reach the age of productivity. Replacing trees is also an opportunity to introduce new varieties, potentially increasing crop resilience to pests.
- The creation of windbreaks and shelterbelts is a planting usually made up of one or more rows of trees or shrubs planted perpendicular to the prevailing wind in such a manner as to provide shelter from the wind, to not only protect the production of agricultural crops as they restore soil organic matter lost through agricultural practices. In present day Ghana shelterbelts half a mile wide were created in colonial days to create favourable conditions (humidity) for agricultural production and more specifically for growing Cocoa and which are still present in the landscape.

5.5 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Severity and prevalence of observed erosion on farm (in relation to slope).
- Interplanting species for soil health, diversification, fertility; Method(s) used to clean annual crop areas after harvest (leaving crop residue as ground cover, cutting and raking into piles, burning, etc.).
- Density of trees in farm habitats.
- Land area altered by planting or removing trees.
- Conversion of natural land (e.g., prairie, forest, savanna) to land used for cultivation or pasture, or conversion from cultivated or pasture land to natural land.
- Land area altered by planting or removing trees.
- Conversion of natural land (e.g., prairie, forest, savanna) to land used for cultivation or pasture, or conversion from cultivated or pasture land to natural land.

5.6 Other indicators proposed by key informants and other literature

- Land use and loss of biodiversity (One Earth).
- Soil cation rates (measures the exchange between the plant and the soil and how much it absorbs nutrients).
- Plant disease mitigation. For Coffee could be measured through the absence of spores in the final product or in cupping scores.
- Number and types of trees planted or removed.
- Land preserved as forest (percentage of total land holdings in ha), monitor extend and condition.

5.7 Recommendations/amendments

Overall recommendations related to land degradation:

- Raise awareness among the Fairtrade system on the increasing political will, legislation, and consumer demand to address deforestation, as it poses a potential risk to all commodities, particularly Cocoa and Coffee. Also, in the case of slash and burn, Fairtrade should start measuring the impact in biodiversity loss apart from CO2 emissions.
- Promote and support agroforestry practices in specific areas such as Ghana or the Côte d Ivoire.
- Encourage carrying out on-farm diagnostics or analysis to collect data on knowledge, attitudes and practices. In the case sustainable practices such as agroforestry were not adopted ask the reasons (lack of money, lack of time, impracticability due to the geographic location, altitude, soil, climate).

5.8 Credible verification/ Impact assessments

Remote sensing and satellite monitoring of landscape changes:

- Global Forest Watch
- AIRBUS - Satellite Imagery Services
- Planet - Planet Labs
- IUCN - REMAP tool for remote-sensing environmental monitoring and assessment

6. Lack of primary & secondary education
(challenge: primary & secondary education)

6.1 Relevant definition(s)

Primary & Secondary education in rural areas enables positive rural economic development and well-being of rural communities (OECD, 2021). Lack of education in rural areas results in knowledge, information and skills gaps. SDG 4 aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

The associated topics are:

- *Access to education and schools* refers to the ways educational institutions and their programs and policies ensure that all have equal opportunities to study in environments that enhance learning and well-being for all (source: consultants based on understanding on the subject matter).
- *Gender gap in education* refers to the discriminatory difference between males, females and non-binary persons accessing learning opportunities and benefits from education (source: consultants based on understanding on the subject matter).
- *Quality of school* refers to, inter alia, access to safe and healthy learning environments, including infrastructure, the relevance of the curricula, and school attendance and performance (source: consultants based on understanding on the subject matter).
- *Economic returns of education* refer to the increase in incomes and wages due to education (Dickson & Harmon, 2011; Psacharopoulos & Patrinos, 2018).
- *Lack of resources* to afford books, materials, and cover the cost of boarding and food (source: consultants based on understanding on the subject matter).
- *Youth employment and decent opportunities* refer that education can bring or enable those opportunities as it provides them with knowledge and understanding to produce and supply technologies (source: Fairtrade and expert review).

6.2 Background

Education is a fundamental human right, and its deprivation can lead and contribute to social, economic, and environmental problems. For example, lack of education or poor-quality education is one of the principal barriers to eliminating poverty and hunger (De Muro & Burchi, 2007), and it is crucial to preventing and fighting child labour (ILO, n.d.). FAO also identified education as an enabler of rural people's capacity to be food secure and sustainably manage natural resources (Acker et al., 2009). Furthermore, quality education could mean better access to decent work opportunities for youth.

Quality and access to education in rural areas often face limitations in the lack of "infrastructure, limited pedagogical materials, curricula with little relevance for rural lives, poor and variable rates of rural school attendance, and lower levels of educational performance and achievement" (ILO, n.d.). In addition, the geographical dispersion of schools might require children to walk long distances.

Gender is also a key issue within education, as young girls often have to fight against traditions that do not value women's education, and they can face risks of abuse while commuting to school. Women uneducated is a major constraint to development as they play a crucial role in rural economic growth (UN, n.d.-b). Women contribute to "agricultural production, food security and nutrition, land and natural resource management, and building climate resilience" (UN, n.d.-b). In addition, "a World Bank study found that every year of secondary school education is correlated with an 18 per cent increase in a girl's future earning power" (Yong Kim, 2018). The research also shows that "better-educated women tend to be healthier, participate more in the formal labour market, earn more, give birth to fewer children, marry at a later age, and provide better health care and education to their children" (Yong Kim, 2018).

Farmers and workers could negatively contribute to primary and secondary education outcomes if they would not send their children to school, hire them as workers, or undervalue girls' education. Such decisions vary based on a number of factors, such as insufficient income or wages to afford school, lack of labour supply, absence of schools or transportation to access distant schools, discrimination based on gender, unsafe schooling, lack of educational infrastructure, poor quality of education and perceived lack of returns on schooling. In turn, the deficits in education negatively impact the inclusive development of POs, their members and workers [90].

90 Children's education is a top concern among Flower workers in East Africa as school is perceived as

6.3 Linkages between social, economic, and environmental outcomes

Education allows the understanding of the hard sciences, which can be applied to produce food sustainably with the appropriate education. Lack of education can lead to social and economic issues such as inter-generational poverty and the absence of skilled, informed and empowered workers. It could also enable exploitation, abuse, and discriminatory and unfair practices between the genders. Moreover, education, mainly primary for rural people, has also been linked with food insecurity.

Another link is with living incomes and wages, which are critical to enabling education, mainly in regions where the government does not provide primary or secondary education or both. Furthermore, low income and wages can adversely impact education when children are sent to work instead of school to contribute to the family economy. However, such decisions are based on many factors, including the perception of quality education and the lack of returns on schooling.

For POs the level of education is relevant as it can affect the way they do business, produce, and their ability to interface with the Fairtrade system. Education is a means to exit poverty, as knowledge acquisition allows for technological innovation, increasing incomes and improving livelihoods.

The deficits also negatively impact the inclusive development of Producer Organisations, their members and workers.

6.4 Leading framework(s)/standard(s)/regulation

Operative framework

- UNSDG (Goal 4)
- Fairtrade standards (HL mentions primary education)

6.5 (potential) countermeasure(s)

Work to enable living income and living wages for farming households, including awareness raising and capacity building on child rights, gender rights and rights of youth to access decent employment; skills development and business opportunities in partnership with the

a tool to exit poverty. Secondary school is not provided by the government and flower workers who often face poverty does not have the financial means to cover for the education and materials of their children. Most of the Fairtrade premium in the flower setting is invested in secondary school and higher education for the workers' children and further training for workers to obtain secondary incomes, e.g., driving lessons or swing courses.

government, supply chain actors, NGOs or other institutions to enable access and quality education; periodic risk assessments on compliance to relevant Fairtrade Standards; development and operations of grievance mechanisms (preferably both digital and traditional channels); help and guidance with birth certificates; advocacy to ensure quality education and learning opportunities for children and youth; the creation of networks such as the 'Fairtrade alumni network'[91] in Africa.

6.6 Other relevant metric(s)

Other indicators proposed by key informants and other literature

- Number of household members through age 18 who have completed appropriate number of grades for age
- Number of household members aged 15 years and older who have primary school or higher level of education

6.7 Recommendations/amendments

Overall recommendations related to education:

- Consider providing POs clear areas on where to invest the premium, especially in "workers wellbeing", to ensure that it is used for the long-term benefit of workers, for example, make mandatory to invest a certain share of the Fairtrade Premium in education for the workers and workers' children.

6.8 Credible verification/ Impact assessments

- Traceability of the Fairtrade Premium.

91 Fairtrade Africa built a 'Fairtrade Alumni Network' with people who already benefited from the premium invested in education and pursued secondary education and university studies. The network members hold presentations in schools where the children of flower workers attend. Through presentations that are meant to inspire and motivate the pupils to learn, behave, and earn good grades, the members demonstrate that it is possible to exit poverty.

7. Water stress
(challenge: water use)

7.1 Relevant definition(s)

Water stress refers to the ability, or lack thereof to meet human and ecological demand for freshwater (UN, 2022; UN Global Compact, 2014). In other words, water stress occurs when water demand exceeds the available amount.

The associated topics are:

- *Water conservation* "refers to the preservation, control and development of water sources" (OECD, 2001).
- *Water consumption & use is* portion of water withdrawn from its source that could be returned (use) or not (consumption) (Project Drawdown, 2020).
- *Water scarcity* refers to physical water shortage or in access (source: consultants based on understanding on the subject matter).
- *Water retention* is water retained by soils. Retention increases with higher percentage or restoration of soil organic matter (Lal, 2020).

7.2 Background

According to the World Meteorological Organisation (2021), water scarcity is one of the key risks to achieving sustainable development. Agriculture is one of the economic sectors with the highest rates of global water withdrawals (70%, and for some developing countries, it reaches 95%) (FAO, n.d.-h). "In terms of water consumption — water used, but returned to the same watershed — agriculture is responsible for about 85% of global water use" (Project Drawdown, 2020).

For agricultural production, large amounts of water are used, which stands in constant competition with other industries and/or cities for freshwater. Therefore, agriculture is one of the main causes of water scarcity as well as a casualty.

In particular agriculture is greatly affected by droughts and water scarcity (IDMP, 2022) specially when temperatures rise due to climate change. If crops are not properly watered productivity falls, which also impacts food production, leaving many people to face chronic food apart from water insecurity (IDMP, 2022). Of particular importance for freshwater systems is future agricultural land use, especially irrigation, which accounts for about 90% of global water consumption and severely impacts freshwater availability for humans and ecosystems (Döll, 2009).

A recent study commissioned by FI to assess its impact on environmental protection, biodiversity conservation and adaptation to climate change, revealed that in all except in one case study (Cocoa) "the key environmental challenges are mostly related to water issues" (Linne et al., 2019), e.g. water scarcity. In the case of Bananas in Panamá production "water shortages lead to dehydration of soils and Bananas plants, ultimately resulting in production losses and sometimes plant losses" and for Flowers in Kenya "prolonged dry spells lead to water shortages, resulting in changes to the production cycle" (ibid) that ultimately affected the market as when it was demand, there wasn't supply and vice versa.

7.3 Linkages between social, economic, and environmental outcomes

Agriculture is greatly affected by droughts and water scarcity, especially for those crops in which water is used with different purposes in production. Not providing plants with enough water can lead to loss of crop productivity and crop quality. Furthermore, water shortages could lead to dehydration of soils, ultimately resulting in production losses, plant losses or changes in the production cycle affecting the market and contract enforcement.

By adopting sustainable practices that enhance water retention and by managing water resources producers can mitigate the risks of economic losses due to water stress and increase resilience to climate change.

7.4 Leading framework(s)/standard(s)/regulation

Operative framework

- UNSDG (Goal 6)
- Fairtrade standards (HL - SPO - Climate Standards)
- UN – Water use efficiency
- United Nations Framework Convention on Climate Change (UNFCCC) - Climate action pathway: Water
- Global Water Partnership 'Handbook for developing integrated water resources management and water efficiency strategies'

7.5 (potential) countermeasure(s)

Sustainable practices

Efficient water harvesting (incl., rainwater harvesting); creating ponds, reservoirs, water pans and retention ditches; sustainable drip irrigation, Hügelkultur (burying wood to increase soil water retention); water management; avoiding deforestation; closed-loop water systems[92] (to reduce freshwater requirements); identify processes where consumption can be reduced; water recycling;

Observations

- Sustainable irrigation depends on the type of irrigation system that producers implement. Some just flood the whole area, which implies using much water, but in a country where infrastructure is in place, and farmers have access to finance, some plantations can implement drip irrigation.
- A countermeasure for Bananas and other crops could be reducing water use in other stages of production. In the case of Bananas was during the packing process.
- Projects such as Program for Increasing Productivity (PIP) have the potential to reduce water consumption as by enhancing soil fertility, moisture and other properties, soil gains more water retention capacity, which reduces the amount of irrigation needed. A countermeasure is promoting projects that enhance soil health and water retention in other to reduce the water footprint.

7.6 Other relevant metric(s)

Metrics Theory of Change:

- Percentage of POs which have taken reasonable measures to ensure sustainable water use

Other indicators proposed by key informants and other literature

- Sustainability of irrigation water consumption (water consumption) (One Earth): km3 (cubic kilometres) total annual irrigation water/km3 sustainable annual water consumption
- Water Conservation Measures (COSA): Practices used to conserve water: drip irrigation, catchments, water-efficient processing, etc.
- Water used for irrigation in total and per unit of product

92 See Fairtrade Life Cycle Assessment Cut Roses (Alig & Frischknecht, 2018).

7.7 Recommendations/amendments

Overall recommendations related to education:

- Develop a plan on water use, producers need to:
    1. Understand and identify the issues related to water;
    2. measure current water use on production and non-production consumption;
    3. map the causes depleting water;
    4. analyse possible countermeasures.
- Change farmers' perceptions and behaviours on investment. The observed trend is an increasing dependence of farmers on external financial support from NGOs, government programs and other organisations (with no or minimum interest) and an unwillingness to invest their savings in farm improvements.

7.8 Credible verification / Impact assessments

- Cool farm tool

8. Biodiversity loss
(challenge: biodiversity and agrobiodiversity)

8.1 Relevant definition(s)

The term biodiversity represents all "variety of life at genetic[93], species[94] and ecosystem[95] levels" (FAO, 2019), and includes ecological processes that support ecosystem functions (Lindenmayer, 2011). Thus, biodiversity loss refers to the decline or extinction of species, the reduction in the number of species inhabiting an ecosystem, the homogenisation of species' gene pools, and the homogenisation of biological communities across the landscape.

93 Refers to "the variety of genes within a species. Each species is made up of individuals that have their own particular genetic composition" (Office of the Commissioner for Sustainability and the Environment, 2015).
94 Refers to "the variety of species within a habitat or a region" (Office of the Commissioner for Sustainability and the Environment, 2015). Species includes, inter alia, plants, insects, bacteria, fungi and animals (incl. humans).
95 Refers to "the variety of ecosystems in a given area Ecosystems" and an ecosystems are "a suite of organisms and their physical environment interacting together" (Office of the Commissioner for Sustainability and the Environment, 2015). Also, biodiversity is considered the backbone of ecosystem services.

Biodiversity might include species that tend to be antagonists to agricultural production (pests and diseases such as Coffee rust, swollen shoot, and fusarium). The populations of such species should be regulated to support a well-functioning ecosystem. Increasing biodiversity within the landscape strengthens an ecosystem's capacity to regulate such populations naturally.

The associated topics are:

- *Ecosystem protection* which refers to the conservation of habitats, ecosystem functions, and species (e.g., flora and fauna) population and metapopulation (source: Fairtrade and expert review).
- *Species and varietal diversity*[96] refers to the diversification of species that enhance ecosystem services and resilience to climate change (MacKenzie & Foyer, 2021).
- *Agrobiodiversity*, a subtopic of cultivated/raised species and varietal diversity, which refers to the number of species and the varieties within species that contribute and add value to agriculture and food systems (e.g., seeds rights and seed propagation) (Gliessman, 2015).
- Seed Sovereignty involves the right to save, replant, share and use seeds to breed new varieties, and the right to participate in the formulation of policies regarding seeds (Kloppenburg, 2014).
- *Monoculture* is the extensive cultivation of a single crop within a single area.
- *GMOs* are genetically modified crops.
- *Alien invasive species are species "consider to be main direct drivers of biodiversity loss"* (Convention on Biological Diversity, 2019).

8.2 Background

Biodiversity and species interactions are critical for agriculture production, climate change, human resilience, human lives, health and wellbeing, food security and nutrition (Food and Agriculture Organization of the United Nations, 2019c). The main contributors to biodiversity loss are the intensification of agricultural practices[97] and conversion of natural ecosystems to for example monocultures (Armengot et al., 2016;

96 Charles Darwin, 150 years ago, based in his observations recommended diversifying and planting different species to strengthen plant growth and increase yields. Current academic research in forest and climate change is taking up the idea along with policymakers and landowners (MacKenzie & Foyer, 2021).

97 It refers to the rapid increase of lands used for conventional agriculture which often drives the simplification and homogenization of ecosystems.

Foley et al., 2005; R. J. Morris, 2010; Philpott et al., 2008), both driven by human activities[98]. Other unsustainable practices that can harm local ecosystems, leading to the extinction of plants and animals, are the overuse of agrochemicals and extensive monocultures plantations.

For farmers, an absence of – or poor – biodiversity increases dependency on external inputs such as fertilisers and pesticides to sustain primary production (replacing the natural services lost with chemicals). As these inputs impoverish even further the natural resource base or as pests develop resistance to pesticides, input needs (and associated costs grow) and harm to the ecosystem deepens (Caron et al., 2014; Cordell et al., 2011; Struik et al., 2014; Therond et al., 2017). In the long term, these practices result in land degradation, soil infertility, poor crop resilience and decreased productivity and yields.

Climate change also affects biodiversity (Otto-Portner et al., 2021), as the warmer the Earth gets, the more risks some species face to survive, as they need specific climate conditions, and some species could take long to adapt or are unable to do it. Furthermore, droughts, freezes, floods and other extreme weather events endanger biodiversity and nature's services. However, in turn, biodiversity loss affects climate, among other things, through GHG emissions,[99] nitrogen and water cycles (Otto-Portner et al., 2021). In addition, climate change can change the suitability areas for some crops (e.g., Coffee). This change may imply the invasion of natural/forested areas to continue productivity (Baca et al., 2014).

Lastly, the use of GMOs[100] associated with biodiversity loss,[101] since it can reduce the "genetic diversity of plants and animals in the environment" (Landry, 2015). Genetic diversity is key for adaptation and resilience as losing genetic diversity can result in individuals of the same specie

98 For example, the rise in coffee demand has contributed to the "intensification of coffee plantations" and "tropical deforestation" in order to increase productivity resulting in biodiversity loss along with the associated ecosystem services (Jezeer & Verweij, 2015; Philpott et al., 2008).

99 "Ecosystem degradation through land use changes and other impacts on natural carbon stocks and sequestration is a major contributor to cumulative CO2 emissions" (Otto-Portner et al., 2021).

100 Various stakeholders see potential in genome editing techniques like CRISPR-Cas9, Cisgenesis and intragenesis or reverse breeding and are arguing that they should be separated from the EU GMOs regulation (Demeter International, 2021c). Moreover, the European Commission published a study on 'new genome techniques' (NGT) and their potential for sustainable agriculture, and proposes an open consultation to revise 2001 GMO legislation (Demeter International, 2021a).

101 GMOs in the Fairtrade standards are prohibited for different reasons than biodiversity loss. It is related to dependence and farmers empowerment. As GMOs generate dependence in external inputs, from buying the seed to maintaining the crops. As other implications of GMOS are dependence and Farmers are advised to avoid such dependencies as they should be able to make decisions over new technologies, inputs and practices, which rarely happens in the case of GMOs (Müller et al., 2014). Another point to discourage its use is the potential negative effects on human health like "antibiotic resistance, allergenicity, unnatural nutritional changes and toxicity" (Maghari & Ardekani, 2011). Famers rights can also be in the spotlight when unintentionally GMOs end up mixing in their croplands (for example due to air transportation of the seed). They face the risks of big corporations, holders of the intellectual property rights of the GMOs, to sue them for infringement.

reacting the same way to external shocks.[102] Conversely, variation and diversity can increase the probability of a species' survival (Landry, 2015). For the reasons above, preventing biodiversity loss and reintroducing biodiversity into the ecosystems, except for pests and diseases, can be beneficial to the natural environment, farmers, workers and the local communities.[103] Nevertheless, large amounts or combinations of some biodiversity can be counterproductive, e.g., introducing plants that outcompete crops for nutrients, sun and water. Thus, aiming at the right balance of biodiversity will allow farmers to benefit from ecosystem services[104] and contribute to sustainability.[105]

8.3 Linkages between social, economic, and environmental outcomes

Biodiversity is part of the natural capital of the farm. For Fairtrade POs, biodiversity loss is a risk that may, *inter alia*, reduce crop yields in the long term due to soil fertility loss. Also, it can cause crop losses as biodiversity loss can contribute to farms poor resilience to disturbances (Gunderson, 2003) such as climate variability. Moreover, it endangers farmers' food security, nutrition, living incomes and living wages.

Protecting and enhancing biodiversity functional to agricultural production has many advantages to producers. Biodiversity's contributions to nutrient cycling and pest regulation, in the medium and long turn, can reduce the cost of external inputs such as herbicides, pesticides and fertilisers, thus increasing overall farm income (Gurr et al., 2003). Biodiversity is also a critical dimension of soil health. Healthy soils produce higher yields, increase property value and enhance the resilience of the farm.

102 An example of the risk and consequences of the loss of genetic diversity is the potato famine in Ireland in the mid-19th century. Agricultural practices in potato cultivation at the time resulted in all potatoes having identical genes, when P. infectants (a fugus) spread, all potato crops reacted the same, losing all production and affecting the livelihoods and survival of the Irish population.

103 For example, in 2015 CLAC launched the Productivity Improvement Programme (PIP) for bananas crops. The aim was to improve soil fertility, increase productivity, and halve agrochemicals use by nurturing biodiversity and applying organic fertiliser. In the past, excessive use of agrichemicals and monoculture practices harmed the soils, reducing productivity and making banana crops more vulnerable to pests and diseases (Fairtrade Foundation, 2020). One of the solutions to reverse the trend was to grow other crops along with bananas (polyculture). After five years, the programme showed positive results, improving soil fertility and increasing banana production. Among other conclusions of the project, it was clear that "to protect the health of the soil for the future, it is essential to increase biodiversity, adding microorganisms which improve resistance to fungi, viruses and bacteria that cause diseases in plants" (Fairtrade Foundation, 2020).

104 Pollination, microclimate control, pests prevention, soil fertility and water regulation (Jezeer & Verweij, 2015).

105 Mimicking nature is another way to describe agroecological agroecosystems where there is complementarity among the species: "the goal is to design a quilt of agroecosystems within a landscape unit, each mimicking the structure and function of natural ecosystems" (Altieri & Nicholls, 2005).

Furthermore, the introduction of agrobiodiversity is a mitigation strategy against climate change that increases farmers' resilience and adaptation (Gaudin et al., 2015).

8.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- UNSDG (Goal 15)
- Fairtrade standards (HL - SPO - Climate Standards)
- IUCN - Global Standard for Nature-based Solutions
- IUCN Red List of Endangered Species
- Dasgupta Review on the Economics of Biodiversity [which builds on The Economics of Ecosystems and Biodiversity (TEEB)]

8.5 (potential) countermeasure(s)

Sustainable practices

Intercropping; crop rotation; agroforestry; afforestation/reforestation training in sustainable agriculture and biodiversity benefits to food production; deforestation prevention; prohibit the use of GMOs, limiting fertilisers and pesticides; leveraging knowledge about specific organisms beneficial to crops and utilising them instead of fertilisers or pesticides, e.g., bees, fungi, worms, and bacteria (this approach should be carefully analysed as biological control agents can cause major problems than pest); vegetation restoration assessment; becoming organic; prohibit herbicides; bio ferments; ecosystems and landscape management e.g. windbreaks, insect strips and living fences, mosaic of crop types; cover crops mulching; introduce digital farm management technology that provides information for more efficient decision making and reduces biodiversity loss; biological input-based farming systems or biodiversity-based farming systems; organic and bio-fertilisers. Phytosanitary and alien fauna control activities; Strengthen the use of ecosystem services with regards to the interplay among plants and species: root excrements as ecosystem service to control pest infestation.

Observations

- Cover crops are beneficial in banana plantations, the technique might be impractical or inefficient among perennial crops where vegetation growth does not leave enough space for other plants to access light. However, there are different types of cover crops and for example

in Coffee and Cacao, plantations can benefit of other crops like legumes that produce a lot of leaf litter and that help with N fixation (Meylan et al., 2017; Rose et al., 2019).

- Crop rotation might not be compatible with Fairtrade main crops: Coffee, Bananas, Sugar cane and Cocoa. Perennial crops (plants/ trees) do not need to be replanted each year. This technique could be applied, for example, in Cotton, where usually farmers rotate Cotton with nitrogen fixation plants.
- Intercropping might find some adoption drawbacks[106] within perennial crops, however some research highlight the benefits of introducing nitrogen fixation plants (e.g. legumes), for example, in Coffee plantations (Mendonça et al., 2017).
- Reforestation or afforestation[107] is not likely to be practiced by SPOs or CPs as they own or work on a small number of hectares. Converting farmland into forest will reduce their primary source of income. However, there are examples of small farmers practicing it in Cameroon (Jagoret et al., 2012).

8.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Species and varietal diversity: "portion of focus crop(s) that are improved varieties (locally adapted or native heirloom varieties, selected to thrive in local conditions, hybrid, genetically altered, genetically selected); number of other crops or animal products produced on farm for sale, trade, or consumption."
- Plant and tree diversity: "levels of biodiversity: cleared land or pasture, monoculture, 2-3 cultivated species (sparse trees), 4-10 cultivated species (some trees), crop presence with multi-strata forest, fully functional natural forest; practices followed that preserve or enhance biodiversity."

106 Intercropping and crop rotation are often perceived as practices that reduce crop yields compared to monocultures. Farmers may be inclined to pursue the option that maximises their income, often being monocropping. This economic advantage over diversification strategies, however, may not perdure in time. Also, the crop as well as the plantation age should be considered in these practices as for example the case of in sugar, the vegetative growth is massive and there is hardly enough sunlight or other resources to allow plan growth below. Concerning the plantation age, old plantations are highly vulnerable to pests, so they should be under a permanent renovation plan. However, in the early stages of the plantation, some intercropping can be introduced.

107 Reforestation (planting trees in a degraded forest) or afforestation (planting trees to create a forest) and agroforestry are similar as, all involve planting trees. However, agroforestry combines the replanting with cultivation areas (Netter et al., 2022).

Other indicators proposed by key informants and other literature:

- Ecosystem biophysical capital: defined as the capture of adequate solar energy to sustain cycles of matter in an ecosystem.
- Land use and loss of biodiversity (One Earth): the lost forested area due to agricultural activities (land-use change)
- The average (%) score of POs (differentiated by HL and SPO) on practices implemented to protect ecosystems and biodiversity (total practices implemented divided by the number of farms).

8.7 Recommendations/amendments

Overall recommendations related to biodiversity:

- Include a provision in its standards for biodiversity growth, and distance itself from a purely yes/no approach.
- Work with commercial partners to cost-share and finance sustainable projects that enhance biodiversity, such as agroforestry projects in crops such as Coffee, Bananas and Cocoa.
- In the case of slash and burn and burning practices, start measuring the impact in biodiversity loss apart from CO2 emissions.
- On the development of acceptable[108] biodiversity and agrobiodiversity plan, the formulation should include:
    1. an on-farm self-assessment to identify current practices that protect and enhance biodiversity and those which harms or endanger biodiversity;
    2. an evaluation of sustainable practices that best fit the farm and add value to production. The value addition could be, among other things, in terms of efficiency, productivity or economic capital;
    3. self-setting goals at PO level and targets on the areas of the plan to improve, and demonstrate a year-over-year improvement until goals and targets are fulfilled;
    4. review the plan every three years or whichever period FI, PN and NFOs agree to adjust goals and targets.
- Share and mainstream, where applicable, the “Program for increasing productivity” and promote programs that could maintain or increase productivity and that at the same time reduce dependence on

108 Acceptable plans refer to plans which full fills Fairtrade specifications in standards

agrochemicals, cost increases biodiversity and has positive effects on the environment.

8.8 Credible verification/ Impact assessments

On-farm biodiversity assessment methods discussed in Gabel et al. (2018):

- *Credit Point System* developed by the Research Institute of Organic Agriculture (FiBL) and the Swiss Ornithological Institute. It is a scoring system that includes 32 relevant options or measures to enhance farmland biodiversity (Birrer et al., 2014).
- *Sustainability Monitoring and Assessment Routine* (SMART) developed also by FiBL based on SAFA (FAO) guidelines. It includes 72 indicators for biodiversity out of 327 indicators.
- *Life Cycle Impact Assessment* (LCIA) developed by Meier et al (2015), published by FiBL
- Monitoring plant and species diversity based on farm data collection to calculate species richness, density (Birrer et al., 2014).

Other:

- Remote sensing, satellite monitoring of land scape changes tools and drone images to measure biodiversity.
- Monitor year-over-year improvement on the application of the biodiversity plans.
- Cool farm tool

9. Soil organic carbon depletion
(challenge: soil organic carbon)

9.1 Relevant definition(s)

Soil organic matter (SOM) is essential for ecosystems and agriculture as it improves soil quality, improves water retention, reduces erosion, enhances productivity, and increases food security (Ontl & Schulte, 2012). Soil organic carbon (SOC) is a compound that can be found in soils as part of SOM. On the aggregate, soil organic carbon is being depleted from soil and released to the atmosphere contributing to climate change directly by human practices (deforestation, soil disturbances) and by natural processes but exacerbated by human practices (soil organic matter decomposition triggered by the absence of carbon input from the growth

of forest, due to deforestation) (Ontl & Schulte, 2012). Climate change and warming will promote substantial soil carbon losses.[109]

The associated topics are:

- *Soil Health* "is the capacity of soil to function as a living system, with ecosystem and land use boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health" (FAO, 2008a).
- *Carbon emission* carbon released to the atmosphere.
- *Carbon sinks (reforested areas & soil)* process mechanism that removes CO2 from the atmosphere (FAO, n.d.-c).
- *Pre-harvest burning* is an agricultural practice that entails burning the crop before harvest, a practice generally used in Sugarcane to (a) remove the leaves and tops of the Sugarcane plant leaving only the Sugar (b) ensure the safety of workers, preventing wild animal attacks (source: Fairtrade and expert review).[110]

9.2 Background

Conventional intensive agriculture and land-use change are two practices (Lei et al., 2019; P. Smith, 2008), among others, that deplete SOC stocks. SOC depletion is associated with increased CO2 emissions from agriculture that contribute to and cause climate change (Ontl & Schulte, 2012). SOC depletion also indicates declining SOM levels and by extension declining soil health, endangering fertility, productivity and food security. Fairtrade POs can cause carbon depletion when converting forested land into cropland or by carrying out agricultural practices that intensively disturb soils. In turn, POs can suffer economic losses due to low levels of SOM that could impact farmers and workers' quality of life and livelihoods. The reason is that soil organic matter, helps retain water and nutrients, stabilizing agricultural productivity. It also helps mitigate floods by infiltrating rainfall, storing moisture, and improving soil fertility and health.

Increasing SOM levels represents an opportunity to sequester CO2 from the atmosphere. The creation of new carbon sinks by reforesting land (managed forest), reducing tillage and covering soils on croplands and

109 According to research "soil carbon storage declines strongly with mean annual temperature 'increase'. The reduction in C storage with temperature was more than three times greater in coarse-textured (sandy) soils, with limited capacities for stabilizing organic matter, than in fine-textured (clayey) soils with greater soil carbon stabilization capacities" (Hartley et al., 2021).

110 Pre-harvest burning is an unsustainable practice that, among other things, releases CO2 to the environment, and could be harmful to human health, e.g., eliciting respiratory diseases for those regularly exposed to smoke.

managing pastures carefully can remove GHG, especially CO2 as soil is in perpetual need of carbon could store more than what it emits (Ontl & Schulte, 2012).

Carbon sequestered from the atmosphere can be stored in three major carbon pools (Project Drawdown, 2020), and special attention should be paid as on this may depend on the time the carbon sequestered is stored:

- Biomass Carbon refers to the carbon that can be found in plants and is divided in aboveground biomass (AGB), which includes the wood, leaves and grasses, and belowground biomass (BGB) which includes roots. Carbon sequestered is store in plants through the process of photosynthesis and this carbon stays within the plant till it dies.
- Detritus Carbon is the dead biomass that plants leave behind when they die or when they lose leaves or roots. In the process of decomposition part of the carbon is released to the atmosphere in the form of CO2 and "the remainder is converted to soil organic matter".

Soil Organic Carbon is the reservoir with most potential and it is composed of "decomposed plant matter and microbes." The time carbon is stored in SOC depends as it could be a lifetime or quickly released back to the atmosphere as a consequence of decomposition and microbe respiration.

9.3 Linkages between social, economic, and environmental outcomes

Soils are an important resource for farmers and part of the natural capital from The Five Capitals Framework. They are also the primary input in agricultural production, without healthy soils there are risks of declining productivity and yields, and increasing vulnerability to pests and diseases. On the contrary, healthy and fertile soils could lead to more productivity, higher crop quality, and less external inputs, which could result in higher incomes. Farmer investments in their own soils will also add value to their property and increase its longevity, possibly also increasing the commercial value of the property. Furthermore, healthy soils increase resilience to climate change.

9.4 Leading framework(s)/standard(s)/regulation

Operative framework

- IUCN Soil biodiversity and soil organic carbon
- ISOFAR "A Conceptual Framework for Soil management and its effect on Soil Biodiversity in Organic and Low Input Farming"

- The Five Capitals Framework
- Fairtrade Standards (HL – SPO – Climate Standards)

9.5 (potential) countermeasure(s)

Sustainable practices

Agricultural management practices to increase soil organic carbon and organic matter on degraded soils up to the limit the land can take by adopting agroforestry practices, or other diversifying cropping systems such as polyculture and alley cropping; afforestation/reforestation; applying green manure/cover crops; mulching, terracing; incorporating crop residue into the soil; rotating crops and composting made from crop residues; measuring soil health; conservation practices; management of water systems; biochar;[111] agricultural practices that prevent further depletion of carbon such as cover crops and mulching, no deforestation; non or minimum tillage.

Another potential practice that could increase carbon in soils up to the soil limit capacity and potentially generate profits is using soils as carbon sinks, which also reduces CO2 from the atmosphere.

Observations

See observations in biodiversity regarding cover crops, crop rotation, intercropping and afforestation/reforestation.

- Using soils as carbon sinks and potential subjects for carbon credits projects could have controversial effects. Often soils store small percentages of carbon as soil organic carbon, thus is necessary to previously conduct studies on soils to determine the storage potential. The amount of carbon any one farmer can sequester will be highly dependent on inherent soil properties (those that can't be changed through management). Furthermore, measuring and developing a reliable carbon credit scheme focused or that includes soil carbon sequestration is complex and will take into account the risks of carbon being re-released to the atmosphere due to agricultural practices, any soil disturbance or by natural respiration of the soil (soil micro-organism). Fairtrade also should be careful to fall into greenwashing and not create perverse incentives where farmers would deplete carbon on the land to then sequester it and obtain a premium.

111 Biochar can improve productivity, contribute to stable soil carbon, and reduce N2O emissions from, for example, rice fields (US EPA, 2014).

- Agricultural practices are a factor of soils carbon depletion, for example if the soil is not well protected, then rain can wash off many things off the soil. To mitigate the issue the main counter measure is avoiding or changing the practices that can contribute to it, such as irrigation and tilling.
- Another practice that depletes carbon is monoculture, crops such as Cotton or Rice heavily rely on this practice.
- Conservation practices and management of water systems are significant since one leading cause of soil organic depletion is soil erosion. Soil erosion can be through land exposure to the sun, especially when there are no agroforestry or shade trees and by rainfalls which can wash away soil organic matter in exposed lands (no trees). So, here the proposal is things to do with the establishment of woodlots or you want to call from forestry or agroforest there is mulching, cover cropping and there is terracing.

9.6 Other relevant metric(s)

Indicators of Soil Health (see Annex H) (Gliessman, 2015)

Other indicator of soil health (Coffee)

- Soil cation rates (reveals plants and soil exchange rates, the capacity to absorb nutrients). Rates are low in areas with high fertilisers application.
- Sampling techniques to measure Coffee rust
- Absence of spores in the final product
- Cupping scores

9.7 Recommendations/amendments

Recommendations specific to policies and activities:

- Encourage measuring soil health, under the Fairtrade requirement to invest at least 25% of the premium received in quality. Soils are a quality aspect and measuring its health is necessary to assess the land state of erosion. The metric is useful to determine the type and amount of fertiliser (organic or chemical) needed in the farm. Cost can be supported by farmers or shared with other institutional organizations, NGOs, or by PNs, NFOs or FI.
- Provide guidance and encourage producers acquiring better knowledge of soil characteristics to evaluate what crops perform best under such conditions.

- Consider the following to develop projects that improve soil health:
  - Evaluating potential practices and approaches that improve soil health and resilience to climate change through the increase in soil organic matter, biological nitrogen fixation, soil biodiversity, reduction of soil acidification, and that will lead to more fertility, productivity, water retention and resistance to pest and diseases. An analysis should be done taking into consideration geographic location, crops and type of farm.
  - Collect and analyse data on the potential practices and its outcomes in different crops/commodities to improve soil health (projects and experiences inside and outside of Fairtrade).
  - Evaluating and verify applicability feasibility to scale up the sustainable practices.
  - Elaborating pilot project plan involving all PN in different scales and producing regions, estimating cost, profit and revenue loss for each year of the pilot project.
  - Elaborating a cost sharing model to cover the revenue gap farmers might face in the first years of the project.
  - Looking for strategic partnerships with commercial enterprises, government and NGOs (donors/sponsors) to fund the projects and share the cost.
  - Putting in place a robust monitoring and evaluation program or leverage existing ones (form partners) to demonstrate impact.

9.8 Credible verification/ Impact assessments

Credible verification includes monitoring by remote sensing, biomass assessment, land use assessment, SOC stock assessments.

10. Lack of water & sanitation
(challenge: water and sanitation)

10.1 Relevant definition(s)

The right to water "entitles everyone to have access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use"112 (UN Water, 2021). The right to sanitation "entitles everyone to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, and socially and culturally acceptable and that provides privacy and ensures dignity" (UN Water, 2021).

Associated topics:

- *Access to sanitation facilities* refers to having near or close sanitation facilities (source: consultants based on understanding on the subject matter).
- *Access to safe water* refers to access to good quality freshwater (source: consultants based on understanding on the subject matter).
- *Unequal access to water and sanitation* refers to people or groups "being excluded from, or marginalized in relation to, water and sanitation access" (UN Water, 2021) (see Gender inequality and inequity and Social inequity).

10.2 Background

Elemental to our existence, water was recognised as a human right by the United Nations General Assembly in 2010. Access to water and sanitation were identified as essential resources, without which human "health, dignity[,] prosperity" and the enjoyment of other human rights are at risk (UN Water, 2021).

112 The term sufficient refers to enough and continues supply of water for different uses such as "drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene." Safe refers to water "free from micro-organisms, chemical substances and radiological hazards." Acceptable is linked to the quality of water and to facilities and services being "free from micro-organisms, chemical substances and radiological hazards." Physically accessible is the condition of being a service physically available withing the immediate surroundings, and affordable, refers that water and sanitation services "must be affordable for all" (UN Water, 2021).

In rural areas, adequate water and sanitation supply can be scarce. Limitations in access could be linked to "environmental fragility and relatively poor economic conditions," and the lack of or poor infrastructure and sources of "drinking water and safe sanitation" (UN Water, 2021). In addition, "to this lack of services, natural water sources such as wells, pumps, and rivers are often contaminated and provide an unreliable supply" (UN Water, 2021).

Access to water and sanitation also addresses inequality since the provision of these services impacts women and other marginalised groups differently. In this sense, gender inequality is present, for example, when women have to cover long distances to collect water for consumption, which often involves lifting and carrying heavy buckets or other water containers. Moreover, the lack of water and sanitation infrastructure (incl. facilities) can affect the health and physical safety of women and girls, as they are at risk of sexual violence when they need to use the facilities at night, when the facilities are public (not exclusively for women) or shared with others (UN Water, 2021), or in their way to collecting water.

Last, lack of water & access to sanitation at work and in housing adversely affect workers and their children, especially where workers live at the jobsite, potentially affecting productivity.

10.3 Linkages between social, economic, and environmental outcomes

Access to clean water, sanitation services and water management are basic elements to achieve equitable, sustainable and productive rural economies. It is linked to the reduction of poverty and other environmental, economic and social benefits. Poor sanitation is a source of contaminants which can affect human health, especially workers health (e.g. water-borne diseases such as diarrhoea, malaria and dengue fever), increasing health care expenses and reducing the economic returns.

Improved management and access to fresh clean water and sanitation can reduce the cost of health for workers, save time which can be invested in education and other productive activities, and improve workers health potentially resulting in an increase of productivity.

Also, safe disposal of wastewaters helps to improve the quality of surface waters with benefits for the environment and economics sectors that depend on water as a resource (e.g. agriculture).

10.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- UNSDG (Goal 6)
- Fairtrade standards (HL - SPO)

10.5 (potential) countermeasure(s)

Prevent water contamination; certify working conditions and housing conditions (when POs supply housing as part of their remuneration), build water reservoirs such as ponds, boreholes or drilling wells, cost effective filters to purify water, advocacy to push for infrastructure.

10.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Safe Water for Domestic Use: Household access to water they consider safe to drink
- Safe water for laborers: Laborers' access to water they consider safe to drink during work
- Access to sanitation facilities: Availability (presence) of sanitation facilities in the household.
- Access to safe water: Household access to water they consider safe to drink
- Safe water for laborers: Laborers' access to water they consider safe to drink during work

Metrics Theory of change:

- Percentage of PO member and worker households using an improved drinking water source, by gender of PO member/ worker
- Percentage of PO member and worker households using an improved sanitation facility which is not shared (with non-household members), by gender of PO member/ worker

10.7 Recommendations/amendments

No comments.

10.8 Credible verification / Impact assessments

No comments.

11. Gender inequality and inequity
(challenge: gender equality)

11.1 Relevant definition(s)

Gender equality exists when access to rights, opportunities and returns is unaffected by gender (UN, n.d.-a). In terms of gender equity (not exactly the same as equality), the differences and specific needs between the genders must be acknowledged: e.g. pregnancy. Gender equity is the process of being fair and just to all persons regardless of their gender. Further distinctions were made by TEEB, who defined gender equality as "equal participation of women and men in decision making, equal ability to exercise their human rights, to access and control resources and to reap the benefits of development, and equal opportunities in employment and in all other aspects of their livelihoods" and gender equity as "fairness of treatment for women and men, according to their respective needs" (Tirado von der Pahlen et al., 2018).

In agriculture, gender differences and gaps are extensive (FAO, n.d.-e). Females and other unrepresented genders living in rural settings are more likely to suffer from discrimination, ill-treatment, food insecurity and barriers in accessing resources, services, technology, information, and financial assets.

The associated topics are:

- *Inclusive and equal participation* refers to equal access, participation and consideration in decision making regardless of gender (source: Fairtrade and expert review).
- *Inclusive Management* refers to gender-equal opportunities and presence in management roles.
- *Gender-based income differences* refer to the variance in income and wages based on gender (source: Fairtrade and expert review).
- *Gender-based violence (GBV)* "refers to harmful acts directed at an individual based on their gender. It is rooted in gender inequality, the abuse of power and harmful norms" (UNHCR, n.d.).

11.2 Background

Women are crucial for rural development and "major agents for change" (FAO, n.d.-e). However, the gender gap in agriculture is still extensive. According to FAO (n.d.-e), women as producers face major

constraints to access and own resources such as land, water[113] and farm inputs (fertilisers, pesticides, tools). Also, they lack access to rural advisory and extension services, technology, timely labour, weather and climate, information about sustainable production, and access to credits and financial assets. Due to these constraints when compared to men, women are often considered less productive[114] (Tirado von der Pahlen et al., 2018).

Even though agriculture is in many countries "the largest sector for female employment", women are often "under-represented in local institutions and governance mechanisms, and tend to have less decision-making power" (FAO, n.d.-e). Furthermore, also due to "prevailing gender norms and discrimination [...] women face an excessive work burden, and that much of their labour remains unpaid and unrecognized" (FAO, n.d.-e). FAO further states that if women were guaranteed equal access to opportunities and resources as men "they could increase their farm yields by 20-30 per cent, feeding an additional 150 million people " (Tirado von der Pahlen et al., 2018).[115]

Another critical issue in agriculture and rural areas is gender-based violence (GBV), "statistics show that on average one in three women experience physical or sexual abuse in her lifetime" (FAO, n.d.-d), these type of abuses impacts people's physical, mental and emotional health. GBV affects women and girls in particular, compromising their ability to work, generate wealth and as caregivers, perpetuating poverty and "jeopardizing agricultural productivity, food security and nutrition" (FAO, n.d.-d).

Bias and discriminatory practices against women, non-binary, and other vulnerable groups may be witnessed in Fairtrade PO and among their members, which contributes to the gender-based gaps present in agriculture. For example, gender differences may be witnessed in the lack of female representatives in POs' management, boards and operations; income or wages difference between genders for the same value of work performed by males; and gender-lens of exploitation, abuse and/or harassment. These exclusions and differential treatments of persons based on gender increases disparities, foster discrimination, accelerate poverty and insecurity. In the long run, gender inequality and inequity

113 A policy brief by GWP (2006) stressed that women often face problems to have access to water. As agricultural extensionist or services providers like irrigation agencies and policy makers often overlook women farmers.

114 In cocoa agriculture, for example, farms run by women perform, on average, worse than those run by men. The conclusion is not, however, that women are not suitable farmers. Upon deeper analysis, the reasons are often related to the production conditions where women have smaller farms, fewer resources and are less likely to own their land and have lower financial savings to invest.

115 See also in Kerr t al., (2016) gender inequities in smallholders in Africa through an agroecological framing.

impair sustainable development of farming businesses, communities, nations, including that of farming households and Producer Organisations.

11.3 Linkages between social, economic, and environmental outcomes

The inclusion of women and other marginalised groups could be beneficial to sustainable agriculture production as enhanced net farm profitability and financial transparency is derived from more female ownership, management and participation. Also, when women take control of resources, budgets, and production, communities show higher levels of food security, nutrition, education, and school attendance from a development perspective. On the contrary, exclusions and differential treatments of persons based on gender increase disparities, foster discrimination, accelerate poverty, and increase insecurity. In the long run, gender inequality and inequity impair sustainable development of farming businesses.

Access to land ownership or participation in the financial decisions of the farm, regardless of gender, can make a difference and contribute to better livelihoods.

11.4 Leading framework(s)/standard(s)/regulation

Operative framework

- UNSDG (Goal 5)
- Fairtrade standards (HL - SPO)
- OECD Toolkit for Mainstreaming and Implementing Gender Equality

11.5 (potential) countermeasure(s)

Targeted policy, programs and partnerships to ensure inclusive, diverse and participatory access to and distribution of benefits, resources, technologies, information and knowledge, decent employment and business and trading opportunities, communications and advocacy, including decision-making and management, and right to safe and respectful workplaces; reclaiming women's time by facilitating task such as securing access to water with boreholes in the village, providing cooking technology or child care (setting up childcare groups where women work); champion women-led networks; women school of leadership[116]; worker registries.

116 FTA and NAPP have leadership school programs where the aim is to build skills in areas such as leadership, income diversification, finance, negotiation, decision making and gender equality.

11.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Number of household members through age 18 who have completed the appropriate number of grades for age (disaggregated by gender).
- Attendance at training and in producer organisations (by gender).
- The proportion of decisions about the focus crop made by women and by men.
- Total net income from farms owned or managed by women compared to farms managed by men.
- Women's participation in producer organisation, indicated by the number of ways they participate (participate in meetings, vote, serve as delegate, hold executive post).
- Financial autonomy (aggregated self-reported data, there Is a framework called *fair voice* where people are contacted directly and are surveyed through text messages. It could be something similar for women, and ask questions regarding making financial decisions: if they decide where to spend the money, it requires different data collection and probably more expensive ones).
- Quality information about the difference between male and female workers/farmers.

Metrics Theory of Change:

- Percentage of PO member/ worker households where women are involved in or take important decisions over financial resources and production, by gender
- Attitudes towards gender equality among PO members and workers, by gender (trends over time)
- Number, type and value of Premium projects specifically targeting (1) [SPOs only] Workers, (2) HLOs only] Migrant and seasonal workers, and estimated number of people benefiting, in last calendar year
- Percentage of POs which: (1) had a gender policy and/or strategy by the end of the last calendar year, (2) implemented measures to address gender issues in the last calendar year

Strategy KPI

- Gender Index at the organizational level for SPOs: [topics included related to representation, participation, activities for Gender Mainstreaming, Gender policy]

11.7 Recommendations/amendments

Overall recommendations related to gender inequality and inequity:

- Work with PNs, NFOs to ensure women do not face any gender-based constraints, in terms of accessing services, resources (inputs) and participation.
- Consider the local culture while developing gender policies and programs, as gender imbalances could be the result of social and cultural norms that are inherently limiting equality and is not Fairtrade place to reconfigure their cultural set up. They way Fairtrade can influence is through the creation of opportunities for women and promoting good practices in the community.
- During self-assessment studies, POs should collect data on how many women/non-binaries are members, how many are at the top management, and carry out an analysis to determine their level of gender equality. Afterwards, the person or committee appointed will set up a course of action in the areas to improve (e.g. increase on women participation at the different levels). During audits, POs would have to demonstrate improvement until it reaches a level of gender equality. Improvement can be shown in the participation of women in the premium decision making (committee participation).
- Women need time to be active participant in sustainable agricultural production. Women to be empowered and help household, communities and resilience need to reclaim their time, which is often spent collecting water, wood and doing work for the households. The first two apart from consuming time it could imply a risk for women's safety.
- Women who are given the education and resources to become business leaders tend to be future oriented. They are prone to thinking and planning in the long-term about their business role in supply chains and how to make it sustainable. In addition, it was observed at the Women School of Leadership that women are more willing to income diversification strategies.
- Some research has been done on the inclusiveness of remote voting following national elections.[117] Fairtrade should leverage the opportunity and enable people to participate through mail or other technology, this would make participation more equitable. In this regard, Fairtrade did a social compliance study where instead of

117 See: (Akilli, 2012; C. Gabel et al., 2016; Lupiáñez-Villanueva et al., 2018; Summers et al., 2016)

physical focus groups discussions, they were held online through WhatsApp focus group discussions. That allowed people to give inputs over the course of a week on different questions and allow many members to participate who otherwise would not have been able to, especially women.

11.8 Credible verification / Impact assessments

No comments.

12. Lack of access to energy
(challenge: access to energy)

12.1 Relevant definition(s)

SDG 7 envisions access to affordable, reliable, sustainable and modern energy for all. Energy is a key input to agriculture production and is e.g. used as fuels or electricity to power up machinery and equipment, heat or cool buildings, and for lighting. Moreover, often in rural areas wood is used for cooking which causes CO2 emissions and deforestation.

Associated topics:

- *Energy conservation and reduction* refers to reducing the consumption of energy and improving efficiency in its use (source: consultants based on understanding on the subject matter).
- *Transition to renewable energies* is replacing fossil fuels and no renewable energy with renewable alternatives (source: consultants based on understanding on the subject matter).
- *Access to electricity* refers to the stable delivery of energy to households (implies a minimum level of consumption) (source: consultants based on understanding on the subject matter).
- *Renewable energy* is “often referred to as clean energy, comes from natural sources or processes that are constantly replenished” (NRDC, 2022)
- *Energy efficiency* means “using less energy to perform the same tasks” which leads to “eliminating energy waste.” (EESI n.d.)

12.2 Background

The use of energy in agriculture is present throughout the supply chain and goes beyond the one used directly in production, such as fuels to power up machinery or electricity for irrigation pumps, and includes the energy used to produce off-farm inputs, such as fertilisers, pesticides and other agrochemicals. Currently, most of the energy used in agriculture comes from non-renewable sources, affecting farmers' profits (Gliessman, 2015) and production control. Sustainability cannot be achieved by relying on non-renewable inputs to produce since, one, the natural resources to generate the non-renewable source are finite. Two, it generates dependence and vulnerabilities to supply shortages, market fluctuations and increases in prices (Gliessman, 2015), and three, the use of non-renewable electricity and fossil fuels contribute to climate change by, among other things, releasing CO2 to the environment.

The most non-renewable source used in agriculture is fossil fuels (Gliessman, 2015). However, in Fairtrade POs it might vary depending on the type of production, crop, and type of the organisation (SPO or HL). Another unsustainable energy source, mainly in small producer farms, is charcoal and wood, used as fire for cookstoves. This traditional way of cooking releases CO2, may contribute to deforestation and endangers farmers and workers' health because of the smoke generated from burning the wood.

For agricultural sustainability, improved energy efficiency or the implementation of renewable energy sources such as solar panels are "pivotal to achieving economic sustainability and GHG emission reductions" (Alluvione et al., 2011).

12.3 Linkages between social, economic, and environmental outcomes

Energy efficiency "is the cheapest – and often the most immediate – way to reduce the use of fossil fuels" (EESI, n.d.), and has many benefits such as reducing GHG emissions, de dependence on external inputs, potentially lowering cost and increasing profits. Implementing renewable energy or more efficient methods/techniques to use and save energy such as clean cooking stoves can also positively affect farmers and workers' lives, by preventing, for example, the inhalation of smoke and being an opportunity to generate extra earnings with Fairtrade Carbon Credits.

Transition to renewable energy can be costly, but with the right funding, it can be an opportunity, to provide farmers with long-term source of income as renewable energy (wind, solar, and biomass energy) can be used on the farm to replace other fuels or sold as a cash crop. Also, by

joining or promoting projects related to clean energy (e.g. low carbon emitting cooking stoves), POs can produce Fairtrade Carbon Credits and increase their income.

12.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- EU - 2030 climate & energy framework
- UNSDG (Goal 7)

12.5 (potential) countermeasure(s)

Efficient use of resources and renewable energy; support the transition to renewable/clean energies (for domestic and agricultural production) that can be a long-term source of energy and income e.g. wind, solar, hydropower, biogas heating, and biomass energy; ensure access to the technology or technique e.g. clean cooking stoves to avoid inequalities; invest in renewable energy, and ensure access; by reducing the use of fossil fuels there is a potential for carbon sequestration, based on the emissions avoided, sequestration should be monetized; syngas.

12.6 Other relevant metric(s)

Proposed by Gliessman (2015):

- Ratio of renewable energy input to total energy input: minimum level should approach one
- Ratio of net energy output to total external input: minimum level should maintain as far above 1 as possible

Metrics Theory of change:

- Percentage of PO member and worker households with reliable source of electricity for lighting in home, by gender of PO member/ worker

12.7 Recommendations/amendments

Recommendations specific to a policy:

- Develop and participate in energy efficiency projects that include solar panels to heat water. Further measures could be introducing an 'electronic brain' connected to sensors on the most critical areas of energy consumption. These sensors can be programmed on routines

that incorporate network energy tariffs. So, the incorporated technology will analyse real-time data and recommend the best option for energy consumption at different times to optimise energy use and cost, e.g. at certain peak times when the grid is overwhelmed with demand, prices may tend to rise, the electronic brain will then recommend to power off or to use, if available, energy generated from renewable sources. When demand on the grid falls, and it is convenient to switch, the brain will recommend this and storing renewable energy instead.

12.8 Credible verification / Impact assessments

- Life cycle assessment for energy
- Gold Standard – Renewable Energy

13. Food insecurity
(challenge: food security and nutrition)

13.1 Relevant definition(s)

Food security for farmers, farm workers, their household members, and their local communities entails having physical, social, and economic access to sufficient safe and nutritious food that meets their food preferences and dietary needs for an active and healthy life. If any of these requirements are not met, then there is a risk of ill-health caused by food insecurity.

Associated topics:

- *Food availability* refers to the physical availability in sufficient quantities and appropriate quality (FAO, 2006).
- *Food access* is the access to resources to acquire appropriate and nutritious food (FAO, 2006).
- *Food stability* is to be food secure and have continuous access to food also means there are no acute risks of losing access to food due to a sudden shock or event (FAO, 2006).
- *Food utilisation* refers to reaching a state of nutritional well-being; utilisation is commonly understood as the way the body makes the most of various nutrients in the food (FAO, 2006).

- *Food sovereignty* is a holistic approach, alternative to food security that recognises "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems," (Declaration of Nyéléni, 2007)

13.2 Background

Adequate food is a human right and is included in the SDG N°2. The deprivation or lack of food availability, accessibility, and adequacy may affect the exercise of other human rights and negatively impact the well-being of farmers and workers. According to recent research, smallholder farms account for more than one third (35%) of the food produced globally (Lowder et al., 2021). These farms operate around 12% of the total agricultural land. Even though small-scale farms contribute substantially to global food production they are likely to "suffers disproportionately from hunger, poverty, discrimination, violent conflict, and climate change" (Rikolto, 2021); thus small-scale farmers and farm workers despite being responsible for a large part of the agricultural production, are also one of the "most food-insecure and poorest populations" (Alpízar et al., 2020).

A study conducted in Central America found that among factors of recurrent food insecurity for smallholder farmers are "age, size of the household, land tenure and technical education," and factors of episodic food insecurity is related to "short term availability of labour and capital to avoid the crisis" (Alpízar et al., 2020).118 Moreover, the study found that the climate crisis exacerbates food insecurity among small farm settings. To address the problem, the study recommends adopting food security policies and strategies with focus on "farmer education, securing access to land, generating more off-farm employment opportunities, and providing greater access to technical support, and facilitating intergenerational knowledge exchange" (Alpízar et al., 2020). Also, it suggested diversifying agriculture production to increase the variety of food and income sources and reducing the risks of chronic food insecurity.119 In this regard, various studies found a positive relationship between diversified farming systems and smallholder farmers nutrition (Bellon et al., 2016; Demeke et al., 2017; Jones et al., 2014; Powell et al., 2015).

118 The farmers participating in the study grow coffee and/or basic grains, thus the factors mentioned might not apply to all contexts.

119 Additionally, the research suggested short-term strategies to address food insecurity, such as "providing food, monetary, labour, or other support to farmers during or after an extreme event, possibly involving the female heads of household in the distribution of aid" (Alpízar et al., 2020).

Promoting agroecological practices also have positive impacts on food security such as seed saving, reducing the distance between producers and consumers and addressing food dumping (Anderzén et al., 2020; Bezner Kerr et al., 2021; Caswell et al., 2014; Fernandez & Méndez, 2019; K. S. Morris et al., 2013). Linked to agroecology is food sovereignty, an alternative approach to food security, that intends to put control of food systems in the hands of farmers. This approach also aims at produce food in a culturally acceptable manned in harmony with the environment. Fairtrade has already taken a position regarding food sovereignty in which it recognises that it is key to "improving health outcomes and promoting economic autonomy" (CLAC Comercio Justo, 2020).

13.3 Linkages between social, economic, and environmental outcomes

The relevance of food security and nutrition for producers and workers is its adverse effects on their health. Unhealthy producers and workers cannot give their best to produce, potentially affecting farm productivity and profitability. Also, lack of sufficiently nutritious food to meet their dietary needs can affect their overall livelihoods and quality of life. Unsustainable practices such as not diversifying crops or variety diversity (within the crop) pose a significant risk for food security and small-scale farmers resilience. Furthermore, farmers, by not being at their optimum, are less likely to introduce APs.

For Fairtrade, SPOs and CPOs are more likely at risk of food insecurity, as are Hired Labour Organisations.

13.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- UNSDG (Goal 2)
- Food Sovereignty Framework
- Committee on World Food Security (CFS) - Global Strategic Framework for Food Security & Nutrition (GSF)
- UN - A Road Map for Scaling-Up Nutrition (SUN)

13.5 (potential) countermeasure(s)

Crop diversification to produce and stock food for own consumption; dedicated portion or percentage of the arable land to be used by farmers and workers for the production of non-cash food crops; shift to

sustainable practices to improve productivity and resilience to climate change; training to improve skills that could help mitigate agriculture impacts on the environment; support farmer to farmer learning; better linkages with markets.

13.6 Other relevant metric(s)

Metrics/Indicators proposed by the Sustainability Monitoring and Assessment Routine (SMART):

- Do all members of the farm household have adequate nutritional meals each day?
- Does the farm take steps / implement projects to enhance the food security of the local community, or does it financially support such efforts?

13.7 Recommendations/amendments

- Follow Alpízar et al. (2020) recommendations and tackle food insecurity from different angles: education, land tenure, facilitating the exchange of knowledge and access to technical support. Also, by providing fundings for recovery after external shocks.
- Support actions to strengthen food sovereignty in rural areas

13.8 Credible verification / Impact assessments

No comments.

14.Pesticide pollution
(challenge: efficient use of pesticides and agroecological alternatives)

14.1 Relevant definition(s)

Pesticide pollution is a type of environmental pollution caused by pesticides. The presence or increase of pesticides in the environment can contaminate soil, water, and air, harm biodiversity and adversely impact human health (Aktar et al., 2009).

The associated topics are:

- *Pesticides* include chemical substances, such as, herbicides, insecticides and fungicides, designed to kill, incapacitate, inhibit growth or keep away pests that generally harm crops or interfere with agricultural production (Roser, 2019).
- *Ozone layer depletion* is the reduction or thinning of the protective ozone layer present in the stratosphere (upper atmosphere) by chemical pollution (Adeoye & Aina, 2019).
- *Pest and crops diseases management* refers to techniques and practices to controls pest and diseases (source: consultants based on understanding on the subject matter).
- *Water contamination* refers to the release of toxic substances into water bodies, turning them unsafe for humans and harming the aquatic ecosystem (source: consultants based on understanding on the subject matter).
- *Human illnesses and diseases* refers to the effects human exposure to pesticides (directly or through air, water or food contamination), especially when there is long-term pesticide exposure (WHO, 2020).

14.2 Background

In agriculture, chemicals pesticides are used, among other things, to control weeds and pests. However, it was estimated that only small amounts – less than 0.1% - of the pesticides applied reach the objective (Duke, 2017; Pimentel, 1995).

Excess of chemicals can affect soil fertility as non-targeted soil microorganisms (fungi and bacteria) are killed in the process, which are necessary to store carbon and retain nutrients into the soil and help

plants access those same nutrients[120] (Aktar et al., 2009; Klein, 2019). Moreover, according to some studies, pesticides may cause alterations in the composition of the soil flora leading to the presence of more bacteria than fungi, which can reduce crop productivity and carbon sequestration (Klein, 2019; Pal et al., 2006; S et al., 2015; M. D. Smith et al., 2000). The opposite effect can be achieved in dominant fungal soils (Kelley, 2014).

Pesticides can also contaminate the air, water, non-target plants and even kill the pest's natural enemies, which further affects biodiversity and the ecosystems, endangering species necessary to produce food. Overuse and over-reliance on these substances also contribute to pest resistance, which increases the need to apply more pesticides over time with little inference in crop losses and pest extermination (FAO, n.d.-f).

In agriculture, chemicals can contaminate watersheds primarily through surface runoff and tile drainage (Cedergreen & Rasmussen, 2017). Depending on the method utilised and the amount of chemicals sprayed, spray drift can be another route. Some studies suggest that herbicides could "cause biological impairments of water bodies if they occur in water or sediment at sufficient concentrations" (EPA, n.d.). In addition, the combination of pesticides e.g. insecticides and herbicides, could also lead to impairments (Streibig et al., 1998), "resulting in additive or synergistic effects" (EPA, n.d.), affecting the aquatic ecosystems (Cedergreen & Rasmussen, 2017).

Last but equally important are the effects toxic chemicals in pesticides have on human health. According to the World Health Organisation (WHO), pesticides "are among the leading causes of death by self-poisoning, and this burden is felt disproportionately in low- and middle-income countries" (WHO, 2020). Human exposure to agrochemicals can be through water and food already contaminated. However, the greatest threat is faced by agricultural workers, who work directly with the substances, and those who are near where pesticides are applied (WHO, 2020).

Among Fairtrade crops, Flowers are the most exposed to the risk of chemical pollution since chemicals are necessary to meet specific market requirements and can be a potential source of water contamination

120 According to research, some pesticides "suppress nitrogen-fixing bacteria from replenishing natural nitrogen fertiliser in soil, resulting in lower crop yields, stunted growth and an ever-greater need from additives to boost production" (Potera, 2007). These effects have been observed in leguminous plants, often used in crop rotation or intercropping systems. With the help of bacteria, leguminous transform the nitrogen in the atmosphere into organic and inorganic nitrogen and nutrients to the soil. The process is known as symbiotic N fixation (SNF), a natural and sustainable way to source soils with nitrogen instead of fertilisers (Fox et al., 2007). Some pesticides can "disrupt SNF, decrease plant yield, and render legume crop rotations less effective for maintaining soil fertility" (Fox et al., 2007). Regarding the use of legumes to increase nitrogen on coffee trees revealed that almost "30% of the nitrogen effectively fixed by a legume (including biomass, roots and root exudates) were transferred to the associated coffee tress" (Snoeck et al., 2000).

if the necessary precautions are not taken. Also, Flowers could face problems with the maximum residue values (MRV), which is a big concern for consumers. In this sense, the contamination of the end product is a serious risk for any crop produced with agrochemicals. However, the end product contamination could also happen by wind and water drift or when crops from different producers are mixed or blended.[121]

14.3 Linkages between social, economic, and environmental outcomes

Excess of pesticides sprayed on crops remain in the soil, causing soil pollution and depleting its fertility in the long term. Less fertile soils may lower crop quality, productivity in the long term, and increase vulnerability to pests and diseases. Farmers to maintain yield levels might need to apply more pesticides, generating dependence in external inputs and more pest resistance, ultimately increasing production costs. Pesticides can also endanger the health of farmers and field workers, either because they apply the chemicals (direct contact or by breathing toxic emissions), or because they drink water or eat food already contaminated. Through food or agriproducts contamination, pesticides can also harm consumers.

By introducing alternative measures to prevent and protect crops from pests and diseases, such as enhancing soil health, using natural enemies or natural biopesticides, it can help farmers, their families, and workers, in the long term, to increase productivity and reduce costs positively affecting living incomes and workers' wages and health.

Furthermore, by applying only natural or agroecological alternatives, and in combination with other practices, POs can access organic markets and the organic premium.

14.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- FAO / WHO - The International Code of Conduct on Pesticide Management
- FAO - Pesticide Registration Toolkit
- PAN - International List of Highly Hazardous Pesticides
- Fairtrade standards (HL - SPO - Climate Standards) and list of hazardous materials

121 This implies mixing crops produced with agrochemical with those who were not, or those who were produced with banned chemicals. This could end in with the whole patch contaminated.

14.5 (potential) countermeasure(s)

Sustainable practices

Intercropping, crop rotation, cover crops and mulching; biological management of pests that involves using living organisms and species to reduce pest population (this approach should be carefully analysed before application as biological control agents can cause major problems than pest) or bio-pesticides (chili garlic paste, or preparations with cow manure and urine that should be applied to the soil); integrated pest management; push and pull methods and/ or allelopathy (biochemicals released by plants, that can, for example, suppress other plants' growth); separating water sources/water bodies from crops to avoid contamination (buffer zones); use vegetation to prevent pesticides surface runoff to water bodies; becoming organic, closed-loop water systems; as part of the digitalization of supply chain, the software selection could be one that integrates farm management technology, which provides information for more efficient decision making, for example, based on self-inputted data from the farmer and combined with external data such as humidity, temperature, weather forecast, etc., with an inbuilt artificial intelligence (AI) in the tool can predict pest and diseases, and provide guidance on preventive measures to mitigate the risk or how to counteract the pest or disease; POs could contribute with agrochemical distribution and application to contravene perverse incentives from governments and agrochemicals retailers that encourage farmers to use more chemicals than they need.

Observations

- See observations in biodiversity regarding cover crops, crop rotation and intercropping.
- Pest control by releasing natural enemies often require a community approach or working together with neighbouring farms as it may involve the release of predator or a pathogen.
- Greenhouse Flowers production cannot become organic, since Flowers are susceptible to pests and diseases. Also, the market has specific requirements such as leaves without spots, and heads perfectly put.
- Flower plantations must follow Fairtrade's hazardous material list (HML) list. Nevertheless, as Flowers are not considered food for humans, there is no limit nor a defined maximum residue level of pesticides.

- There is a potential trade-off between practice that require non-soil tillage[122] and agrochemical usage as not every farm can adapt to both practices. Some farmers who practice no-till farming use glyphosate (herbicide), now banned by many countries and by Fairtrade, for weed control.
- There might be some external barriers on the adoption of organic farming by exporters and governments who require the use of chemicals (mass spraying programs).
- Becoming organic in some products require a lot of efforts or due to the production model is not feasible. For example, in Bananas, where the plant is vulnerable to pest and diseases due to the climate. In addition, some producers may consider that there are not enough incentives or enough market share (demand side) to pursue the transition to organic as it could reduce crop productivity and yields which the organic differential might not compensate. Perceptions may also be the result of misinformation.

14.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Integrated pest management: "number of IPM practices employed on farm."
- Pesticides used: "amount of natural or synthetic insecticides, herbicides, fungicides, etc. that are used on focus crop"
- Pesticide use efficiency: "pesticide use compared to level of losses from pest or disease."
- Water Contamination Prevention Measures (COSA): Practices used to prevent water contamination from: crop processing wastewater, animals, domestic discharge, cleaning of agrochemical application equipment, etc.

Other indicators proposed by key informants and other literature

- Number of pests per type and crop suffered in a year.
- Number of pests per type and crop handled with agrochemicals.
- Number of pests per type and crop handled with non-chemical methods.

122 Minimum and reduced soil tillage is suggested as a sustainable agricultural practice by many approaches, e.g. regenerative agriculture, nature-inclusive agriculture, organic farming, and agroecology.

- Number of prevention practices of pests in place.
- Number of farms with an integrated pest management strategy.
- Ratio pest types managed with sustainable practices over managed with pesticides.
- No record of usage of pesticides that include substances that harm the ozone layer depletion (including substances listed in the Montreal Protocol, as well as substances suspected to deplete the ozone layer).

Metrics Theory of Change:

- Percentage of POs which have taken reasonable measures to ensure people are protected from harmful effects of chemicals.

14.7 Recommendations/amendments

No comments.

14.8 Credible verification/ Impact assessments

Use technology that digitalises supply chain.

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15. Lack of agroecological practices (APs) application (challenge: Agroecological Practices (APs))

15.1 Relevant definition(s)

Good agricultural practices (APs) are necessary for the transition to sustainable agriculture. APs are not static, nor is there a set of practices that fit all social, economic and ecological contexts. For Fairtrade APs should entail practices that account for the ecological, social and economic dimensions of sustainability, along with the synergies and trade-offs among the dimensions.

Agroecology is one holistic and integrated approach that incorporate. An example of practices under the approach are agroforestry (see more in Annex F – Agroecology section). Moreover, agroecology is based on bottom-up and territorial processes, helping to deliver contextualized solutions to local problems with people at the centre.

Associated topics:

- *Behaviour change* refers to the alteration or change of habits and behaviours for the long term (source: Fairtrade and expert review).
- *Collective support and farmer-to-farmer knowledge* support and learning refers to the need of support by farmers to learn about sustainable agricultural practices, adapt these practices, and commit to applying them. It may be provided by SPOs, and PNs within the Fairtrade system and also NGOs experts in agroecology (source: Fairtrade and expert review).
- *Combination of training, exchange of practices, and experimentations* is the best way to support change, particularly in the adoption of APs. If farmers exchange practices between them, they are more likely to experiment and share their experiences (source: Fairtrade and expert review).
- *Supporting organic certification*, which Fairtrade already does, is a way to motivate the application of APs (source: Fairtrade and expert review).
- *Cost of training in APs* refers to the affordability of further education or learning opportunities in agriculture (source: Fairtrade and expert review).
- *Access to further appropriate education* refers to the possibility to continue to develop skills and acquire new knowledge that could be applied to produce more sustainably (source: Fairtrade and expert review).

15.2 Background

Conventional agriculture systems that apply unsustainable practices to maximise yields such as overuse of synthetic pesticides and fertilizers, the use of GMOs, and monocropping (Stony Brook University, 2021), can lead to environmental degradation (e.g., soil erosion, loss of soil fertility and biodiversity loss) and socio-economic issues (Rodriguez et al., 2009).

Sustainable agriculture, on the contrary, can generate environmental, social and economic benefits. However, the AP adoption has not been widely mainstreamed yet. Rodriguez et al. (2009) identified the following categories of barriers to AP adoption: economics, education and information, resistance to change, social considerations, infrastructure, landlessness and personal characteristics.

The economic reasons revolve around costs (of materials, equipment, technology) and financial concerns and doubts farmers have regarding whether sustainable practices might reduce costs and increase profits over time. They also have concerns about what a change of practices entails in the short term i.e., trade-offs, such as a temporary decrease in yields, productivity loss,123 and increasing labour cost, which is often scarce. Whether these risks are perceived or real, they are a barrier to adoption (Baerenklau, 2005; Gamon et al., 1994; Norman et al., 1997; Rodriguez et al., 2009). Other adoption limitation linked to the economic domain are the farmer's economic situation, who often face poverty and cannot afford expensive transitions or decreased farm income (Arellanes & Lee, 2003; Norman et al., 1997), and current low trade prices for some commodities that does not cover the cost of transitioning to sustainable agriculture (Norman et al., 1997; Rodriguez et al., 2009).

The second grounds of barriers concerns the lack of sufficient information and education around APs. Often reliable information about the benefits of APs is not available or shared equitably to all (Norman et al., 1997; Young, 1989). In addition, some APs are knowledge-intensive; the adoption of these practices require proper training (Rodriguez et al., 2009).

Personal characteristics barriers include "age, attitudes and beliefs" that in some cases can generate resistance to change (Rodriguez et al., 2009; Wandel & Smithers, 2000).

The last two reasons are infrastructure where farmers cannot adopt APs due to the lack of access to some resources such as energy, supporting services, or infrastructure necessary to develop, for example, drip irrigation. Finally, land ownership, where the lack of land titles often acts as a barrier to adopt APs due to the lack of incentives. Farmers are less likely to invest, e.g., in soils and biodiversity if there is no security that they can legally own the land in papers. Similar effects can be found when land is rented to produce, and the owner is not the one exploiting it.

15.3 Linkages between social, economic, and environmental outcomes

Living incomes, and collective dynamics and support, are key factors in the adoption and transition to APs. Insufficient income may encourage unsustainable practices such as deforestation to increase productivity, overuse of agrochemicals, or slash-and-burn to save labour costs. At

123 For small farmers that lack access to chemicals (pesticides, fertilisers, etc.), APs can also be a mean to improve the protection (against pests & diseases) and the nutrition of their crops. In this case adopting APs results in higher yields.

the same time, as soils degrade, production goes down, and farmers and farm workers have less food and income. Climate change can reduce harvests with similar effects.

APs, in the long term, are linked to better ecological, economic and social outcomes, such as fertile and healthy soils, rich biodiversity, resistance to pests and diseases, adaptation to climate change, secure and quality yields, all ideally leading to better incomes and more equitable practices in terms of gender and opportunities for the marginalised groups. Economically it also means potentially having access to specific markets such as organic and to new markets that could be developed, such as carbon-neutral or carbon-positive products.

15.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- CIDSE agroecology principles
- HLPE agroecology principles
- Fairtrade Standards (SPO, Coffee, Cocoa)

15.5 (potential) countermeasure(s)

Foster or enhance workers and producers to attend courses or training on APs; deliver training on APs that, encourage participation and provide supportive educational experience; develop plans with POs to implement APs and verify/monitor the implementation; agroecological differential, payments for ecological services, support for farmer-to-farmer learning; vocational schools.

15.6 Other relevant metric(s)

Metrics Theory of change:

- Number and type of trainings delivered to PO members and workers by different types of providers in the last year, and average number of participants in each type of training;
- Percentage of SPO member households where training on APs was received in the last calendar year by (1) Male PO members, (2) Female PO members, (3) Other males in the household, (4) Other females in the household, by AP training topic.

Other indicators proposed by key informants and other literature

- Number of POs with an annual AP workplans
- Number of POs implementing AP plans
- Number of agroecological lighthouses identified/highlighted at regional/global scales
- Number and types of trainings that follow a Farmer-to-Farmer methodology[124]
- Number of training sessions aligned with agroecological principles (to assess if any of the principles were under-supported).

15.7 Recommendations/amendments

Overall recommendations related to APs:

- Before planning any training, make a diagnosis of local knowledge and former knowledge and which APs are already implemented. That way, training is primarily focused on new APs. The cost of training should be cost-shared with partnerships.
- Take action and provide training for workers having farms outside the Fairtrade system where they do not apply sustainable practices, e.g., firewood and overuse of chemicals. Fairtrade could cooperate with other organisations to deliver capacity building.
- Emphasise on standards how farmers and workers can embrace or transition to APs that promote sustainable agriculture. For example, it can include steps on how producers can use farmland manure or other friendly practice to the environment.
- Map, collect, and systematise data of the main commodities on:
  - Natural existent conditions of production such as climate, microclimate, topography, type of soils, conditions of soils (erosion, aridification, etc.), rainfall patterns, and others.
  - Sustainable and non-sustainable agricultural practices implemented by POs, including, experiences, outcomes, challenges and lessons learned in the adoption.
  - Fairtrade projects currently active related to sustainable agriculture, including at least the ha. affected, practices involved,

124 This involves farmers sharing knowledge on agricultural innovations within their communities (Lukuyu et al., 2012).

number of partners funding, co-funding the programme (per type of stakeholder), drawbacks and advantages in adoption, challenges and good practices for adoption.

– Other production information such as total production125 on MTs, Kg (Flowers in stems), persons directly working the land (producers, family members, workers and others but engaged in production), profits, costs.

- Collecting data would help Fairtrade to have a clear understanding of the production systems on the ground, the challenges, the drawbacks, gaps, and barriers to implementing APs. It could help well-informed design strategies and to assess the POs status on sustainable agricultural systems considering the definitions provided in section V.2.A Defining sustainable agriculture. Furthermore, it could serve to map the most critical risks POs are exposed to and POs' farming systems alignment with agroecology and organic farming. Based on the information collected in, Fairtrade could develop benchmarks per regions and crops on the application of Aps, taking into consideration that solutions are locally based, benchmark should be focused on areas and design score systems (credit point systems) to grade practices sustainability. Another approach could be using the Gliessman 5 -level framework (V.2.C.c Definitions and transitional pathways to agroecology) to identify POs status in the levels of farming systems transformation or transition to sustainability.
- Conduct feasibility studies of Fairtrade final policies, including advantages and challenges for all crops and build up a transition plan per crop, which should take into account synergies and trade-offs. Based on the feasibility assessments per crop in (7) Fairtrade should discuss how to deal with products that cannot be produced sustainably under the approaches (V.2.C Mapping sustainable approaches to agriculture), definitions (V.2.A Defining sustainable agriculture), and frameworks established (V.2.B Proposed sustainable agriculture risk framework). Some positions on the topic could be:

  a. Phase out or not further invest resources into growing the market for products that cannot be produced using sustainable farming systems.

  b. Weigh the consequences on Fairtrade's image, which can be critically observed by the general public (including Fairtrade consumers), and its ambition to be a leading sustainability

125 This data could be verified with plausibility yield calculations based on polygons and satellite data.

scheme, if unsustainable products (or requiring a type of production that is harmful to the environment) are maintained as Fairtrade due to its historical responsibility to have included them in the past with a clear view towards the benefit of workers and with less regard to environmental impacts.

15.8 Credible verification / Impact assessments

- To assess farmers adoption of APs, Fairtrade can assess levels of pollution in soils, the amount of biodiversity, and adaptation to climate change.
- To assess farmers adoption of APs after training (either delivered by Fairtrade or another organisation), Fairtrade can do a follow-up session (years or months later) to monitor/evaluate if the practices were implemented or not. In the case they were no, Fairtrade can ask the reasons.

16. Social inequity
(challenge: social equity and equality)

16.1 Relevant definition(s)

Social inequity is a cross-cutting risk, and in terms of definitions, there are two essential concepts. The first is inequity, which refers to unfairness and injustice, and the second is inequality that entails unbalances or differences. Both concepts are related as inequalities can be understood as the result of inequity, and often inequalities imply more than differences and fall back into the unfairness of how society is structured.

Therefore, social equity involves the degree of justice, fairness, impartiality and inclusiveness “with which resources are distributed, opportunities afforded and decisions made” (FAO, 2014b). Equity includes the concept of equality, and it “encompasses rights, control over resources, subjective views, capabilities and access to primary goods” (Tirado von der Pahlen et al., 2018). As such, it is a “critical component of most Sustainable Development Goals” (Tirado von der Pahlen et al., 2018), particularly SDG 10 aims to reduce inequalities and ensure no one is left behind. TEEB’s AgriFood Evaluation framework highlights as critical issues for social equity: barriers to land, credit, resources, environmental contamination, wages and working conditions, child and forced labour, slavery, ethical issues, and animal welfare (Tirado von der Pahlen et al., 2018).

The associated topics are:

- *Financial inclusion/services*: includes access to credits, savings, credit history of payments (source: consultants based on understanding on the subject matter).
- *Economic inclusion:* refers to contributions to economic development in rural areas (source: consultants based on understanding on the subject matter).
- *Minimum wage:* is a tool that delivers social justice as it improves the lives of low-paid women and men (source: consultants based on understanding on the subject matter).
- *Digital divide* refers to the gap between individuals who have access to the internet and ICT (information and communication technologies) and those who do not (source: consultants based on understanding on the subject matter).
- *Asymmetry of information* refers to the knowledge differentials from the different actors (e.g. producers and buyers) in transactions, precipitated by unequal access to information. It is linked to lack of infrastructure and access to the information age (source: consultants based on understanding on the subject matter).
- *Lack of cost-sharing:* refers to the unintended adverse effects regulation and supply chain requirements can have on SPOs. SPOs often face a disproportionate burden to pay and bear the cost of compliance without the help of other supply chain actors equally responsible for achieving sustainable production (source: consultants based on understanding on the subject matter).
- *Vulnerable groups*, refers to young or elderly employees, women, non-binary the disabled, minorities and socially disadvantaged (FAO, 2014b).
- *Barriers to land, credit and resources* (see Market barriers and anti-competitive behaviour; and Land rights violations)
- *Wages and working conditions* (see Labour rights violations; Substandard housing, and Work-related morbidity and mortality)
- *Child labour and force labour* (see Labour rights violations, and Child labour)
- *Slavery* (see Labour rights violations)
- *Animal welfare* (see Biodiversity loss)

16.2 Background

Social equity is a key element for sustainable agriculture systems as it recognises "people and their quality of life" as a central issue (FAO, 2014b; Tirado von der Pahlen et al., 2018). An equitable agriculture production system considers and benefits all social groups but brings particular attention to those disadvantaged, vulnerable or discriminated against groups (e.g., people living in poverty and extreme poverty, indigenous people, migrants, and women). Equity contributes to poverty reduction (World Bank, 2005) and in agriculture production, aims at a fairer and inclusive provision and distribution of resources, opportunities and decision making. This entails improving poor and vulnerable people's access to resources such as land and water, securing labour rights, providing access to new technologies, information to make decisions, access to local and international markets, and "investing in improving gender equality and women's rights education and status" (Tirado von der Pahlen et al., 2018).

For Fairtrade POs social inequity has multiple layers. One side relies upon POs unsustainable conducts or actions that can contribute to social inequity, such as aggravating or not addressing the existent differences and breaches in the farms and communities. For example, not providing capacity building, enhancing the wage gender gap, excluding women from decision-making processes, and not having a fair representation of women in the organisation. Also, by making differences and paying less to migrant workers, banning them from joining trade unions, not providing adequate housing (in the case it is part of the remuneration), and not providing health care and social security. POs might also contribute to inequality by not fostering the communities' and members' economic development with the Fairtrade premium.

On the other side, current social and infrastructure conditions in rural areas, such as lack of access to credits and technologies, market barriers and asymmetries of information, are a source of inequities and inequalities between supply chain actors, often resulting in power imbalances in detriment of POs, especially for small-scale settings. These differences and inequities can be the result of the "lack of priority given to smallholders and family farming in national policies" and the "disproportionate share of investment" (Tirado von der Pahlen et al., 2018) not flowing down to small producers.

Another source of unfairness could be the situation small-scale settings face with climate change, especially in the global south, where they often have to bear the cost to adapt and mitigate its consequences alone. The unfairness resides in the fact that major contributions to GHG emissions, global warming, and pollution from agriculture are more likely produced

by the industrial and intensive agriculture systems and other actors in the supply chain, as opposed to small scale producers' contribution. However, the latter are more likely to suffer the severe consequences of climate change, potentially aggravating their economic and financial situation by causing crop losses, decreasing yields, and requiring higher production costs.

Similarly, regulations such as EU HREDD (which could enhance social equity in agriculture supply chains), EU proposal for stopping deforestation and buyers corporate codes of practice requesting compliance with environmental and social requirements might have potential unintended adverse consequences for Fairtrade POs, particularly SPOs, if the cost for transitioning or complying with the requirements are not shared with other actors or not included in the prices buyers pay, increasing the pressure on suppliers who are already in a vulnerable position, often facing poverty and not having the capacity to absorb the demands. These additional costs, which are not shared nor reflected in prices, "leads to strained relationships with buyers and knock-on effects for workers and small farmers organization suppliers" (Nelson et al., 2020). They could also strengthen the imbalances in the power relationships in trade and amplify "trends towards market concentration" (Nelson et al., 2020) to those larger suppliers and companies who can bear the cost.

16.3 Linkages between social, economic, and environmental outcomes

As mentioned, social inequity is a cross-cutting risk and entails, *inter alia*, inequalities related to gender, opportunities, education, capacity building, access to resources and information that prevents self-and community development and perpetuates poverty. In the agricultural context, social inequity is perpetuated e.g. through lack of financial inclusion, market barriers, misinformation, lack of infrastructure and investments and gender inequalities.

By taking actions in the domain of social justice, PO members' and workers' livelihoods may be improved. Working and advocating for higher incomes, democratising opportunities and resources, equal and fair treatment in the workspace (no discrimination), capacity building, equal and cost-sharing of responsibilities across the supply chain, fair trading practices, and empowerment of farmers and workers may push for more sustainable and fair development. Furthermore, aiming at a balanced relationship between buyers and suppliers can increase Fairtrade PO opportunities, such as increased market access and better agreements with suppliers (which can later translate into better conditions for

workers, households, and the community). Also, helping and allowing POs to access and own data and technology that could produce timely, actionable information could reduce cost and increase yields.

16.4 Leading framework(s)/standard(s)/ regulation

Operative framework:

- TEEB's AgriFood Evaluation framework chapter 5 "Social equity, justice and ethics: missing links in eco-agri-food systems"
- FAO "SAFA Sustainability Assessment of Food and Agriculture Systems Guidelines"
- United Nation Sustainable Development Goals

16.5 (potential) countermeasure(s)

Rural development; capacity building; supplier engagement; internet access; training for farmers and hired labour to use the internet and technologies that are beneficial or foster sustainable agriculture, e.g. decision tools, management tools; taking advantage of government programmes that aim to reduce the digital gap e.g. free/low-cost access to the internet or to satellite data in order to monitor crops, land, weather patterns, commodity spot prices and alternative cash-crops; advocacy for cost-sharing among the supply chain and for prices that include the cost of sustainable production.

16.6 Other relevant metric(s)

Metrics Theory of change:

- Number of strategic alliances and joint actions with businesses, government and multilateral bodies, civil society organizations, sustainability initiatives, and funders

Other indicators proposed by key informants and other literature

- See goal(s) and targets (s) in: gender inequality and inequity, low income and low wages, violation of workers' rights, child labour and market barriers and anti-competitive behaviour.
- Number of supply chains where buyers participate and cost-share the transition cost to sustainable production systems and compliance with the upcoming regulation.
- Quality of Life (COSA): "Producer's opinion of the overall quality of life for those on the farm"

- Support to Vulnerable People (SAFA): "*Does the enterprise accommodate varying levels of ability and disability, young workers and aged ones and provide resources to the community to support vulnerable people, women, minorities and the disadvantaged, with social and health services, training, and cultural events for women, minorities and the disadvantaged?*"

16.7 Recommendations/amendments

Overall recommendations related to social inequality:

- Geo-location points and remote sensing can help target resources or focus on areas exposed or sensitive to unsustainable practices, such as deforestation or pollution (farms near a factory with a high level of contamination to the atmosphere). The main restrictions in the implementation are infrastructure, technology (hardware, software, wireless internet), technological education and vertical integration of systems (the connection of data gathered from POs with FLOCERT, Fairtrade and other certification bodies and actors in the supply chain such as commercial partners).

16.8 Credible verification / Impact assessments

No comments.

17. Nutrient pollution
(challenge: efficient use of fertilisers and agroecological alternatives)

17.1 Relevant definition(s)

Nitrogen, phosphorus and potassium are elements in fertilisers (chemical or organic, e.g. from animal manure or vegetal) used to boost crop productivity. If added in excess, Nitrogen (N) and phosphorus (P) flow from agricultural soil to lakes, rivers and oceans, even to the atmosphere, polluting water and air with excess nutrients. Nitrous Oxide (N2O), a powerful GHG (300x the global warming potential of carbon dioxide) which also contributes to the ozone layer degradation, is released to the atmosphere because of fertiliser runoff and water pollution. Lack of sufficient Potassium (K) in fertilisers or in soils, can indirectly contribute to nutrient pollution, as potassium ions help crops absorb nitrogen and phosphorus, thus reducing runoff and contamination.

The associated topics are:

- *Nutrient balance* is a method to determine fertiliser needs (source: Fairtrade and expert review).
- *NPK use and efficiency* refers to the application of fertilisers at the correct time and amount and based on soil types and nutrient needs (source: Fairtrade and expert review).
- *Ocean acidification* is reduction in the pH of the ocean. Nitrogen fertiliser runoff cause eutrophication, which contributes to the ocean acidity (European Commission, 2015).
- *Ozone layer depletion* is the thinning of the ozone layer present in the upper atmosphere.

17.2 Background

Over the years, fertilisers generate imbalances in soil structure, altering the function of soil microbial communities, which disrupts the biological flow of nutrients to plants, "creating a dependent agro-ecosystem and weaker, less resilient plants" (Regenerative Agriculture Initiative & The Carbon Underground, 2017). When fertilisers are imbalanced or applied in excess, it will increase the dependence and weaken plant resilience.[126] Even though synthetic or chemical fertilisers causes more adverse externalities, also overuse and mis appliance of biofertilizers can lead to "accumulation of salts, nutrients , and heavy metals" that could alter plant growth, soil health, water quality and human health (Carvajal-Muñoz & Carmona-Garcia, 2012).

The application of synthetic fertiliser contributes to climate change in many ways, for example through the energy it cost to produce and transport them, the alteration of microbial communities in soils and the degradation of soil organic matter (Regenerative Agriculture Initiative & The Carbon Underground, 2017). Another way is through Nitrous Oxide (N2O), a powerful GHG (300x the global warming potential of carbon dioxide) which also contributes to the ozone layer degradation (Ravishankara, 2015; Ravishankara et al., 2009; Revell et al., 2015; R. Sanders, 2012; Thompson et al., 2019). This potent gas is released into the atmosphere due to fertiliser runoff and water pollution.

Water pollution occurs as a consequence of over-reliance on nitrogen fertiliser, especially when they are not efficiently applied (overuse or

126 According to the Stockholm Resilience Centre (n.d.) and its work on the nine planetary boundaries, "biogeochemical cycles of nitrogen and phosphorus have been radically changed," causing the world to engage in high-risk behaviours such that it finds itself in the unsafe "operating space."

at an inappropriate time). Runoff has negative impacts on watersheds (contamination), human health and the environment (Zhang et al., 2015). It can contribute and cause biodiversity loss, eutrophication, atmospheric N deposition, and emissions of nitrous oxide (N2O) (Jackson, 2011), which ultimately affects crop yields as a comeback (Zhang et al., 2015).

Lack of sufficient Potassium (K) in fertilisers or soils can indirectly contribute to nutrient pollution, as potassium ions help crops absorb nitrogen and phosphorus, thus reducing runoff and contamination.

In agriculture, fertilisers are used to boost crop growth and productivity. Over-reliance on nitrogen fertiliser, especially when it is not efficiently applied (overuse or applied at an inappropriate time), could negatively impacts watersheds and human health. Fairtrade POs cause and contribute to nutrient pollution during crop growth. The use of fertilisers also may contribute to global warming through increased CH4/N20 emissions. For example, it can contribute to ocean acidification, affecting marine life and the communities that depend on the ocean for food and work (NOAA, 2020). Eutrophication also impacts aquatic ecosystems; the excess of nutrients in water leads to algae boom, which blocks light, causing other marine plants to die. During the decay process, water ends up with low levels of oxygen, which can, among others, kill fish, crabs and oysters (NOAA, 2021).

On the other hand, nutrient pollution can affect crop yields in the long run. The overuse of fertilisers triggers a boomerang effect involving other environmental impacts. For example, soils can be harmed over years, increasing its acidity levels and reducing fertility in the future, which may decrease a crop's year-over-year productivity. Another example is that an incorrect application of fertilisers results in runoff which threatens human health, food security, clean water, and livelihoods (IPBES, 2018).

17.3 Linkages between social, economic, and environmental outcomes

The use of fertiliser can negatively affect soils if they are not adequately and efficiently applied. Furthermore, over or untimely application can result in watershed contamination. The excess of nitrogen in water bodies can cause eutrophication, and for humans it could pose a significant threat to health.

Due to the high prices of synthetic fertilisers, SPO is more likely to apply less than required. However, there can be perverse incentives created by the government or other supply chain actors to encourage farmers to use more, for example, by subsidising prices. Also, an increase in incomes could potentially result in more application of fertilisers.

By building farmers capabilities and understanding of the risk associated with fertilisers, and by exposing the benefits that substituting chemicals or other practices that allow a natural fertilisation for example organic, bio-fertiliser, or other preparation made with farm resources, producers can potentially benefit from a cut in cost, from richer soils and increased yields and productivity over time, as natural fertilisers are less expensive and applicability can be sustained in time.

Hired labour plantations such as in Flowers commodity are highly dependent on chemicals to produce, this could pose a risk to the environment and workers if they are not provided with the right equipment and knowledge to protect themselves from exposure.

17.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- Fairtrade standards (HL - SPO - Climate Standards) and list of hazardous materials

17.5 (potential) countermeasure(s)

Sustainable practices

Using natural compost to reduce or eliminate chemical nitrogen fertilisers, especially manure with high phosphorus values apart from nitrogen; cultivation of nitrogen-fixing plants, nutrient management (balance between what the soil needs, and the amount of nitrogen, phosphorus and potassium applied); separating water sources/water bodies from crops to avoid contamination; use vegetation to prevent fertiliser runoff to water bodies (buffer zones), becoming organic; incentivising crop diversification and discouraging monocropping; low-cost AI soil sensors.

17.6 Other relevant metric(s)

Other indicators proposed by key informants and other literature

- N surplus & P surplus (One Earth) Producer's method(s) to determine fertiliser needs (soil analysis report, advice or assessment of a professional, observation, knowledge of nutrient depletion by the previous crop, etc.)
- Nitrogen, phosphorus, and potassium amounts in synthetic fertilisers used and compared to focus crop yields - indicates both efficiency and potential pollution (COSA).

- Farmers should be able to show progress in the application of the nutrient management plan.
- Attendance to training / number of training/ yes/no compulsory training on fertilisers.

17.7 Recommendations/amendments

- If becoming organic is not possible, then Fairtrade should require an efficient use of nitrogen and the development of a nutrient management plan. For annual crops, the plan should be based on conserving the soil, nitrogen ploughing in the crop residues, proper crop rotation or intercropping where one of the crops is a nitrogen fixation plant or a leguminous crop.

17.8 Credible verification / Impact assessments

MPS certification

18.Inability to trace supply chain

18.1 Relevant definition(s)

Traceability in supply chains refers to the ability to track a product, from origin to its various chains of value addition (Banerjee & Menon, 2015). It allows for identifying actors and associated production conditions that act on the community and the natural ecosystem. For Fairtrade-certified supply chains, traceability permits the tracking and tracing of crops and other products from the farm to consumers.

Associated topics:

- *Leakage-in refers* to the filtration of products that were not produced under Fairtrade standards into the Fairtrade supply chain (source: consultants based on understanding on the subject matter).
- *Traceability* refers to the system that allows tracking and tracing products from the field to the buyer (source: consultants based on understanding on the subject matter).
- *Transparency* in supply chains is a means to increase traceability and "refers to the capture and transference of 'high-level' information along the supply chain" (SGS, 2018). Information collected includes accurate product data such as the name of suppliers, location, facilities, and certificates.

- *Chain of custody* refers to the filtration of products that were not produced under Fairtrade standards into the Fairtrade supply chain (source: consultants based on understanding on the subject matter).
- *Digitisation* refers to the process of converting analogue data (e.g. paper) into digital form (Brennen & Kreiss, 2016; OED, 2014)
- *Digitalisation* refers to the "adoption or increase in use of digital or computer technology by an organization, industry, country, etc." (Brennen & Kreiss, 2016; OED, 2014)
- *Supply chain digitalisation*, a subtopic of digitalisation, is the implementation of novel digital technology in the supply chain processes in order to conduct business. The application of technology has the potential to transform the "supply chain capabilities and operational performance" (Ehie & Ferreira, 2019)
- *Data ownership* refers to "the possession of data and the responsibility for information" (Responsible Conduct of Research [RCR], n.d.). Data is a means of production and an asset that can be traded (OECD, 2020); ownership refers to power and control (RCR, n.d.).
- *Segregation vs mass balance,* refers to two different approaches to source a certified product. A segregated model implies keeping physically separated certified products from non-certified products across the supply chain. Mass balance, on the contrary, occurs when certified and non-certified products are mixed at some point in the manufacturing process (Fairtrade International, n.d.-c).
- *Human rights due diligence* refers to actions and efforts to prevent human and environmental rights violations (CBI, 2021). For UNGPs, it "is a term used to describe a cyclical process through which businesses identify, prevent, mitigate and communicate publicly about their actual and potential adverse human rights impacts" (Holly & Methven O'brien, 2021).
- *Interaction among traceable systems* refers to the compatibilities and harmonisation of the systems set up by national regulation and big companies, in order to close discrepancies.

18.2 Background

Supply chains and trade worldwide are on the brink of a profound paradigm shift with supply chain traceability. As already mentioned, traceability allows following the origin of the products or materials used in production, from the beginning (origin) to the end (consumers). It also

provides information that serves multiple purposes, such as improving efficiency, resilience and competitiveness. In addition, it can be used to make better and informed decisions. For example, robust and transparent traceability can give POs access to information at other levels/tiers, increasing their bargaining power. Traceability is also a key aspect of certification labels which generally certify the origin of a product, including how it was produced (Saenz et al., 2021).

Traceability has become a key enabler of sustainability due to pipeline regulation and changes in consumption and business strategies. Consumers, for example, are concerned about the quality, safety and conditions in which food is produced, basing their consumption decisions on them (Saenz et al., 2021). Companies, in addition to responding to these consumer changes and complying with regulation, found other advantages such as the visibility of inputs and processes, which can result in higher revenues. Robust traceability, however, requires the collaboration of all supply chain actions. In fact, there is value creation by sharing information, and data among actors at different levels of the supply chain.

For Fairtrade POs, which often are in the origin tier of supply chains, critical factors need to be addressed to take traceability as an opportunity and not a burden. Factors are: cost-sharing the cost of implementing a robust traceability system across the supply chain, data ownership, harmonisation of systems, Leakage-in, and the possibility to monetise data produced by POs.

18.3 Linkages between social, economic, and environmental outcomes

Leakage-in is present the supply and demand side. On the supply, market participants seek to access the Fairtrade-certified by introducing non-certified crops into the Fairtrade system. On the demand side, leakage-in can involve opportunism, i.e. people trying to game the system for their benefit, such as traders. These unsustainable practices could harm the system generating side margins on selling illegal crops as legitimate. Consequently, generating problems with suppliers due to the inability to assure "certified" crops did not contribute to illegal deforestation or produced with banned chemicals. For Fairtrade, this condition also means paying more premiums than it should.

Being able to trace the origin of the crops will become a key requirement due to pipeline regulation; not producing nor collecting that type of data could exclude POs from reaching certain markets, ultimately affecting PO's ability to trade and maximise revenue. Introducing systems capable to

collect and monitoring the required elements will be costly, but there are distinct advantages. Depending on the proprietary nature of the data and the capacity of POs to collect it, POs can leverage their monopoly position over data collection in their favour to run their business and find other potential usages, including the very sale of the data. Their journey towards such professionalisation will however need to be centrally supported.

18.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- OECD-FAO Practical Business Tool on Deforestation, Forest Degradation and Due Diligence in Agricultural Supply Chains
- Rainforest Alliance Accountability framework
- ISO 22005:2007 Traceability in the feed and food chain — General principles and basic requirements for system design and implementation
- World Economic Forum Digital Traceability: A Framework for More Sustainable and Resilient Value Chains
- ISCO Public-private platforms for sustainable Cocoa

18.5 (potential) countermeasure(s)

Satellite-based monitoring, modelling the estimated output of a farm; field audits including stock audits; train PNs and FLOCERT in forensic auditing including auditing contracts sold under Fairtrade and no Fairtrade terms; digitalisation of supply chain; digitalise internal management systems; implementation of traceability systems and technology that will be required by upcoming regulation (some software are IMS, smart contracts or blockchain).

18.6 Other relevant metric(s)

No other metrics suggested.

18.7 Recommendations/amendments

Overall recommendations related to inability to trace the supply chain:

- Fairtrade should consider the work done from other certification schemes on traceability systems in the supply chain such as Rainforest Alliance.

18.8 Credible verification/ Impact assessments

- Blockchain traceability software, satellite monitoring and auditing, geo-localisation.
- Fairtrade should let know POs, it is controlling or monitoring deforestation with geo-localisation and other technologies for the deterrence effect but should perform the actual control on a sampling basis at least once a year.
- Fairtrade should engage with the community and strengthen its relationship with community leaders, who can serve as eyes and ears of what is happening in the ground. This way Fairtrade will be able to identify risks areas where deforestation could be happening or any human right violation.
- FLOCERT should do assessments/audits considering the risk of deforestation in some areas. They should work with national maps indicating protected areas, areas of forest or areas under high risk of deforestation and select in the sampling POs that are near the identified areas.
- Do “plausible yield” analysis for farms to detect anomalies.
- Fair insight tool initiative by FLOCERT to provide data and reports to POs tool where peers can register some information for the time being only for the premium use and use it as a monitoring internal.

19. Waste and food loss

(challenge: reducing, recycling, reusing, and sharing)

19.1 Relevant definition(s)

Waste and food loss refers to food or substances or other elements needed to produce food that are discarded, required to be discarded, or where there is the intention to discard. According to FAO, food loss “is the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers and consumers” and occurs “from post-harvest up to, but not including, the retail level” (FAO, n.d.-b). Food waste “refers to the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers” (FAO, n.d.-b).

Associated topics:

- Organic waste refers to crop waste, manure, food, etc., (source: consultants based on understanding on the subject matter).
- Inorganic waste includes plastics, metals (source: consultants based on understanding on the subject matter).
- Hazardous waste includes toxic substances such as pesticides and fertilisers (source: consultants based on understanding on the subject matter).
- Circular economy "is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible"(European Parliament, 2022).
- Waste reduction refers to using less resources (e.g., materials and energy) minimising waste and preserving natural resources (source: consultants based on understanding on the subject matter).
- Recycle "is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products"(US EPA, 2021).

19.2 Background

Food waste and food loss are global issues and of great public concern. Project Drawdown (2021) estimated that "roughly a third of the world's food is never eaten, which means land and resources used and greenhouse gases emitted in producing it were unnecessary". In this regard, food waste approximately accounts for 8% of global emissions (Project Drawdown, 2021). In addition, FAO (2014) estimated that the annual full economic, environmental and social cost of food waste is USD$ 2.6 trillion (FAO, 2014c).

Following FAO (n.d.-b) distinction on the concepts the most relevant for agriculture and Fairtrade POs in terms of field of action is food loss, which occurs between post-harvest and up to, but not including, the retail level. However, actions to reduce waste should be taken along the supply chain.

In the case of low-income countries, Project Drawdown (2021) also found that "wastage is generally unintentional and occurs earlier in the supply chain—food rots on farms or spoils during storage or distribution." In contrast, in countries with higher income, wastage is at the end of the supply chain when "retailers and consumers reject food based on bumps, bruises, and colouring, or simply order, buy, and serve too much" (Project Drawdown, 2021).

The relevance of waste in agri-food systems relies on the fact that many people are suffering hunger while at the same time food is being wasted. Also, it relies on the resources consumed to produce the food.

Reducing food loss is vital to ensure sustainable consumption and production, and there are many ways in which it can be advantageous for producers, even representing opportunities to diversify and reduce external inputs, reducing cost, increasing revenue, productivity, and ultimately impacting farmers livelihoods. A concept related to food loss and that is helpful to understand the possible countermeasures is circularity or circular economy. For example, turning into by-products crops that did not pass the quality control for export but are in good condition to be consumed locally after some processing. Another example could be using organic waste to cover the soil or creating green manure to fertilise.

19.3 Linkages between social, economic, and environmental outcomes

Food loss could occur due to inadequate harvesting time, climatic conditions, harvest and handling practices, and challenges related to selling products. The loss of resources needed to produce the crops needs to be accounted for, such as water, land, energy, labour, capital, GHG emissions, and chemical pollution. POs can also contribute to inorganic waste, as plastics are used to operate equipment (disposable gloves), feed sacks, harvest nets, containers, etc., which pollutes the surrounding environment.

Reducing food waste means using less water, chemicals, reducing GHG emissions, avoiding deforestation, and it could potentially liberate lands to reforestation and recover biodiversity that could be used as carbon sinks.

19.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- FAO - Global Initiative on Food Loss and Waste Reduction
- FAO - Technical Platform on the Measurement and Reduction of Food Loss and Waste
- UNSDG (Goal 12)

19.5 (potential) countermeasure(s)

Management of crop waste and hazardous waste (from pesticides e.g. the containers); usage of organic waste to create biomass, an energy source; avoid incineration of waste and residues, waste reduction and waste recycling; water management; avoidance of food loss by harvesting on-time, and good practices; adequate storage facilities, packing and efficient transportation

19.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Local nutrient cycle: recycling of organic matter and crop wastes
- Responsible Waste Management: Materials recycled, reused, or disposed of properly

Metrics Theory of change:

- Percentage of POs which have implemented reasonable measures to ensure waste is managed in an environmentally responsible way

19.7 Recommendations/amendments

No comments.

19.8 Credible verification / Impact assessments

- GIZ - Circular Economy Impact Assessment
- Life Cycle Assessment on food waste

20. Substandard housing
(challenge: appropriate housing)

20.1 Relevant definition(s)

Adequate housing is a basic need, which has been recognised as a human right. The status of adequate or appropriate housing means meeting some minimum criteria: security of tenure, availability of services, affordability, habitability, accessibility, location and cultural adequacy (see definitions of each in associated topics). Furthermore, SDG 11 target 11.1 points to “ensure access for all to adequate, safe and affordable housing and essential services and upgraded slums” by 2030. Despite

the relevance of the topic, often in agriculture farm workers (including migrant workers) face issues with poor housing conditions.

Associated topics:

- *Adequate housing & living conditions*: refers to housing in sanitary conditions, with good roofing, access to clean water and proper security, near essential services such as hospitals, public transportation and stores (OHCHR, n.d.-b).
- *Security of tenure* refers to the legal protection against threats such as evictions (source: consultants based on understanding on the subject matter).
- *Availability of services, materials, facilities and infrastructure*: refers to access to safe drinking water, adequate sanitation, energy for cooking, heating, and lighting (source: consultants based on understanding on the subject matter).
- *Affordability* is related to the cost of decent housing and accommodation which "should not cost the worker more than a reasonable proportion of income, whether by way of rent for, or by way of payments towards the purchase" (ILO Workers' Housing Recommendation, 1961 No. 115)
- *Habitability* is related to physical safety, adequate space, and shelter from the cold, damp, heat, rain, wind, and other hazards (OHCHR, n.d.-b).
- *Accessibility* refers to equal access that includes vulnerable and marginalised groups (source: consultants based on understanding on the subject matter).
- *Location* is related to where housing is provided – and the proximity to basic services (e.g., health and education) and infrastructure. Also, close to employment opportunities, and away from polluted or dangerous areas (OHCHR, n.d.-b).
- Cultural adequacy is related to housing respecting and considering "the expression of cultural identity" (OHCHR, n.d.-b).

20.2 Background

The right to adequate housing entails more than having shelter and involves as mentioned before "the right to live in safety and dignity in a decent home" (OHCHR, n.d.-b). In rural areas, substandard housing "is more prominent" along with the lack of physical and social infrastructure.

Poor and inadequate housing conditions in the sector can lead to health issues, "including respiratory infections, asthma, lead poisoning, injuries, and mental health" potentially affecting farm performance. In addition, it could also prevent the enjoyment of other human rights (Krieger & Higgins, 2002).

Proper housing conditions are regulated by international laws and treaties, and is particularly relevant within the Fairtrade systems when it is provided as part of the remunerations of workers. In such case, employers must follow the legal requirements that ensure "adequate and decent housing accommodation and a suitable living environment" (ILO Workers' Housing Recommendation, 1961 No. 115).

20.3 Linkages between social, economic, and environmental outcomes

Poor housing conditions can affect workers health, well-being and work performance. Likewise, inadequate housing for farmers could affect their profits, since they would not be in optimum conditions to perform well in the farm, potentially damaging their income and increasing the cost of production, if they require hiring extra labour, which is not often the case due to the poor economic situation of some small producers.

For workers there are similar consequences, particularly when POs are the ones supplying housing as part of compensations. It's crucial for the performance of the farm, to cover the basic living conditions such as drinking water and sanitation, as POs are at risks of a loss of productivity or a decrease in yields and efficiency since workers might not be at the best of their potential or could be unmotivated.

Workers and farmers unmotivated and facing health issues go in detriment of the adoption of some APs, as they could be labour intensive or require time, energy and effort to be implemented.

20.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- ILO Workers' Housing Recommendation, 1961 (No. 115)
- ILO Helpdesk Factsheet No. 6, 2009: Workers' housing
- Special Rapporteur on the right to adequate housing
- Fairtrade Standards (HL)

20.5 (potential) countermeasure(s)

Fairtrade seeks to mitigate these risks for some worker classes, notably in its Hired Labour Standard, requiring adequate and decent housing than affords a suitable living environment for workers. A further step would be to include the inspection of housing conditions in its certification audits, including SPO settings.

20.6 Other relevant metric(s)

Metrics Theory of change:

- Percentage of HLO worker households with decent quality housing, by migrant status and gender of worker

20.7 Recommendations/amendments

No recommendations.

20.8 Credible verification / Impact assessments

No comments.

21. Lack of political voice
(challenge: agency)

21.1 Relevant definition(s)

Political voice entails being heard by engaging in activities for the purpose or with the intent of influencing actions. Within the Fairtrade system, political voice has many faces. On one side, it refers to 1) farm workers having the agency to participate in POs corporate governance with the associated representation of labour interests and rights 2) their ability and freedom to participate in trade unions and later collective bargains. On the other side, political voice is also relevant to Producers Organisation's and workers' ability to participate in PNs and in the Fairtrade system in order to represent their interest and participate in decision-making. A third aspect of political voice is the participation of Fairtrade actors (e.g., producers, farm workers, PNs) in developing policies [127] and being heard by other institutions, governments, in trade

127 The capacity for Public Policy Advocacy to influence policies at different level: local, regional, national, international, should be developed and encouraged.

relationships and commercial relations. Lack of political voice generally refers to the inability to be heard and represented, which can lead to systemic grievances and social inequalities.

The associated topics are:

- *Governance structure & mechanism* refers to controls, policies, practices that drive the organisations towards objectives (source: Fairtrade and expert review).
- *Producer Organisations' participation in Fairtrade system* refers to representation of POs interest (source: Fairtrade and expert review).
- *POs governance and co-determination* refers to workers' participation in POs corporate governance (source: Fairtrade and expert review).
- *Trade unions* refer to the "association of workers in a particular trade, industry, or company created for the purpose of securing improvements in pay, benefits, working conditions, or social and political status through collective bargaining"(Britannica, 2019).
- *Worker participation*

21.2 Background

Voices of POs, producers and workers being heard across the supply chain and the Fairtrade systems is highly relevant for sustainability. Ensuring no one is left behind (e.g. men, women, youth and adults, land owners and farm workers) or excluded could impact innovation, productivity, communication and the adoption and transition to sustainable practices in agriculture.

Research points out that workers behaviour "is one of the most critical factors translating sustainable principles into practice" (Čiarnienė et al., 2021). Therefore, it is necessary to hear and integrate their perspectives on work activities, decisions, and at any other level or element that could improve their work environment and situation. According to Čiarnienė et al. (2021), workers' voices could be considered from different angles, one concerning the macro-level, which includes unionism and collective bargaining. The other side is the micro-level that influences the decision-making process (Dundon et al., 2004; Morrison, 2014; Su et al., 2017; Tsang & Zhang, 2018).

A recent study on Fairtrade workers in SPOs for Bananas (Colombia, DR and Perú) and Cocoa (Côte d'Ivoire and Ghana) found a case of higher results as a consequence of labour participation in election and SPO governance. The study also suggested co-determination as a form of corporate governance where SPO membership would be extended to

workers (sharecroppers, tenant farmers and permanent labourers) and "one-third of the SPO board would be represented by the labour supply" (de Buhr et al., 2020).

Incorporating farm workers in the dynamic of POs structure and other actors of the Fairtrade system could help build strong relationships and trust, bring innovation, productivity and organisational improvement. For workers, "self-expression in voice often results in feeling valued, increased job satisfaction, greater influence and better opportunities for development" (CIPD, 2021). Also, hearing workers voices can create inclusive and safe working environments.

Similarly, the incorporation or fair representation of all actor in the Fairtrade system, POs and workers fair and equal participation in PNs, and PNs being involved in the discussion and development of Fairtrade policies and strategies could bring added value, understanding and better acceptance and adoption of the changes.

Different approaches are needed for strengthen producers and farmworkers voice and advocacy capacity.

21.3 Linkages between social, economic, and environmental outcomes

Agricultural workers often lack representation among the bodies that make decisions on the farm resulting in their interest often being represented, this could be the result of lack of trade unions support in rural areas. Also, farmers or producers, and workers can see their interests not being addressed within the Fairtrade system and structure. For example, by not being correctly represented in PNs.

POs can negatively impact workers and farmers political voices and rights by not involving them in a POs governance and decision making, e.g. deciding where to spend the Fairtrade premium. Not taking into account workers opinions structurally disempower them and can impact their quality of life. On the hand, not allowing workers to participate in PO governance can result in foregone opportunities, as worker participation may improve worker ownership and raise productivity. Furthermore, some Producer Organisations' members might be neglected when making decisions, as power could be centralised within POs leadership.

21.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- Fairtrade standards (HL, SPO)

21.5 (potential) countermeasure(s)

Corporate governance co-determination (involve workers in POs governance through trade unions or workers representatives); require that a part of the Fairtrade premium benefit directly or indirectly hired workers; transparent internal POs voting mechanisms (General Assembly/ Board); internal communication among POs members; introduce control mechanisms to guarantee representation and participation for all POs members; POs managing and owning their data; POs and producer participation in fundraising and in international events, encounters or projects with the aim to initiate relationships and connect with other organizations and agencies so they can speak and be heard; providing POs, farmers and workers access to ICT (information and communication technology), resources and infrastructure. Also, by IT literacy and capacity to connect, use the data and analyse data; full understanding of the organization and becoming entrepreneurs in other to be able to speak and make their voice hear, for example with traders and banks.

21.6 Other relevant metric(s)

Other indicators proposed by key informants and other literature

- POs data management ownership (do POs own their data)
- Number of POs and farmers connected to other organizations through a development project or other linkages.

Metrics Theory of change:

- Number and percentage of workers contracted by POs who were members of trade unions at the end of the last calendar year, (2) [HLO only] breakdown of trade union members by gender and type of contract
- Degree of self-confidence and sense of control over lives experienced by PO members and workers
- Percentage of PO members and workers who report working collectively with others to bring about improvements in their communities, by gender
- Percentage of PO members and workers who perceive that dissenting opinions can be raised and are respected in their communities

- Percentage of POs where (1) PO management, (2) [HLOs only] worker representatives perceive POs are able to influence policies and regulations within the Fairtrade system, and percentage using each type of channel to do so
- Degree to which workplace trade union(s)/ other form of worker organization has linkages with (1) other company level trade unions/ worker organisations, (2) national trade union organisations, (3) international trade union organisations
- Percentage of SPOs where the Fairtrade Development Plan includes at least one activity which benefits workers and was designed in consultation with workers
- Percentage of all Fairtrade certified POs which participated in at least one Fairtrade PN event or activity in last calendar year, and percentage of delegates at PN organized events who were (1) PO management representatives, (2) PO members or workers, by type of event
- Degree to which trade union representatives are free to carry out union activities without interference by management

21.7 Recommendations/amendments

Overall recommendations related to lack of political voice:

- Fairtrade should take more bottom-up approaches and, allow POs and the PNs codetermination. Fairtrade should not impose ideas or dictate agendas, solutions should be the result of discussions, co-development, and co-direction with POs and PNs.

21.8 Credible verification / Impact assessments

No comments.

22. Child labour
(challenge: child rights)

22.1 Relevant definition(s)

According to the ILO, child labour refers to "work that deprives children of their childhood, their potential and their dignity, and that is harmful to their physical and mental development" (ILO, n.d.-c). It includes work that "is mentally, physically, socially, or morally dangerous and harmful to children; and interferes with their schooling by depriving them of the opportunity to attend school or obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work" (ILO, n.d.-c). The definition and specification of child labour is premised on the minimum age of employment, as stipulated in ILO Convention No. 138 concerning the minimum age, and ILO Convention No. 182 concerning the worst forms of child labour, which includes the practice of hazardous child labour and child trafficking for labour purposes.

Associated topics:

- *Child Labour (ILO Convention No. 138)* is any employment or work below the age of 15 years (13 years for light work). However, depending on a country's economic development, poverty or lack of educational resources, the minimum age is set at 14 years old (12 for light work). ILO Convention No. 138 also establishes that in the case of hazardous work, child labour is below the age of 18 years old, yet under certain strict conditions it could be below 16 years old.
- *Worst Forms of Child Labour (ILO Convention No. 182),* is work carried out by persons under 18 that that could likely harm the health, safety or morals of children. Moreover, it identifies four types: hazardous work, slavery-like practices, use of children for commercial sexual exploitation, or in illicit activities.
- *Forced Labour (ILO Convention No. 29, 105),* all work or service exacted from any person under menace or penalty and for which the person has not voluntarily offered himself.
- *Foregone economic returns of education*, refers to child labour impairing the formation of human capital and preventing or limiting the significant economics returns of education.
- *Pervasive poverty in rural areas*, refers to persistent levels of rural poverty (Khan, 2001).
- *Untapped potential of youth* (see *Youth unemployment, poverty and lack of decent livelihood opportunities*).

22.2 Background

The agriculture sector accounts for approximately 70% of the world's working children in terms of individual child labourers (FAO, n.d.-a; ILO & UNICEF, 2021). In addition, according to ILO *(2019)*, agriculture is in "the top five exporting industries with risk of child labour in their supply chain" by direct contribution and in all regions[128]. The same ILO (2019) report showed that even though child labour is most likely to happen in domestic production, which is often the case of agriculture, there is a risk that children are contributing to global supply chains. In this respect, to address the problem, ILO (2019) suggest (2019) broadening the systems to look beyond the immediate suppliers and scrutinise "upstream production activities such as raw material extraction and agriculture serving as inputs to other industries." The EU upcoming regulation in human rights due diligence and other national regulation such as the Dutch Child Labour Due Diligence Law favour this approach.

Work that can be classified as child labour depends on the age of the child, the type of task performed, the number of hours, the conditions in which the job is performed and the regulations of the different countries (see ILO conventions and definitions above). Moreover, child labour could be harmful to children's physical and mental well-being since the tasks involved are likely to put their health and development in danger whether the work is performed on the family farm or for another plantation unrelated to the family. Furthermore, hazardous labour is commonplace in agriculture where, e.g., applying pesticides and continuous exposure to toxins can lead to chronic diseases such as cancer or development issues.

Child labour major underlying cause poverty. Poor households, whose member do not earn sufficient income (including wages) or are "working at or below the poverty line" are more "likely have to resort to child labour at the expense of their children's education to meet basic needs and deal with uncertainty and shocks[129]" (ILO, 2019). Research has also link low wages with poverty which "can result in situations of debt bondage, for instance where workers take on loans with usurious interest rates as a coping strategy. Delayed or missed payment of wages can also create barriers to exit". Among the pressures that can lead to child labour in agriculture are "parents turning to children to help them meet quotas or increase earnings where wages are low" (ILO, 2019). Apart from household multi-dimensional poverty, further reasons for child labour

128 Sub-Saharan Africa, Eastern and South-Eastern Asia, Central and & Southern Asia, Northern Africa and Western Asia, and Latin America and the Caribbean.

129 Shocks can be of different kinds, such as related to health ("illness of caregivers or primary wage earners"), death, climate change (natural disasters, loss of crops, crop diseases, etc.), market and prices.

include low crop prices, poor-quality schooling, lack of social security and financial safety nets, poor enforcement of labour rights and laws, low level of parent education, lack of awareness on the effects of child labour, lack of decent opportunities for youth, and the lack of adult labour supply at specific compensation rates.

A word of clarification is that not all work done by children is considered child labour. Work that is not detrimental to children's' health, education and development may be beneficial, especially in agriculture, to initiate, motivate and provide youth with skills and experience necessary for the future (FAO, 2014b).

22.3 Linkages between social, economic, and environmental outcomes

Child labour affects the social, ecological and economic domains in many ways, hindering the development of sustainable agriculture (FAO, n.d.-a). It also perpetuates intergenerational poverty and generates low skilled labourers by preventing children from attending school (basic human rights) or contributing to absenteeism and academic performance. Additionally, it worsens children's well-being, as harmful agricultural labour is likely to put their health and development in danger (FAO, n.d.-a).

Positive links can be done with youth since the reduction of child labour could increase opportunities for young workers in agriculture (European Commission, 2021b). Furthermore, young people over the age of compulsory education or 15 years have the right to perform non-hazardous or non-exploitative and non-abusive work i.e. work that is not considered child labour. In fact, their ability to engage the labour market through e.g. apprenticeship roles, can provide them with skills and networks that may put them on a path to higher income and incentivise them to stay in the sector.

As stated above, there are linkages between child labour and PO revenue, as unskilled workers might be less likely to adopt APs, e.g. knowing how to protect nature while producing. Moreover, eliminating child labour may push up adult wages (de Buhr et al., 2020).

22.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- UNSDG (Goal 8)
- Fairtrade standards (HL - SPO)

22.5 (potential) countermeasure(s)

Producer organisations implement monitoring and response system to control for child labour, including an Internal Control System (ICS) required by Fairtrade. An innovative child labour monitoring systems is notably the Youth Inclusive Community-Based Monitoring and Remediation System on Child Labour (YICBMR) is an approach that features youth monitors to undertake community-based monitoring, allowing youth to also input on issues concerning child and youth well-being, including child labour; setting up in POs internal committees responsible for preventing child labour, forced labour, and other labour rights violations.

Relevant policy and programs include sensitisation and targeted training to producer organisations and their members. Partnerships with stakeholders involves engagement and advocacy with governments to implement national action plans for child labour eradication. Other approaches include establishing grievance mechanisms or other mechanism to report child labour (preferably both digital and analogue channels); working towards living incomes and wages for all farmers and workers, as well as delivering decent youth employment, income diversification.

22.6 Other relevant metric(s)

No other relevant metrics.

22.7 Recommendations/amendments

Overall recommendations related to child labour:

- Increase understanding within the Fairtrade system the relevance of introducing children to the culture at a young age, as this is the right time to introduce them to farming before they lose interest. Fairtrade should prevent falling into the artificial distinction between children helping their parents on the farm in countries such as Europe and the US, which is more likely to be viewed favourably, and children doing the same in producing countries such as Ghana, Brazil, Dominican

Republic and others where Fairtrade operates. In this sense, Fairtrade should consider work done by children to help their parents as allowed, provided it respects the international frameworks (ILO and UN conventions) and national laws.

- Advocate for supply chain actors and other stakeholders contributing to the identification and remediation of child labour since POs might find difficulties in addressing the risk once it is detected due to the lack of resources. Moreover, Fairtrade could take advantage of an inclusive approach by recognising the other actors involved in the POs monitoring and remediation systems and bringing them into Fairtrade reporting structures to capture information to begin understanding the scale of the problem. A roadmap:

    1. Fairtrade should require systems to be put in place;
    2. Fairtrade should work to generate the inflow of income necessary to fund and maintain the system, with the POs and the commercial partners;
    3. Analyse the data produced, which over time, it should be expected to increase the numbers of cases identified in alignment with the risks identified.

22.8 Credible verification / Impact assessments

- Include as part of the audit assessing the monitor and remediation systems performance (e.g. if they have an independent monitoring committee and if remediation in the case the issue was found it was successful) and the evaluation of the data produced (e.g., number of cases detected and remediated)
- Traceability systems (see 16. Inability to trace supply chain)
- Internal Control System (ICS)
- Youth Inclusive Community-Based Monitoring and Remediation System on Child Labour (YICBMR)

23. Labour rights violations
(challenge: labour rights)

23.1 Relevant definition(s)

Violation of labour rights refers to non-compliance to labour-related regulations and human rights of workers, including non-conformity to relevant Fairtrade standards. Agriculture has one of the highest incidences of forced labour, with exploitative conditions enabled by low margins or returns, discrimination, exploitation and abuse, poverty, domestic labour scarcity, inadequate legal protections for workers and enforcement of labour requirements.

The associated topics are:

- *Bonded, forced labour, and human trafficking* are unacceptable labour practices which constitute egregious breaches of human rights (source: consultants based on understanding on the subject matter).
- *Written Labour Contracts* refers to agreements and conditions of work in a written contracts with clear terms such as compensation and benefits (source: consultants based on understanding on the subject matter).
- *Wage Discrimination* refers to income gap between genders, youth and other vulnerable groups (source: Fairtrade and expert review).
- *Freedom of Association / Unionisation* are basic human right to organise or form and participate in groups
- *Collective Bargaining* are negotiations between employers and workers to determine, amount other things, working conditions, terms of employment or regulating relationships (ILO, n.d.-b).
- *Compliance with international/national laws on worker rights* refers to respect and observations of human rights, international conventions, treaties and regulations regarding work (source: consultants based on understanding on the subject matter).
- *Grievance Mechanisms* secure process available for workers and other individuals to voice grievances and be afforded the chance of remedy (source: consultants based on understanding on the subject matter).
- *Migrant workers* are persons who migrate from one country to another for work purposes (source: consultants based on understanding on the subject matter).
- *Formalisation:* refers to the transition from the informal to the formal economy for hired workers (source: Fairtrade and expert review).

- *Protection of employment status and entitlement*: refers to setting rules for layoffs to lock in entitlements for workers that have already been provided at the time of certification and that can only be reduced on the basis of a negotiated agreement with elected worker represented (source: Fairtrade and expert review).

23.2 Background

In agriculture, workers often face unsuitable working conditions and rights violations that can compromise their health to the exercise of their rights, for example, informal and exploitative arrangements, lack of legal and social protection, antiunion practices, gender discrimination, hazardous work without the proper PPE, force labour, low wages and debt bondage (Jacobs & Cotula, 2021). Furthermore, in some countries, it could include beatings and violence, denial of fundamental freedoms, intimidation, harassment, torture and death.

Two of the reasons that labour rights violations are a risk in the sector is the high level of informality and that agricultural work is very little recognized socially in any kind of society. Others could be the low level of self-organization and the low level of literacy, including knowledge about rights and trade unions which are instruments of self-organization.

Regarding the effects of labour rights violations, they were found to affect morale impacting the output. Research showed that "disengaged workers had 37 % higher absenteeism, 49 % more accidents, and 60 %t more errors and defects" (Seppälä & Cameron, 2015). Moreover, workplace stress is associated with high turnover,[130] and high turnover rates are costly to a business.[131]

In the context of Fairtrade SPOs, the study *Contextual Analysis of Workers in Fairtrade Certified Small-scale Producer Organisations* revealed that even *negative rights* are too frequently violated in the SPO space. These included violations against international labour standards, notably the ten ILO fundamental Conventions [132] and ILO Convention 11 concerning the rights of association and combination of agricultural workers, which address the pervasive and ongoing exclusion of agricultural workers from exercising their fundamental right to freedom of association and collective bargaining.

130 "Research shows that workplace stress leads to an increase of almost 50 percent in voluntary turnover (Seppälä & Cameron, 2015).

131 Replacing a single worker costs a business approximately 20 percent of an employee's annual salary (Boushey & Glynn, 2012).

132 In 2022 the International Labour Conference added safety and health to Fundamental Principles and Rights at Work (ILO, 2022). As each fundamental principle is associated to with relevant ILO conventions, ILO convention No. 155 Occupational Safety and Health and ILO convention No. 187 Promotional Framework for Occupational Safety and Health, will be included as fundamental ILO conventions (see Annex I).

23.3 Linkages between social, economic, and environmental outcomes

Respect – and support – for labour rights not only unlocks the potential for self-actualization and self-determination, it also fosters greater employee/worker engagement and retention. Labour rights violations, however, affect morale, impacting labour output.

The risk of labour rights violations is a particularly elevated in conditions of informality and where there is little societal recognition for agricultural work. Agricultural workers are often among the poorest and most marginalised groups in society. They suffer from low levels of registration, recognition and protection. Low literacy and educational attainment are associated with a lack of knowledge about labour rights and trade union participation. Low trade union participation generally has a negative impact on wage levels and the ability of workers to positively influence working conditions. Result is a perpetuation of the poverty cycle.

There is also a risk of a PO losing certification due to non-compliance with Fairtrade standards. If also detected by 3rd parties, it could also mean the loss of relevant licensees/buyers that expect Fairtrade certification to be an effective means to prevent or act on human rights violations.

23.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- Recommendation concerning the transition from the informal to the formal economy [Transition from the Informal to the Formal Economy Recommendation, 2015 (No. 204)]
- UNSDG (Goal 8)
- Fairtrade standards (HL - SPO)

23.5 (potential) countermeasure(s)

Relevant standards in place, regular monitoring and responding to risks, grievance mechanisms available for all (preferably both digital and traditional channels); written contracts; central hiring (standardising terms and conditions of employment at SPO level); regulating and strengthening the human resources capacity of POs; workers registries; social dialogue; policies to facilitate the formalisation of workers. Contracts with labour brokers, identifying subcontracted workers; advocacy for governments to undertake annual labour inspections of each certified PO; supplier engagement; include labours in the standard setting process.

23.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA (n.d.-b)

- Labour Contracts: "Whether the producer has a written contract that covers labour hours, duration of employment, wages, termination conditions, time off, grievance procedures, safeguarding policies, etc. and if it is honoured; if the producer knows anyone whose contract has not been honoured."
- Discrimination (wage): "Equal pay for equal work: if any group of workers receives lower wages than others for doing equal work (i.e., immigrants, women, ethnic or religious minorities)."
- Right to organize: "Whether the producer is aware of any unions or committees of workers and if they know anyone who is a part of them."
- Compliance with international/national laws on worker rights: "The supplier complies with all international and national laws regarding worker rights, including: working conditions, adequate pay and fair treatment. Asked across the supply chain."

Metrics Theory of change:

- Percentage of POs where terms and conditions for workers hired by (1) the PO, (2) [SPOs only] SPO members are determined by a legally recognized Collective Bargaining Agreement agreed at company or sector level, at the end of the last calendar year
- Percentage of POs where worker representatives (1) had regular scheduled meetings with senior management to discuss general workplace issues, (2) met regularly with senior management to discuss individual cases and grievances as and when they arose, in the last calendar year
- Percentage of HLOs where women on (1) permanent contracts (2) seasonal or fixed term contracts, received at least 12 weeks maternity leave on full pay in last calendar year
- Percentage of POs where there was at least one worker organization with the right to bargain representing (1) general workers, (2) office and professional staff, at the end of the last calendar year
- Percentage of HLOs where (1) permanent workers, (2) seasonal workers, (3) fixed term workers, (4) subcontracted workers, were provided written contracts in the last calendar year
- Frequency of wage negotiations, and (2) inclusion of wage rates in Collective Bargaining Agreements

- Degree to which financial and other relevant business information is disclosed to worker representatives regularly and in advance of collective bargaining
- Degree to which sexual exploitation and abuse occurs in the workplace
- Percentage of workers' grievances resolved, as reported by worker representatives, in last calendar year
- Percentage HLOs where (1) there is a transparent and effective grievance procedure in place and it is followed by the employer, (2) workers are aware of the grievance procedure

Other indicators proposed by key informants and other literature

- Percentages of worker related inputs (answer), compared to overall inputs received in standards consultations.
- Number of workers participating in POs General Assembly.
- Workers having their own governance body (yes/no)
- Workers participating in premium decisions (yes/no)
- % of worker representatives or worker related voice in PN, NFO, and FI
- and labour-rights perspective to ensure that minimum requirements apply to *all* workers.

23.7 Recommendations/amendments

Overall recommendations related to biodiversity:

- Fairtrade should require contracts between labour brokers and SPOs which would need to have specific conditions attached concerning worker rights. Also, the identity, location, etc. of a labour broker's "clients" would need to be reported to Fairtrade.

Recommendations specific to policies and activities:

- Concerning suggested policy n° 9 until workers registries are set up, to enforce current provisions, especially the criteria of "*significant workers*" / "10 workers" in SPO settings, Fairtrade should consider modelling the extent (population size) of hired labourers in SPOs, to know the actual beneficiaries of the systems, which could demonstrate that Fairtrade's overall development value is much greater than previously considered.

23.8 Credible verification / Impact assessments

- Take a risk base approach to workers right verification, considering the context of the country and the most typical abuses occurring in the region. A mechanism should be developed to integrate the knowledge of the local context, its risks and in the particularities of the product while doing audits.

24. Land rights violations & lobbying regulation (challenge: land rights)

24.1 Relevant definition(s)

Land is elemental to economic rights, the exercise of human rights and cultural rights (OHCHR, n.d.-a). For agriculture, land is one of the primary inputs to produce. Furthermore, land rights are factors of, among other things, poverty reduction, food security, development, peacebuilding, social justice, disaster prevention and recovery, and urban and rural planning. Unfair competition and policy capture may be controlled, in part, through lobbying-control regulation, which is *inter alia* essential for protecting land rights, especially of indigenous peoples.

Associated topics:

- *Land tenure* is "is the relationship that individuals and groups hold with respect to land and land-based resources, such as trees, minerals, pastures, and water" (LandLinks, n.d.).
- *Land tenure rules, as a subtopic of land tenure*, "define the ways in which property rights to land are allocated, transferred, used, or managed in a particular society"(LandLinks, n.d.).
- *Land tenure systems, as a subtopic of land tenure*, "define who can hold and use resources, for what length of time, and under what conditions" (LandLinks, n.d.),
- *Land and resources rights* include rights to use, manage and control land, forests, and other natural resources (source: consultants based on understanding on the subject matter).
- *Land ownership restrictions* refer to limitations on the use of the property that are imposed by laws or other limitations (source: consultants based on understanding on the subject matter).
- *Social and gender inequities in land tenure* point to the "power relations between different groups and governance authorities" that are often reflected in "land and tree tenure"(FAO & ICRAF 2019).

- *Indigenous land rights*, a topic related to social inequities, refer to the collective and individual rights for indigenous people, which are considered a vulnerable group (source: Fairtrade and expert review).
- *Land titles* refers to the legal document that prove ownership of the land.
- *Birth certificates* is the official document given up birth that records the person's identity (source: Fairtrade and expert review).
- *Land grabbing* refers to the large-scale land acquisitions by investors (source: Fairtrade and expert review).
- *Public policy and lobbying* refers to the participation in public policy development (source: consultants based on understanding on the subject matter).

24.2 Background

Land tenure security is a severe risk for farmers in some producing countries. It is also a key element in sustainable agriculture as people's perception of the protection and enforcement of their rights on land may influence investments and sustainable resource management133 (LandLinks, n.d.). Furthermore, land tenure is linked to inequalities in gender and other vulnerable groups such as indigenous communities and migrants, who often face unequal access to resources or are denied the right to own or exploit lands.

Land tenure systems can be divided into two groups: formal and informal. Informal systems, such as customary law,134 including common property, are based on more traditional and unwritten rules. These systems may be more inclusive as they consider poor and vulnerable groups' access to land (FAO, 2008b). However, they are less likely to sustain the pressure communities, and external actors exert on land and resources. Land ownership and public land ownership are two examples of formal systems. Whereas the first can be more economically efficient, it could lead to inequalities and exclusion of vulnerable groups. On the contrary, the second (public land ownership) has the potential to be more inclusive, but it can lead to inefficient management of land, "bureaucratic inactivity and corruption" (LandLinks, n.d.).

133 The results of a study held in Ethiopia in agriculture supported the hypothesis that "certification enhances the likelihood of adapting some of the land-related investments, thus supporting adaptation enhancing mechanisms and the resilience of the farming sector" (Bezabih et al., 2021).

134 It could be the case of indigenous communities where the chief along with the elderly decide who would get a piece of land. Such systems can be found in certain countries in Latin America (Brazil, Guatemala, etc.), Africa (Ghana, Kenya, etc.), and also for example in India.

Regarding inequities, land was flagged, in some communities, as a driver of gender inequality since membership can be a barrier to women equal participation in SPO. Fairtrade standards and POs "rules, structures and practices" (Gallagher et al., 2020) require "legal and legitimate right to land use and land tenure." This linkage between membership and ownership of land/ crops registration can create a bias in favour of men, especially in regions where women do not have -- or have difficulty accessing -- land. Some reasons for the limitation may be that "titles are customarily issued to the household head" (Gallagher et al., 2020), the system that allocate land prioritizes men, indigenous custom and usage, "gendered inheritance norms" that "favour sons over daughters" (Gallagher et al., 2020), and unequal access to administration offices to register land.

Another issue, in some regions, for land tenure and security is birth registrations and birth certificates since, in the case of land ownership systems, it is necessary to identify the owner with legal documents to register the property under their names.

Governments, regardless of the systems in force, should work to guarantee tenure security, counteract the potential inequities and inequalities the systems might cause between groups, and protect producers from land grabbing and other unsustainable practices that can force them off the land.

24.3 Linkages between social, economic, and environmental outcomes

Long-term land tenure is a crucial factor in land investments and in adopting APs. If farmers do not own the land or are at risk of losing it for various reasons such as regulations or because they do not have the proper certificates to prove farm ownership, they are less motivated to invest in the soil and practices such as agroforestry.

Other linkages are with vulnerable and marginalised groups and their rights to land, such as indigenous people, women, migrants, who often do not have access to the legal means (if it exists) to request and be granted a certificate. Often some of these groups are prohibited from owning land affecting their rights, access to resources, food security and means to achieve decent livelihoods.

Furthermore, with the upcoming regulations related to traceability in deforestation and human rights due diligence, it becomes imperative to formalise land, as it would be necessary to identify the owners of the land.

24.4 Leading framework(s)/standard(s)/regulation

Legal framework:

- United Nations declaration on the rights of peasants and other people working in rural areas (UNDROP)
- United Nations Declaration on the Rights of Indigenous Peoples (UNTRIP)

Operative framework:

- Voluntary Guidelines on the Responsible Governance of Tenure

24.5 (potential) countermeasure(s)

Fairtrade seeks to mitigate these risks in its Hired Labour Standard and Small-scale Producer Organisation Standard, by requiring legal and legitimate right to land use and tenure, before certification. It also requires indigenous land rights to be observed in agreement with international conventions (ILO Convention C169), declarations (United Nations declaration on the rights of peasants and other people working in rural areas, and United Nations Declaration on the Rights of Indigenous Peoples), and guidelines (Voluntary Guidelines on the Responsible Governance of Tenure). A further step would be to include the delivery of training on land rights and indigenous land rights and advocacy work. The development of a guide to answer farmers inquiries regarding land rights and land use.

24.6 Other relevant metric(s)

Other indicators proposed by key informants and other literature

- Number of farmers with legal land tenures certificates
- Number of farmers without formalised ownership of lands

24.7 Recommendations/amendments

Overall recommendations related to land:

- To measure polygons, Fairtrade needs to develop a special clause for indigenous territories, rights and traditional agricultural systems that allows taking as the unit of analysis POs instead of individual farms as in Indigenous communities, most regions have community landowners. The reason is that indigenous lands do not incorporate the concepts of individual property and land property rights. This could happen, among others, in the Amazonia area in Brazil, Bolivia, Guatemala and India.

- There is a risk of lack of investment in the farms and lack of application of APs when the farmers are not the owners of the land as they are not incentivised and may pursue unsustainable practices that, among other things, damages/hurt the soil.

24.8 Credible verification / Impact assessment

Request POs to collect copies of polygons and land rights certificates of farms under certification area and digitalise the information.

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25. Work-related morbidity and mortality
(challenge: health and safety)

25.1 Relevant definition(s)

Health involves physical, mental, emotional and social well-being. Morbidity refers to specific illnesses or health conditions, while mortality implies death (Healthline, 2021). Agriculture employs more than about 1 billion people or 28% of the population employed in 2018 (World Bank, 2021b) and, with frequent occupational accidents and illnesses per year, it constitutes one of the most dangerous industries (ILO, n.d.-a).

Associated topics

- *Farm injuries* refers to accidents and other forms of injury that occurs while engaging in farm/agricultural activities (source: consultants based on understanding on the subject matter).
- *Hazardous machinery & unsafe work places* refers to operations of dangerous agro-machinery or tools and working unprotected without personal protective equipment (PPE), which can cause harm (source: consultants based on understanding on the subject matter).
- *Hazardous working conditions* refers to the types and conditions of work that cause harm (e.g. working under extreme temperatures, excessive noise and radiation, including working to pay off debt at unreasonable and exploitative interest rates, excessive working hours and low wages).
- *Personal protective equipment* is the provision of the right equipment or gear which prevents harm to the user (source: consultants based on understanding on the subject matter).

- *Banned pesticides and other hazardous chemicals* is the prohibition of toxic substances that harms human health and the natural environment (source: consultants based on understanding on the subject matter).
- *Access to medical services/health care* refers to occupational health and safety for all workers (source: consultants based on understanding on the subject matter).

25.2 Background

Occupational safety and health in agriculture is crucial for the social sustainability of employee relationships in all business sizes and types, since "improving healthcare, fighting disease and increasing life expectancy" contributes to "economic growth and long-term success" (FAO, 2014b).

The agriculture sector has one of the highest rates of occupational diseases compared to other industries, as agricultural workers are constantly exposed to agrochemicals and hazardous tasks that are prone to accidents and illnesses (Molina-Guzmán & Ríos-Osorio, 2020). Also "fatality rates are higher in farm workers, and resources available for their compensation are scarce (Kinnunen et al., 2009)" (Molina-Guzmán & Ríos-Osorio, 2020).

Productivity cannot be achieved or sustained if the labour force is suffering from significant morbidity. In addition, the health of workers directly impacts productivity and can have other downsides such as administrative expenses, recruitment and re-integration efforts (FAO, 2014b). Therefore, the working environment is key to the health and well-being of workers, this include providing clean facilities, the correct protective equipment, training and any other element or information that would prevent "health hazards originating in the working environment" (FAO, 2014b).

According to Molina-Guzmán & Ríos-Osorio (2020), one of the main challenges of health and safaty in agriculture is the varied interventions that have to be developed to cover the many activities carried by workers, such as physical work, spraying harmful substances, operating machines, equipment and disengaged workers and managing animals (FAO, 2014b). Another critical issue is that the reporting and monitoring of injuries is often "inadequate and non-standardized" (Molina-Guzmán & Ríos-Osorio, 2020), making it more difficult to design strategies to prevent the risks.

25.3 Linkages between social, economic, and environmental outcomes

Some practices in the agricultural sector put workers at risk, notably those that endanger human health. In general, agricultural workers may be exposed to hazards by applying toxic chemicals that pollute soil, air, and water, particularly if they are not using PPE. The lack of adequate or good labour practices impact workers' health, quality of life and the household's income. Furthermore, unhealthy or injured workers may decrease a farm's profits, productivity, crop yields. It may even cause food shortages and breaches of contracts with customers or make it challenging for a PO to live up to Fairtrade standards.

25.4 Leading framework(s)/standard(s)/regulation

Operative framework:

- UNSDG (Goal 3, 8 16)
- R164 - Occupational Safety and Health Recommendation, 1981 (No. 164)
- R102 - Welfare Facilities Recommendation, 1956 (No. 102)
- Fairtrade standards (HL - SPO)

25.5 (potential) countermeasure(s)

Development of relevant policy, implementing regular risk assessment and formation of Health & Safety Committees, partially led by workers; access to affordable health insurance for workers, and employer contribution to a worker's health insurance; training of workers and farmers, including migrant, youth and female workers, on the work hazards and ways to mitigate them, poor employment practices and worker rights; requirements for mandatory provision of PPE by all POs to all workers, including training on how to use them; institution of Occupational Health and Safety (OHS) guidelines for all workers, regardless of the farm size; monitoring of APs, including OHS compliance.

25.6 Other relevant metric(s)

Metrics/Indicators proposed by COSA:

- Restrictions on agrochemical application: Categories of people restricted from applying chemical pesticides: untrained people, pregnant women, children through age 18, elders

- Protective gear for agrochemical application: Farm supplies protective gear (hats, masks, protective clothing, etc.) to workers who apply agrochemicals
- Hazardous Machinery & Facility Safety (Processing): Measures to ensure health and safety in the processing structures (proper training to reasonably protect the worker, safeguarding of machinery to prevent accidents, protective equipment, workplace sanitation, proper lighting and ventilation).
- Restrictions on hazardous working conditions: Categories of people restricted from using dangerous machinery, equipment, and tools: untrained people, pregnant women, children through age 18, elders.
- Smoke ventilation in cooking area: Whether or not a vent or chimney is used to eliminate indoor smoke.
- Access to medical services: Travel time from farm to medical services, perceived affordability of medical services.

Metrics Theory of change:

- Percentage of HLOs which provided general workers with (1) access to onsite healthcare, (2) private health insurance, in last calendar year.
- Percentage of PO member and worker households with access to healthcare facilities for antenatal care centre, by gender of PO member/ worker.

25.7 Recommendations/amendments

Overall recommendations related to work morbidity and mortality:

- Fairtrade should consider requiring a percentage of the premium being spent in PPE in all SPO each year.

Annex E: Data on top 7 Fairtrade crops

To build this section we used data provided on Fairtrade's "Top 7 products dashboard" (Fairtrade International, 2020)

A.1 COFFEE

Producer Countries	Almost 33 countries produced Coffee in 2019. The most relevant ones in the number of POs are: Peru, Colombia, Honduras, Mexico, Brazil, Nicaragua, and Indonesia. Other countries are Guatemala, Ethiopia, Costa Rica, Tanzania and Vietnam.
Hectares under Fairtrade certification	In 2019 certified hectares were 1M. Latin America accounted for 71,99% of total certified area, Africa and the Middle East 18,62%, and Asia and Pacific 9,40%. Colombia alone accounted for 19.49% of the total area under certification, followed by Peru and Brazil.
Total Fairtrade Production	Production of Coffee in 2019 was 824K MT. The majority was produced in Latin America with 29,51% of total production. Only 7.04% was produced in Africa and the Middle East, and 5,88% in Asia and Pacific. Top country producers were Colombia with 262K MT followed by Brazil that produced 165K MT.
Total number of producers	The total number of POs in 2019 was 636.
Total number of farmers	Farmers in 2019 reached 795.023. Latin America accounted for 29,65%, Africa and the Middle East 57,94% and Asia and the Pacific for 12,41%. Ethiopia accounts for 199.466 farmers while Kenya is in second place with 123.390.

A.2 COCOA

Producer Countries	Almost 23 countries produced Cocoa in 2019. The most relevant ones in the number of POs are: Cote d'Ivoire, Peru and Ecuador. Other countries are Ghana, India, Sierra Leone, Colombia, Dominican Republic, Honduras and Nicaragua.
Hectares under Fairtrade certification	In 2019 certified hectares were 1.3M. Africa and the Middle East accounted for 89,87% of the total certified area, Latin America 9,74% and only 0,39% in Asia and Pacific. Cote d'Ivoire alone accounted for 69,38% of the total area under certification.
Total Fairtrade Production	Production of Cocoa in 2019 was 618K MT. Of the total 89.5% was produced in Africa and the Middle East, whereas 9,92% in Latin America and the rest (0,59%) in Asia and Pacific. The country that produced the most was Cote d'Ivoire with 462K MT.
Total number of producers	The total number of POs was 380 in 2019.
Total number of farmers	Farmers in 2019 reached 415.971. Africa and the Middle East accounted for 91,03%, Latin America for 8,79% and Asia and the pacific only for 0,18%. Cote d'Ivoire is responsible for 251.720 farmers and Ghana 110.386.

A.3 BANANA

Producer Countries	About 17 countries produced Bananas in 2019. The most relevant ones in the number of POs were: Colombia, Dominican Republic, Ecuador and Peru. Other countries were Mexico, Nicaragua, Costa Rica, Panamá, Saint Lucia, Saint Vincent and the Grenadines, Senegal, Ivory Coast, Ghana, Cameroon, India, Sri Lanka, Indonesia and Thailand.
Hectares under Fairtrade certification	In 2019 certified hectares were around 46K. Distribution among producer regions was 92,05% in Latin America, 7,89% in Africa and the Middle East, and 0,07% in Asia and Pacific.
Total Fairtrade Production	Production of Bananas in 2019 was 1.236.126,74 MT. 90,1% was produced in Latin America, whereas 9,89% in Africa and the Middle East; and the rest (0,01%) in Asia and Pacific. Colombia alone was responsible for 31,65% of the production.
Total number of producers	The total number of POs was 241 in 2019.
Total number of farmers	Farmers in 2019 reached 11.465. Latin America accounted for 99,69%, while Asia and the pacific for 0,31%. The total number of workers in 2019 was 23.508, of which 7 Latin America accounted for 73,49% while Africa and the Middle East 26,51%. Colombia has 459 farmers and 8802 workers.

A.4 TEA

Producer Countries	About 11 countries produced Tea in 2019. The most relevant ones in the number of POs were: India, Kenya, China, Sri Lanka and Malawi. Other countries were Rwanda, Tanzania, Uganda and Vietnam.
Hectares under Fairtrade certification	In 2019 certified hectares were around 113K, Africa and the Middle East accounted for 73,09% of total certified area and Asia and Pacific for 26,91%. Of the total area under certification Kenya alone accounted for 55, 48%.
Total Fairtrade Production	Production of Tea in 2019 was 183K. Africa and the Middle East produce the 82,15% while Asia and Pacific 32,78%. The country that produced the most was Kenya, which was responsible for 122K of the production.
Total number of producers	The total number of POs was 100 in 2019.
Total number of farmers	Farmers in 2019 reached 319.558, Africa and the Middle East accounted for 98,69% of them and Asia and Pacific for the rest 1,31%. The total number of workers in 2019 reached 59.195, 84,77% of the total belonged to the region of Asia and Pacific while 15,23% to Africa and the Middle East. Kenya was responsible for 266.008 of those farmers and India for 43.454 workers.

A.5 SUGAR

Producer Countries	About 18 countries produced Sugar in 2019. The most relevant ones in the number of POs were: Mauritius, Paraguay, India, Eswatini, Philippines, Costa Rica and Cuba. Other counties were Belize, Colombia, El Salvador, Fiji, Malawi and Peru.
Hectares under Fairtrade certification	In 2019 certified hectares were 124K. The majority was accounted for by Latin America with 46,47% of the total certified area, closely followed by Asia and Pacific with 45,75%. The rest 7,77% of the total was accounted for by Africa and the Middle East. The countries that had more hectares under certification accounted were Belize, Paraguay and India.
Total Fairtrade Production	Production of Sugar in 2019 was 528K MT. The majority was produced in Latin America, 58,47% of total production. 13,89% was produced in Africa and the Middle East while 27,64% in Asia and Pacific. The countries that produced the most were Belize with 120K MT followed by Costa Rica 88K MT.
Total number of producers	The total number of POs was 76 in 2019.
Total number of farmers	Farmers in 2019 reach 37.075. Latin America accounted for 37,55% of the total of farmers, Asia and the pacific for 45,78% and the rest 16.57% by Africa and the Middle East.

A.6 FLOWERS

Producer Countries	About 6 countries produced Flowers and ornamental plants in 2019. The most relevant ones in the number of POs were: Kenya, Ecuador, Ethiopia and Uganda. The other two countries were Tanzania and Sri Lanka.
Hectares under Fairtrade certification	In 2019 certified hectares were 2K. The majority was accounted for by Africa and the Middle East with 91,67% of the total certified area followed by Latin America with 7,83%. The remaining 0,5% of the total was accounted for by Asia and Pacific. The countries that had more hectares under certification accounted were Kenya, Ethiopia and Ecuador.
Total Fairtrade Production	Production of Flowers and ornamental plants in 2019 was 4.634M. steams. The majority was produced in Africa and the Middle East with 96,39% of the total production. 3,19% was produced in Latin America while only 0,42% in Asia and Pacific. The country that produced the most was Kenya with 2.398.M. steams.
Total number of producers	The total number of POs was 74 in 2019.
Total number of farmers	Workers in 2019 reach 67.199. Africa and the Middle East accounted for 96,31% of the total of workers, Latin America for 3,47% and the rest 0,22% by Asia and the pacific. Kenya is responsible for 41.742 of those workers.

A.7 COTTON

Producer Countries	About 7 countries produced Cotton in 2019. The most relevant ones in the number of POs were: India and Senegal. Other counties were Burkina Faso, Kyrgyzstan, Pakistan, Tajikistan and Uganda.
Hectares under Fairtrade certification	In 2019 certified hectares were 48K. The majority was accounted for by Asia and Pacific with 94,14% of the total certified area. The remaining 5,86% of the total was accounted for by Africa and the Middle East. The country that had more hectares under certification was India with 43K.
Total Fairtrade Production	Production of Cotton in 2019 was 47K MT. The majority was produced in Asia and Pacific, about 94,67% of the total production. The remaining 5,33% was produced in Africa and the Middle East. The country that produced the most was India with 41K MT.
Total number of producers	The total number of POs was 20 in 2019.
Total number of farmers	Farmers in 2019 reach 43.282. Asia and the Pacific accounted for 76,1% of the total of farmers and the rest 23,9% by Africa and the Middle East. India is responsible for 31.013 of the farmers.

Annex F: Literature review of approaches to sustainable agriculture

B.1 AGROECOLOGY

Definition	**Agroecology is considered a "transdisciplinary science, a set of practices and a social movement"** (Méndez et al., 2013; Wezel et al., 2009) **As a science, it holistically studies agroecosystems. As a set of practices, it aims to enhance "the resilience and the ecological, socio-economic and cultural sustainability of farming systems," and as a social movement, "it seeks a new way of considering agriculture and its relationship with society** (Silici, 2014)**" and equity** (Oberč & Arroyo Schnell, 2020, p. 11)**. As a transdisciplinary, participatory and action-oriented approach to sustainable agriculture, agroecology honours the multitude of worldviews held by farmers and seeks equitable relationships between participants involved in agricultural research and food systems change** (Mendez et al., 2013)**. Furthermore, agroecology must be politically engaged to break down the structures that sustain the existing food regime. As its holistic approach integrates the three pillars of sustainability, agroecology is an increasingly recognised approach to achieve sustainable agriculture.**
Main elements and features	FAO ten elements of agroecology A report of CFS HLPE on Agroecology The four principles from IIED Position paper on agroecology IFOAM-EU European Biodiversity Strategy to 2030
Principles	FAO introduced the 10 Elements of Agroecology which are interlinked and interdependent: diversity, co-creating and sharing of knowledge, synergies efficiency, recycling, resilience, human and social values culture and food traditions, responsible governance, circular and solidarity economy. HLPE building in FAO's 10 Elements introduced 13 principles: recycling, input reduction, soil health, animal health, biodiversity, synergy, economic diversification, co-creation of knowledge, social values and diets, fairness, connectivity, land and natural resource governance, and participation.

Practices	To date, there is no definitive list or clear boundaries for considering a practice as agroecological or not. IIED (Silici, 2014) and (Oberč & Arroyo Schnell, 2020, p. 12) mention the following farm-level practices: conservation tillage (non or minimum tillage), mixing crops (intercropping or polycultures), crop rotation and fallowing, cover crops and mulching, crop-livestock integration, integrated nutrient management, pest integrated management (IPM) that involved biological methods of control, push and pull, allelopathy, efficient water harvesting, agroforestry, renewable energy, use of local resources, composting and waste recycling, holistic landscape management. Other practices mentioned by HLPE (2019) include biological nitrogen fixation, soil structure and health improvement, water conservation, carbon sequestration, diversification, organic fertilization, split fertilization, drip irrigation, and plant resistant varieties (resistant cultivars), bio fertilisers, natural pesticides, biopesticides. Agroecology also suggests practices that move beyond farm level.
Advantages / opportunities	It is a holistic approach that addresses the three pillars: environmental, social and economic, and also the cultural pillar. In the environmental domain, practices can, among other things, improve soil health, improve soil fertility, enhance crop yield stability, decrease vulnerability to pest and diseases, reduce soil erosion, enhance biodiversity, reduce or eliminate chemical fertilisers, and enhance resilience to climate change; the approach is supported by many nations and regional bodies, which included agroecology in public policies to transition to sustainable agriculture, e.g., Brazil, France, Nicaragua, Senegal, and India and European union.
Challenges / drawbacks	Oberč & Arroyo Schnell (2020, p. 13) identified the following challenges and drawbacks: difficultly in evolving into "an overarching, holistic concept"; difficulty to monitor and measure its progress and adoption; it has a "context- and location-specific" nature which also according to FAO (2019) hinders measurement and scalability; difficulties in creating a market due to its multiple definitions and interpretations which can confuse consumers, there is not market label; more work is needed in the socio and economic pillars of sustainability. Other drawbacks are that there is no established verification system, synthetic pesticides are not entirely forbidden in agroecological practices.
Documented Fairtrade position on the approach	CLAC position paper on youth and climate change supports and promotes agroecological practices.
Fairtrade current projects and practices	Latin America: bio ferments, compost (with crop waste), mulching, diversification, circular treatment of waste (making jams with Banana waste or composting it).

B.2 ORGANIC FARMING

Definition	The IFOAM defines organic farming as "a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promotes fair relationships and a good quality of life for all involved." (IFOAM, 2008)
Main elements and features	The International Federation of Organic Agriculture Movements (IFOAM) Research Institute for Organic Agriculture (FiBL) EU Organic regulation European Biodiversity Strategy to 2030
Principles	The European Commission identified 6 elements in organic farming in line with its aim to limit agriculture impacts on the environment: "responsible use of energy and natural resources, maintenance of biodiversity, preservation of regional ecological balances, enhancement of soil fertility, maintenance of water quality" and "high standard of animal well fare [which] requires farmers to meet the specific behavioural needs of animals" (European Commission, n.d.-b) IFOAM proposed the following principles for organic agriculture: 1) Health, it "should sustain and enhance the health of soil, plants, animals, human and planet as one and indivisible." 2) Ecology, it "should be based on living ecological systems and cycles, work with them, emulate them and help sustain them." 3) Fairness it "should build on relationships that ensure fairness with regard to the common environment and life opportunities." 4) Care, it "should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment."(IFOAM, 2020)
Practices	Oberč & Arroyo Schnell (2020, p. 22) identified the following practices under organic farming: crop rotation, nitrogen fixing plants and green manure, cultivating plant resistant varieties and breeds (resistant cultivars), natural pest control, natural alternative inputs, compost, minimum tillage, cover crops, green manure, polyculture, companion crops, silvopasture, protecting or introducing biodiversity (grass strips, Flower strips). Other practices framed under regulation such as the EU where the use of GMOs, ionizing radiation is prohibited, and the use of chemical fertilisers, herbicides and pesticides is limited to the minimum. In this regard according to other literature, organic farming bans the use of synthetic chemical fertilisers and pesticides (HLPE, 2019).

Advantages/ opportunities	It addresses the three pillars: environmental, social and economic. According to (Jouzi et al., 2017) the most significative advantages of organic farming are "environmental protection and a higher resilience to environmental changes, increasing farmers' income and reducing external input cost, enhancing social capacity and increasing employment opportunities" also, increasing food security. Also, it restores soil fertility, soil health, soil quality and enhances biodiversity (HLPE, 2019). Other advantages are that there are "well developed certification processes associates with price premiums" (HLPE, 2019), strong markets already developed and regulations that control processes, conditions and enhance credibility.[135]
Challenges/ drawbacks	Oberč & Arroyo Schnell (2020, p. 13) identified the following challenges and drawbacks: difficultly in switch to organic due to barriers such as local conditions, e.g. some practices require specific climate conditions, natural inputs, knowledge or availability (supply) of labourers. Other barriers are market entry where strict regulation might require specific conditions that are hard to fulfil, also market saturation is a growing issue as bigger plantations attracted by the organic premium are crowding the market lowering prices.
Documented Fairtrade position on the approach	Fairtrade promotes organic production and pays a higher minimum price for organically grown products. However organic certification is not required in Fairtrade Standards.
Fairtrade current projects and practices	Fairtrade Organic Cotton differential pilot, Fairtrade pays a differential -0.03€ per kg of seed - on top of market prices for Fairtrade Cotton in India Fairtrade sustainable Sugar cane intensification project (FSSI), it empowers small Sugar producers by supporting organic Sugarcane seed material production in a nursery, where the ownership is shared between the four SPOs that participate in the project. More than 50% of Fairtrade farmers hold organic certification (certified by other organisations such as soil associations). Fairtrade products organic: Cocoa, Tea, Coffee, Cotton, Wine, Marmalade, Bananas, Quinoa, Chocolate, Ice Cream, Oil (Fairtrade Foundation, 2021b).

135 Organic Farming is to date "the only legally defined approach for sustainable agriculture" (Oberč & Arroyo Schnell, 2020, p. 23).

B.3 PERMACULTURE

Definition	**Permacultur**e **is a "system of design based on whole-systems thinking and informed by a set of principles that serve to help farmers mimic the patterns and relationships found in nature"** (Oberč & Arroyo Schnell, 2020, p. 16)**. Mollison** (Mollison, 1988, 1991) **further describes agriculture as a philosophy of working with nature, that recognises the intricate relations that exist in ecosystems and in which agriculture systems have to integrate harmonically. In this way agricultural ecosystem "have the diversity and resilience of natural ecosystems." Furthermore, the term comes from the conjunction of the expressions: permanent culture and permanent agriculture, where the first stresses the importance of social values for food systems and the second that agriculture is a permanent feature in culture** (HLPE, 2019; Oberč & Arroyo Schnell, 2020)**. Some categorise permaculture as part or under agroecology** (Guzmán & Woodgate, 2013)**.**
Main elements and features	Himalayan Permaculture Centre (HPC)
Principles	Permaculture principles were proposed by Holmgren and are based in three core elements: care for the Earth, care for the people and fair share (HLPE, 2019). The twelve principals are: 1) observe and interact: lean from nature and experience (own- and third-party experiences); 2) catch and store energy; 3) obtain a yield; 4) apply self-regulation and feedback; 5) use and value renewables; 6) produce no waste; 7) design from patterns to details; 8) integrate don't segregate; 9) use small, slow solutions; 10) use and value diversity; 11) use edges and value the marginal; 12) creatively use and respond to change. Permaculture principles foster the creation of synergies between the elements such as plants, animal, soil, humans, etc. with the aim to maximise outcomes (HLPE, 2019).
Practices	Oberč & Arroyo Schnell (2020, p. 22) identified the following practices: rainwater harvesting, composting, enhancing and using biodiversity such as pollinators, nitrogen fixing plants, planting perennial crops, no tilling, cover crops, mulching, agroforestry, "Hügelkultur, for some cases no pruning, using keyline design in water management, eliminate pesticides and synthetic fertilisers. HLPE (2019) add landscape design, sustainable architecture and recycling nutrients.
Advantages / opportunities	Permaculture maximises and renders efficient the use of energy and water, improves soil health and enhances biodiversity (HLPE, 2019). It is applicable withing small holders and it is considered to be successful. For example, in remote and poor farming communities the Himalayan Permaculture Centre (HPC) promotes permaculture practices that help reduce cost of labour, money, and external inputs while increasing "farm diversity, resilience, health, education and livelihoods" (Chris Evans, 2017). The attention to this approach is growing and around the world there are a number of networks and initiatives (Oberč & Arroyo Schnell, 2020, p. 17).

Challenges / drawbacks	Oberč & Arroyo Schnell (2020, p. 17) identified the following challenges and drawbacks: it requires knowledge and work to be successful and some claim that certain practices are impracticable. Also, there are concerns over its scalability and incompatibility to contribute to "substantial and reliable food production (Stone, 2018)".
Documented Fairtrade position on the approach	No Fairtrade direct statement on permaculture. Fairtrade Foundation as part of the "Choose the World You Want" festival in 2021, organised a virtual event to "explore how to create a happy horticultural space in a time of climate crisis" in partnership with Permaculture Association (Fairtrade Foundation, 2021a).

B.4 SUSTAINABLE INTENSIFICATION

Definition	**According to the UK's Royal Society sustainable intensification is an approach where "yields are increased without adverse environmental impact and without the cultivation of more land" (The Royal Society, 2009). The approach aims to combine two goals: increasing and maintainin**g **food production levels and reducing the impacts to the environment (Fraanje & Lee-Gammage, 2018; Poppy et al., 2014). Some authors associate intensification with increasing yields such as the Royal Society definitions, but others argue that the main goal is to increase productivity and that can be achieved in terms of yields, knowledge, labour, machinery, pesticides, seed, and other inputs (Fraanje & Lee-Gammage, 2018; Oberč & Arroyo Schnell, 2020; Therond et al., 2017).**
Main elements and features	FCRN FoodSource UK's Royal Society
Principles	The FCRN FoodSource (Fraanje & Lee-Gammage, 2018) identified three principles in line with the Royal Society definition: 1) freezing the agricultural land footprint, limit food production to the exiting farmland and stop land-conversion for agricultural purposes as it releases GHG, endangers biodiversity and degrades ecosystems services; 2) Reducing environmental impacts, this principle aims to reduce at minimum harmful inputs and agricultural practices, such as fertilisers, pesticides, tillage and irrigation; 3) increasing yields, this principle responds to meet the worlds' growing need of food, though as mentioned below intensification aims to increase productivity in many other agricultural aspects that only yields.

Practices	There are many practices under this approach, the requirement is that they follow the above-mentioned principles. Oberč & Arroyo Schnell (2020, p. 41) identified the following: diversification strategies such as intercropping, reduce input of chemical fertilisers, pesticides and other chemicals, silvopasture, precision practices such as robotics, AI and big data, biotechnology. HLPE (2019) identified the following practices promoted in sustainable identification: soil testing, soil conservation, seed spacing, water conservation, conservation tillage, crop rotation, residual mulching as soil cover, cover crops and catch crops in rotations, use of legumes, alley cropping, agroforestry, integrated pest management (IPM), worm compost, precision technologies for irrigation, introduction of high-yielding varieties (including transgenic crops) micro insurance, agricultural finance, value chains, agricultural cooperatives, training, education and extension.
Advantages/ opportunities	Wide range of practices to adopt and achieve the goal, it increases food security, reduces GHG emissions, can spare land to reforest or introduce managed forest, it can enhance biodiversity, it can boost yields and increase farmers profits.
Challenges/ drawbacks	Oberč & Arroyo Schnell (2020, p. 17) identified the following challenges and drawbacks: the high number of practices could also make the concept or approach to vague to understand and apply, the boundaries are not so clear and it could lead to adverse impacts to ecosystems, there are difficulties to measure effectiveness, focus should be also in the socio-economic domains not only in increasing yields, such as, modifying consumption patterns, improve governance systems, reduce waste and access to safe and nutritious food (Fraanje & Lee-Gammage, 2018; Poppy et al., 2014).
Documented Fairtrade position on the approach	No Fairtrade direct statement on sustainable intensification.
Fairtrade current projects and practices	NAPP: The Fairtrade sustainable Sugar cane intensification project (FSSI) empowers small Sugar producers by supporting organic Sugarcane seed material production in a nursery, where the ownership is shared between the four SPOs that participate in the project.

B.5 CLIMATE-SMART AGRICULTURE

Definition	**Climate-smart agriculture (CSA) was launched by FAO in 2010 and was developed as a response to the SDGs in the context of food security and climate change. According to FAO CSA "aims to enhance the capacity of the agricultural systems to support food security, incorporating the need for adaptation and the potential for mitigation into sustainable agriculture development strategies"** (FAO, n.d.-j)**. As an integrated approach it aims to achieve food security, development and tackle climate change.**
Main elements and features	The Global Alliance on Climate Smart Agriculture (GACSA)
Principles	There are three principles in CSA (FAO, 2019b): 1) improving farmers productivity and incomes, which increases food security and better livelihoods, 2) enhancing people's and food system's resilience and adaptation to climate change, 3) reducing or removing, where feasible, GHG emissions. One aspect to consider is that CSA principles are considered and implemented at a holistic level rather than in individual practices., i.e. the approach should take into account these three while designing the system and maximising synergies and minimising trade-offs.
Practices	CSA does not include a set of standard practices, although it can be adopted in any context, region and farm type, it requires site-specific assessments or evaluations to identify which practices and technologies can produce the best results (HLPE, 2019) maximising synergies and minimising trade-offs. Practices applied are local and context-specific (FAO, 2010; Oberč & Arroyo Schnell, 2020) and can include: soils and nutrient management (compost of manure and crop residues, efficient and precise matching of nutrients, "controlled release and deep placement technologies", nitrogen fixation plants such as legumes, increase organic nutrient inputs and reduction of synthetic fertilisers"); water harvesting and water-use efficiency (pools, dams, pits, retaining ridges, irrigation systems, ponds lined with baboo, placing barrels, sophisticated methods e.g. gutters and pipes that channel rain from roofs into containers, barrels, etc., and low-tech alternative to irrigation systems can be "placing bamboo sticks and or bottles filled with water next to plants [to create] slow-drip irrigation" (Rainforest Alliance, 2021); pest and disease control; enhancing biodiversity; crop varietal selection, plant breeding, carbon sequestration (planting perennial crops and grass), forestry, energy efficiency, minimising non-renewable energy sources; food waste reduction.
Advantages/ opportunities	Entities such as FAO, World Bank, IFAD, UNEP, WFP, and CGIAR promotes the adoption of the approach. The EU also support climate-smart agriculture (European Commission, 2017 Another advantage is that it can be implemented in any farm, any crop, any production type and any geographical scope. It also addresses the three-pillar approach (environmental, social and economic domain) and claims 'triple wins' as it enhances mitigation (reducing GHG emissions), adaptation to climate change and increasing yields. Another advantage is that it has support along the food supply chain.

Challenges/ drawbacks	Oberč & Arroyo Schnell (2020, p. 31) identified the following challenges and drawbacks: lack of focus due to the large number of practices and broad actions and domains it tries to cover. Other entities consider that climate-smart agriculture justifies any status quo in agricultural systems, which could mean not achieving the intended change (TABLE, n.d.). More than 100 civil societies organisations have rejected the Global Alliance for Climate Smart Agriculture (GACSA), and in 2017 a letter was raised by Action Aid waring of the potential unfair effects on developing countries and that the success of the approach it is not very clear as some initiatives failed to address the principals and achieve the desired outcomes. Other drawbacks are the misuse of the term 'Climate-smart" which dilutes its meaning and can create confusion. The reason of the misuse could be in part a consequence of the broad concept and the liberty in the understanding of the term. Another letter was raised by Climate Smart Agriculture Concerns (2015) (an initiative against CSA) to warn[136] that (a.) more than 60% of the private sector members of the Global Alliance for Climate Smart Agriculture (GACSA) came from the fertiliser sector; (b.) GACSA was involved in green washing; c. the approach should be more human-rights-focussed.
Documented Fairtrade position on the approach	FI stated that a) it's not a member and should not become a member of the GACSA, as it was concluded that CSA did not align with Fairtrade Climate Change programme, strategy and standards, b) in the case of joining partnerships to achieve strategic goals, its foundation should not be based on CSA, c) Fairtrade and its member will assess case by case whether to participate or not in programmes that are labelled as CSA or reference the term d) Fairtrade can and should nonetheless take part in meetings/events where CSA is discussed in order to expand its knowledge and as long they are not publicly associated to the term, e) Fairtrade opted for no signing Climate Smart Agriculture Concerns letter.

136 The letter was signed by a large number of organisations from different sectors (faith, development, environmental and producer organisations) some are: ACT Alliance, Action Aid, Bread for the World, CARITAS, CIDSE development organisations like Agronomes et Veterinaires Sans Frontieres, Action Contre La Faim, Entreaide & Fraternite, HELVETAS, Greenpeace, Friends of the Earth. Fairtrade was asked to sign this letter but considered that more research and analysis should be done to take such position. Other entities that did not sign the letter are Oxfam, CARE and Save the Children.

B.6 NATURE-INCLUSIVE AGRICULTURE

Definition	**Doorn et al.** (2016) **define nature inclusive agriculture (NIA) approach as "an economically viable agriculture system that optimally manages natural resources and provides a basis for sustainable business operations, including caring for ecological functions and biodiversity on or around the business i.e. farm" or "the pursuit of a positive, reciprocal relationship between farm management and natural capital." Furthermore, Sanders & Westerlink** (2015)**, stressed that the approach aims for an integrated management of natural elements, soil and landscape quality and (food) production "at the farm and landscape levels" (Oberč & Arroyo Schnell, 2020)**
Main elements and features	Wageningen University (WUR) "Toward nature inclusive agriculture"
Principles	There are three principle dimensions in NIA (Oberč & Arroyo Schnell, 2020): 1) biodiversity as an elemental piece of resilient agriculture systems, it calls for functional agrobiodiversity 2) leveraging agro-biodiversity and ecosystem services to reduce emissions, make a better use of raw materials, and minimise the farm's impact on the natural environment, 3) care for the landscape and the "specific species on the farm" (ibid). Runhaar (2021) identified three interconnected principals "employ ecosystem services rather than external inputs; minimise environmental pressures and contribute maximally to 'non-functional' biodiversity and landscape quality"
Practices	Farming practices included in this approach are (Vermunt et al., 2022): manure management (e.g., solid manure instead of slurry), "grazing to improve botanical composition and biodiversity of meadows, close nitrogen cycles and reduce ammonia emissions, use of lightweight machinery to reduce soil compaction, creating landscape elements such as marshland systems, dykes, ditch banks, living fences and tree alleys to provide habitat for species" (ibid). Oberč & Arroyo Schnell (2020) also identified practices characterizing the following as measures that require greater adaptation and commitment: minimise inorganic fertilization (max. 50-100 kg N/ha) and chemical pesticides, diversify landscape elements, reduced or minimum tillage, and planting herb and Flower edges. Other practices with less requirements are: spaces for 'messy corners', non-turning tillage, cleaning ditches in stages and reducing, in edges, the use of fertilisers and ditch mowing.

Advantages/ opportunities	Linked to agroecology and other sustainable agriculture approaches, NIA practices are perceived as simple or feasible, which could help to spread the approach (Oberč & Arroyo Schnell, 2020). The approach enhances biodiversity and helps to build resilience to external shocks. It can reduce the need for external inputs, diversify production systems making more resistant to climate change, and ultimately it can improve livelihoods, food security and nutrition (WUR, n.d.). The approach covers the environmental, social and economic domains of sustainability. It minimises cost and increases income. It can be applied or implemented in stages.
Challenges/ drawbacks	It is a relatively recent approach, that operates more in local food chains rather than mainstream. Vermunt et al. (2022), identified that the reasons that the approach isn't widely adopted in the Netherlands (country where it originated) are, lack of financial incentives, limited financial and action perspective from farmers, lack of a shared ambition and vision of NIA, problems in transfer of knowledge and regime resistance. Oberč & Arroyo Schnell (2020), mentioned that like other approaches, measurement of the outcomes and impacts are qualitative and that in order to get relevance and be included in polices or integrated in the supply chain, transitioning to quantifiable indicators is necessary. In that regard more investments and research are needed. To became wide spread it would also require the transformation of business and market operations.

B.7 CARBON FARMING

Definition	**The government of Western Australia** (n.d.) **defined this approach as "the process of changing agricultural practices or land use to increase the amount of carbon stored in the soil and vegetation (sequestration) and to reduce greenhouse gas emissions from livestock, soil or vegetation (avoidance)."** **The Carbon Cycle Institute** (n.d.) **stated that the approach "involves implementing practices that are known to improve the rate at which CO2 is removed from the atmosphere and converted to plant material and/or soil organic matter" and further clarified that carbon farming is considered successful when the inputs of carbon (gains from improved land management practices) exceed the outputs or carbon losses.**
Main elements and features	Farm to Fork Strategy Carbon Farming Network in Paris - The "4 per 1000"
Principles	There principles are two according to Oberč & Arroyo Schnell (2020): "1) GHG emissions reduction; 2) carbon sequestration"

Practices	There are many practices that help soils and plants sequester CO2 and reduce emissions, some are: reduce or no-tillage, cover crops, crop rotation, agroforestry, planting forest or restoring degraded lands, protecting carbon reach soils (e.g. grasslands and peatlands) (European Commission, n.d.-a). Others mentioned by the Carbon Cycle Institute are: mulching, compost, multi-story cropping, landscape management (e.g. incorporation windbreaks, buffer zones), nutrient management and alley cropping.
Advantages/ opportunities	The approach holds great potential to sequester CO2, store it and reduce GHG, it also offers another potential source of income that incentivises reducing carbon pollution (The Government of Western Australia, n.d.). It has also effects in soils as they become more fertile and resistant (North Sea Region, n.d.). It improves productivity and enhance farm resilience. It also addresses the three pillars of sustainability though clear guidelines are needed. Furthermore, the approach is gaining attention form industries as they see it as a potential strategy to tackle global warming and climate change.
Challenges/ drawbacks	The approach could potentially incentivise unsustainable practices from companies who buy the carbon credits as they would use it to off-set their GHG emission, not really addressing the problem such as actually reducing their emissions. This practice can be considered as greenwashing. Other drawbacks are that it is difficult to measure the impact in terms of the effectivity of the practices implemented. Also, there are multiple frameworks or way of calculation carbon sequestration to emit carbon credits and yet little is known on the benefits it provides, especially in the long terms, as natural carbon sinks also release carbon to the atmosphere though soil and microorganisms' respiration. Oberč & Arroyo Schnell (2020), mentioned that even carbon farming takes the environment into account, it's focus is to narrow, mainly cantered in climate change.
Documented Fairtrade position on the approach	In Fairtrade's Climate Standard, Fairtrade introduced Carbon Credits in partnership with Gold Standards, the aim is to reduce emission through projects that, in turn, farmers receive a minimum price to help cover the cost of the project and a Fairtrade Premium for every credit sold to invest in adaptation and mitigation to climate change.
Fairtrade current projects and practices	Clay cooking stoves in India Cookstove Project in Ethiopia

B.8 BIODYNAMIC AGRICULTURE

Definition	**Biodynamic agriculture is a "holistic, ecological and ethical approach to farming, gardening, food, and nutrition"** (Biodynamic Association, n.d.)**. Another definition could be "an ecological farming system that views the farm as a self-contained and self-sustaining organism"** (Oberč & Arroyo Schnell, 2020)**.**
Main elements and features	The biodynamic association Demeter certification body
Principles	Demeter International (n.d.) outlined the following principles: 1) regeneration as sustainability is not enough, 2) integration of human and humans wellbeing, 3) create and foster a living context where humans and nature (plants and animals) can develop and thrive, 4) respect animal well-being, protect wildlife, nourish soils and, at the same time produce nutrient-dense food, 3) agriculture is part of the surrounding nature, landscape and culture, 5) ecological responsibility that includes caring for resources and further down the process beyond harvesting e.g. packaging and transport impacts, 6) social responsibility, which includes caring and supporting community development and cooperation throughout the supply chain.
Practices	Practices can be: reducing and avoiding external inputs to a minimum (especially those imported). Fertilisers and pesticides (herbicides, fungicides, etc.) are banned. Instead, biodiversity can be used to control and repel pests. Other practices are (Demeter USA, n.d.): water conservation, utilizing the lunar calendar for planting, integrating or consider as part of the farm riparian zones, wetlands, grasslands and forests. Furthermore, in Demeter standards farms are required to spare 10% of their land as a "biodiversity set-aside". More practices are featured in Oberč & Arroyo Schnell (2020), such as integrating stock and crops (this can reduce the need for fertilisers), composting and biodynamic preparations (the combination of both create synergies that enrich compost with nutrients, nitrogen and microbial diversity ultimately improving soil fertility and carbon sequestration), biodynamic sprays (horn manure, horn silica and others that enhance soil health, resistance, plant immunity, water balance).

Advantages/ opportunities	Popular in Europe and the US, the approach is applicable to any farm in any geographic region and production. It is an attractive approach and an opportunity as it has a certification body, Demeter, which certifies farms worldwide and sets up biodynamic agriculture standards, creating a market for biodynamic products. As Fairtrade, Demeter International stands for GMO-free agriculture, prohibiting its use (Demeter International, 2021b). Demeter is against 'new genetic engineering techniques or 'new breeding techniques that are in the scope of GMOs. With farm certification, crops are certified as biodynamic, however to certify products (after processing the crops), Demeter has other standards that need to be met to ensure accountability and integrity (Demeter USA, n.d.). Another positive aspect is that biodynamic integrates the three pillars of sustainability as a holistic approach, adding the spiritual domain and incorporating ancestral wisdom into farming systems. Biodynamic and organic are similar approaches. The difference remains that the first adopt organic practices but goes beyond and uses the farms' resources to, for example, enhance soil fertility by preparing compost and biodynamic preparations instead of depending on external inputs (Rathbone, 2018). Biodynamic also harmonises with the rhythms of nature and studies its cycles (solar and lunar) to find the best time to cultivate and harvest.
Challenges/ drawbacks	Even though the approach is well known, the market is still small and developing. One of the reasons could be the spirituals and traditional wisdom elements that drive consumers away. Also, another setback could be the strict standards Demeter imposes to be certified, requiring more than other certification bodies (Oberč & Arroyo Schnell, 2020). Moreover, it can be costly for producers and consumers. For producers, it requires more workers to produce, and the yields are smaller than conventional agriculture or other approaches. For consumers, the price is higher as it has to cover for the extra work and lower yields (in terms of the opportunity on what can be produced with more intensive approaches that go against the principles of biodynamics of respecting nature) (Environment Go!, 2021).

B.9 CONSERVATION AGRICULTURE

Definition	**Conservation agriculture (CA) is "a farming system that can prevent losses of arable land while regenerating degraded lands"** (FAO, n.d.-k)**. The approach aims to maintain soils together as a living ecosystem that allows food production and addres**ses **climate change** (Project Drawdown, n.d.)**.**
Main elements and features	FAO principles

Principles	FAO (n.d.-k) outlined three main principles (that can be adapted to local context): 1) minimizing soil disturbance through direct seeding and limiting disturbance to placing seeds or applying fertilisers, 2) maintaining soil cover through organic cover crops or crop residues on land post-harvest, and mulching, 3) species diversification through crop rotation and incorporating other plant species.
Practices	Practices under this approach are: reducing or avoiding soil disturbances or interventions, reducing and efficiently applying agrochemicals and mineral or organic fertilisers (its use should not affect or disrupt biological processes) (n.d.-k).
Advantages/ opportunities	Conservation agriculture is applicable to all types of farms, crop production systems and can be adapted into local practices. The approach enhances biodiversity, soil quality, fosters natural processes above and below the ground, and contributes to a more efficient use of water and nutrients (FAO, n.d.-k). It also improves crop production and "overall land husbandry for rainfed and irrigated production". It is widely implemented across the world (mainly in Argentina, Brazil, Canada, Australia, and US) and competes with organic agriculture. Other potential advantages related to no-tillage are: increased carbon sequestration (in no-till fields), reduced hours and numbers of workers and reduced energy consumption, which reduces the cost of production. The approach also enhances soil health and water infiltration, reducing erosion, surface runoff, and pollution through soil erosion. The approach also conserves yields or increase it. There's is proven success of small-holders adopting conservation agriculture in Asia, Africa and in Australia and Brazil, though there are aspect that remain a challenge (Kasalu-Coffin et al., 2014).
Challenges/ drawbacks	Small-scale farmers can find difficulties in adopting and applying the three principles depending on the context, for example, farmers in Zambia revealed they faced "limited access to inputs (quality seeds, fertilisers, herbicides, mulch), labour constraints, insufficient resources or limited markets" (Kasalu-Coffin et al., 2014). However, yield increased compared to conventional methods. Oberč & Arroyo Schnell (2020) highlighted other concerns such as dependence on herbicides, a direct consequence of reducing or no-tilling practices on many farms which can greatly affect the environment. Also, some other difficulties can be found in no-tilling, such as de-compacting the soil, decreasing "water infiltration and soil water content in turn leading to waterlogging and hindered plant and root growth" (Oberč & Arroyo Schnell, 2020). However, if the three principles are applied together, soil compacting should be less prominent. Another setback may be that this approach is mainly focused on soils, leaving apart other elements in the environment that need attention such as biodiversity, water or pest resistance to agrochemicals.

B.10 REGENERATIVE AGRICULTURE

Definition	**Regenerative agriculture is a holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density** (Regenerative Agriculture Initiative & The Carbon Underground, 2017)**. This approach aims to tackle climate change by increasing soil organic matter and restoring biodiversity in degraded soils, resulting in increased carbon sequestration and improving the water cycle (ibid). Regenerative agriculture is also considered by the Food and Land use Coalition** (2019)**, one of the ten critical transitions to transform food and land use.**
Main elements and features	Regenerative Agriculture Initiative, California State University Soil Capital Company & Systemiq Regenerative agriculture Position Statement – Canada Organic Trade Association Levels of Regenerative Agriculture
Principles	The Carbon Underground and the Regenerative Agriculture Initiative outlined four main principles (2017): "1) contribute to generating/ building soils and soil fertility and health; 2) increase water percolation, water retention, and clean and safe water runoff; 3) increase biodiversity and ecosystem health and resiliency; 4) invert the carbon emissions of our current agriculture to one of remarkably significant carbon sequestration thereby cleansing the atmosphere of legacy levels of CO2." Similarly, Soil Capital Company and Systemiq proposes the following principles: "minimise or eliminate agrochemicals; maintain permanent cover of the soil, ideally with living roots; minimise soil disturbance; maximise functional biodiversity; and adapt to context-specific design" (Soil Capital & Systemiq, 2020)
Practices	Practices under this approach are: non or minimum tillage (but depending on the type of soil, some can benefit from interim ripping or low-level chiselling, increasing root zones, yields soil health and carbon sequestration), cover crops, crop rotation, compost, manure, multi-crop/polyculture, intercrop, creating habitats for bees and other beneficial insects, grazing practices that improve plant growth, soil carbon deposit and soil fertility (Regenerative Agriculture Initiative & The Carbon Underground, 2017).

Advantages/ opportunities	Regenerative agriculture is applicable to all types of farms and production systems (including livestock). Regenerative practices contribute to soil aggregation, water infiltration, water retention, carbon sequestration, nutrients cycle, ecosystem diversity, soil health and fertility, farm productivity and resilience of farmers and communities. Also, it can increase crop yields and reduce costs from fertilisers and pesticides (McGee, 2020). This approach has the similar objectives than organic farming (even IFOAM is discussing incorporating regenerative principles into the organic standards and practices), such as avoiding the use of pesticides and synthetic fertilisers, but has a clear focus on soil health as the tool to fight climate change, also it has more emphasis on independence and fairness.
Challenges/ drawbacks	Like any other approach that requires minimum or no tillage, there is also the concern over potential trade-offs between reducing soil tillage and agrochemical usage as not every farm can adapt to it. The practice requires time, and in the meantime, some challenges can appear, such as soil de-compacting and poor water infiltration. Often farmers who practice no-till farming use glyphosate (herbicide) for weed control, potentially affecting carbon flows between the atmosphere and the soil (Klein, 2019). Therefore, before considering no-till farming, farm conditions should be analysed, as there is some discussion over the benefits on soil carbon sequestration of no-till practices. Other drawbacks are its broad definition that allows greenwashing, difficulties in measuring the outputs, and the narrow primary focus on improving environmental quality through soil health, leaving other topics out of the spotlight such as biodiversity and protecting the landscape. The approach can also be considered labour-intensive depending on the farm.

B.11 LOW EXTERNAL INPUT AGRICULTURE

Definition	**Low external input agriculture (LEIA) is an approach "referring to a set of agronomic practices that aim to reduce the use of inputs from outside the production system"**(Oberč & Arroyo Schnell, 2020)**. LEIA "seek to optimise the management and use of internal production inputs (i.e. on-farm resources)"** (Gold, 2007)**.**
Main elements and features	Information Centre for Low External Input and Sustainable Agriculture
Principles	LEIA has two principles to improve ecological sustainability: "1) Minimising the use of external inputs (off-farm resources) by using them in a complementary way; 2) Optimising the management and use of internal production inputs (on-farm resources) and locally available resources by maximising the complementary and synergistic effects of different components of the production system." (Gold, 2007; Oberč & Arroyo Schnell, 2020). The economic and social principles are: "1) Sustained farmer livelihood systems; 2) Competitiveness; 3) Low relative value of external inputs; 4) Equitable adoption potential (especially among small farmers); 5) Reduced dependency on external institutions; 6) Enhanced food security at the family and local level ; 7) Contribution to employment generation" (Gold, 2007; Oberč & Arroyo Schnell, 2020).
Practices	LEIA practices are (Oberč & Arroyo Schnell, 2020): on-farm organic fertilisers such as animal manure replacing synthetic fertilisers, integrated pest management: minimising the use of herbicides and other pesticides, adopting crop rotation and crop diversifying systems, intercropping and cover crops. The aim is to naturally manage pests, diseases, and weeds, enhancing soils, the nutrient cycle, and nitrogen fixation.
Advantages/ opportunities	LEIA is applicable to various production systems and geographical contexts. The reduction of external inputs has many positive outcomes such a lower production cost, lower air and water pollution, less chemical residues on food, less health risks for workers and consumers and increases both short- and long-term farm profitability (Parr et al., 1990). The approach also aims at empowering smallholders and local communities.
Challenges/ drawbacks	The approach may be biased, perhaps giving more importance to the environmental aspect than the socio-economic aspect. Also, some studies suggest that success depends on the primary local conditions of the site. If natural resources are abundant, low external input systems are more likely to work and be profitable as the ecological services can replace the external ones. Based on the premise that to be successful, the approach needs to have a healthy natural environment, Oberč & Arroyo Schnell (2020) question whether LEIA should not also incorporate or focus on areas such as rehabilitation and restoration of the lands and nature as current trends show an increasing degradation of ecosystems.

B.12 CIRCULAR AGRICULTURE

Definition	**Circular agriculture is a "whole system approach [that] involves the integration of crops and livestock and makes the best possible use of resources, including side streams indicating a shift from production-efficiency to resource-efficiency"** (Oberč & Arroyo Schnell, 2020)**.** **Circularity in agriculture implies applying "practices and technology that minimise the input of finite resources encourage the use of regenerative ones, prevent the leakage of natural resources from the food system, and stimulate the reuse and recycling of inevitable resource losses in a way that adds the highest possible value to the food system** (Jurgilevich et al., 2016)**"** (Boer & Ittersum, 2018)**.**
Main elements and features	UN/DESA Policy Brief #105: Circular agriculture for sustainable rural development WUR - Circularity in agricultural production WUR - Circular agriculture: a new perspective for Dutch agriculture
Principles	WUR (Wageningen University and Research) outlines three principles (Boer & Ittersum, 2018): 1) Plant biomass is the basic building block of food and should be used by humans first; 2) By-products from food production, processing and consumption should be recycled back into the food system; 3) Use animals for what they are good at.
Practices	Circular agriculture is connected to mixed farming, which implies practices such as crop diversification, intercropping, soils cover, agroforestry, combining cultivation with animal husbandry, organic fertilisers like on-farm manure. The approach is also connected to organic agriculture, which aims to eliminate the use of agrochemicals (see organic farming practices). Other practices are water recycling, wastewater use, using organic waste for compost or to re-integrate into the soil (UN & DESA, n.d.). Further practices mentioned in Oberč & Arroyo Schnell are: precision agriculture, breeding varieties that can successfully capture nitrogen, using insects, works and other species to convert waste into animal feed, organic fertilisers from animal manure and crop residues, increasing crop quality to reduce by-products unfit for human consumption, and enhance by-products to use them, use all plant parts and bioenergy production with by-products.

Advantages/ opportunities	Circular agriculture is becoming popular across different regions, particularly in Europe, as part of the circular economy concept. One of the opportunities this approach has is that, if practiced or adopted at a large scale, it can reduce: the need for resources (natural and off-farm e.g. fertilisers and land use), the waste generated during production, and the agriculture ecological footprint (UN & DESA, n.d.). Circular farming can also alleviate poverty, increase food security and create new sources of employment as it is a labour-intensive approach. It also represents an opportunity to include marginalised groups such as rural women, as opposed to conventional farming, which requires many resources and capital, circular agriculture requires fewer inputs, lowering the barriers for women to produce (UN & DESA, n.d.). The approach addresses al domains of sustainability: environmental, economic, and social by minimising external inputs, reducing cost, closing nutrient loops, regenerating soils, increasing in the long-term profits, giving opportunities to marginalised groups, and enhancing farmers, workers and communities' livelihoods.
Challenges/ drawbacks	The challenges circular agriculture faces are scalability, mainstreaming, and uptake (Oberč & Arroyo Schnell, 2020). The approach might fund legal barriers in some countries related to food and feed safety or in policies aiming to maximise production.
Fairtrade current projects and practices	Program for Increasing Productivity (PIP), the aim was to improve soil fertility, increase productivity, and halve agrochemicals use by nurturing biodiversity and applying organic fertiliser and bio-ferments (produced with on-farm resources and crop waste).

B.13 ECOLOGICAL INTENSIFICATION

Definition	**Ecological intensification purpose is to "match or increase agricultural production yields as compared to conventional farming methods, while minimizing negative impacts on the environment and on agricultural productivity, by integrating the management of ecosystem services delivered by biodiversity into production systems" (Oberč & Schnell, 2020; p39). FAO also provides the following definition "knowledge-intensive process, aiming for an 'optimal management of nature's ecological functions and biodiversity to improve agricultural system performance, efficiency and farmers' livelihoods'" (FAO, n.a.).**
Main elements and features	FAO - Ecological Intensification The blurred boundaries of ecological, sustainable, and agroecological intensification: a review
Principles	Wezel et al. (2015) identify the following principles (Oberč & Arroyo Schnell, 2020): 1) Biodiversity conservation; 2) Improved soil fertility management; 3) Reduced pest and disease infestations; 4) Farming system resilience; 5) Decreased energy use; 6) Recycling of by-products; 7) Reduction in meat consumption, food losses and waste; 8) Responding to consumers' expectations of product quality; 9) Reducing negative health and environmental externalities; 10) Increasing participatory involvement of stakeholders and collective decision-making.
Practices	Practices entail: mixed cropping systems, diversified crop rotation, use of cover crops, direct-seeding, and mulch-based cropping systems; conservation tillage, minimising soil compaction and soil detoxification; Integrated Pest Management (IPM); improved fertiliser and nutrient management (INM), regulation and monitoring of nutrient supply, injecting fertilisers into the irrigation system; preservation and promotion of positive allelopathic effects (Oberč & Arroyo Schnell, 2020; Wezel et al., 2015).
Advantages/ opportunities	The approach can be applied in different regions, crops, and farming systems. Although it shows an inclination for environmental topics, it also addresses the economic factor by aiming at increasing yields, and in the social domains by enhancing health, and collective decision making (Oberč & Schnell, 2020). The approach is a natured-based alternative to high input agriculture (Kleijn et al., 2018).

Challenges/ drawbacks	"Specific challenges for ecological intensification may be linked to its need to embrace the complexity of the landscape [...]the implementation of, or transition to, ecological intensification requires collective decision-making, institutional innovation, serious investment, and long-term commitment [...] As it currently stands, the model has yet to be proven adaptable or scalable, however global assessments of productivity levels indicate that investments into research for ecologically-intensive farming can pay off" (Kleijn et al., 2018). More knowledge is needed, particularly on the quantification of the costs and benefits of ecological intensification, using variables that are relevant to farmers (e.g., crop yield and profits at the farm level), and the effectiveness of different ecological intensification practices, alone and in combination with other practices, over longer periods of time, and in a range of crops, farming systems, and locations.

B.14 HIGH NATURE VALUE FARMING

Definition	**High nature value (HNV) farming is the 'umbrella' that "links HNV farming systems, HNV farmland, and nature conservation issues together"** (EIP-AGRI Agriculture & Innovations, 2016)**. HNV is "commonly defined as occurring where: agriculture is the dominant land use; agriculture supports (or is associated with) a high diversity of wildlife species and habitats and/or the presence of species of European/national/regional conservation concern, and; the conservation of these wildlife habitats and species is dependent upon the continuation of specific agricultural practice"** (EIP-AGRI Agriculture & Innovations, 2016)**.**
Main elements and features	High Nature Value Farming in Europe EIP-AGRI Focus Group: Sustainable HNV farming
Principles	HNV farming is based on traditional principles related to the "preservation and maintenance of traditional farming systems" (Oberč & Arroyo Schnell, 2020), which includes "the local know-how and good practices" (EIP-AGRI Agriculture & Innovations, 2016). The EIP-AGRI group, in its report, called to re-interpret the understanding of traditional HNV, and instead of focusing on the core principles of HNV, it identified five development pathways that incorporate the socio-economic dimensions to support a more sustainable HNV farming. The pathways are: "1) Networking and cooperation; 2) Farm diversification; 3) Increasing the selling price of HNV products and improving access to markets; 4) Adopting new technologies; 5) Increasing the physical output of the farm (within specific constraints)" (EIP-AGRI Agriculture & Innovations, 2016).

Practices	The approach relies on "sympathetic land management practices" that aim to efficiently use and conserve, maintain, and preserve the landscape. Examples of practices are hay meadows, traditional mowing, leaving fallow areas, using alternatives to synthetic fertilisers such as seaweed, and "cutting rush or undertaking habitat restoration" (HNV Farming in the UK, n.d.). Practices in arable dominated systems (EIP-AGRI Agriculture & Innovations, 2016) are: low-intensity management of dryland crops, organic fertilisers such as animal manure on farm, crop diversification, spring sowing of crops, mechanical weed control, restoration and maintenance of irrigation systems (water meadows and gravity-fed mountain systems). Other practices in other productions systems: mixed crops, grazed semi-natural vegetation under and between trees, reduced external inputs (fertilisers and biocides), efficient pruning of trees, replacements using traditional varieties.
Advantages/ opportunities	HNV has positive outcomes mainly in the environmental domain, which also impacts the social domain as HNV protects and conserves biodiversity, has the potential for carbon storage, and enhances clean water and soil conservation. Concerning adoption, there are successful cases based on this approach, especially where the market for certain HNV products is already developed. In Europe, HNV farming is supported by the Common Agricultural Policy (CAP), which helps farmers when products do not have a strong market.
Challenges/ drawbacks	HNV is barely practiced. In Europe the approach is adopted in marginalised land or communities (e.g. mountain regions) where human development has not yet transformed traditional farming systems or lower input agriculture production into intensive agriculture, mainly due to physical limitations. Farmers, who practice HNV, often face socio-economic difficulties as a consequence of the "low or limited intensification potential" (Oberč & Arroyo Schnell, 2020).

Annex G: Subcategorization of Gliessman's transitional pathways to Agroecology

Taken from DeLonge et.al (2016)

Level 1:

1. ***Reduced water use****: Reduced water consumption through, for example, drip irrigation, improved monitoring, precision agriculture, or improved varietals.*
2. ***Reduced pesticide****: Reduced application of herbicides, fungicides, insecticides, or fumigants through, for example, improved monitoring, precision agriculture, or improved plant varietals. This subcategory includes general integrated pest management (IPM) programs or references to general pest research when no other specific practices are mentioned.*
3. ***Reduced synthetic fertiliser****: Reduced application of synthetic fertilisers through, for example, improved monitoring, precision agriculture, or improved varietals.*
4. ***Reduced energy use****: Reduced fuel consumption or energy use from farming practices through improved technology and equipment or through renewable, low-carbon energy sources that could be used on farm. Projects dedicated to biofuels were coded separately (see meta categories) and were only included in this category if the project involved reduced energy use during the production of biofuel crops.*
5. ***Increased yield (crops)****: Increased agronomic yields achieved through, for example, optimised spacing or timing, improved monitoring, precision agriculture, increased or improved inputs, or improved varietals.*
6. ***Increased yield (fish/meat)****: Increased yield of fish or meat through improved health, precision management, or improved breeds*
7. ***Reduced waste****: Increased net yield of food through improved technologies and equipment that prevents loss during harvesting, processing, or storage.*
8. ***Improved varietals (classical breeding)****: Plant breeding using classical and marker-assisted breeding methods for Level 1 systems.*
9. ***Improved varietals (biotech breeding)****: Plant breeding using transgenic or mutation breeding methods.*

* *The improved yield subcategories were included in L1 in the analysis. However, there is some debate regarding whether projects focused exclusively in increased yields, without also referencing another component in L1, should be considered sustainable agriculture. Therefore, we also completed the analysis with these components moved to the "Unrelated" category.*

Level 2:

1. ***Alternate amendments****: Alternate amendments, such as compost or manure, used in place of synthetic fertilisers.*
2. ***Green manure****: Crops planted specifically to improve soil nutrients, such as nitrogen-fixing cover crops.*
3. ***Biological pest management****: Pest management through biological control methods, by importing, enhancing, or conserving pest enemies.*
4. ***Cover crops for pest management****: Planting cover crops specifically for pest reduction.*
5. ***Other pest management*** *(exc. biological, cover crops): Non-chemical pest management practices that treat rather than prevent pest problems, including the use of steam, UV treatments, or LED lighting.*
6. ***Cover crops for soil condition****: Planting over crops specifically to reduce erosion, increase soil organic matter, or improve general soil condition.*
7. ***Perennials****: Specific and intentional adoption of perennial plant species.*
8. ***Reduced tillage****: Adoption of conservation tillage or no-till practices.*
9. ***Other Level 2 system****: general/fish/meat: Level 2 systems that substitute less toxic inputs into practices to reduce negative impacts but are not captured by any other subcategory. This includes general organic or low-input farming systems or Level 2 fish or meat production.*

Level 3:

1. ***Improved varietals****: Classical breeding specifically for local, regional, organic, or otherwise improved agroecological systems.*
2. ***Locally adapted crops****: Incorporating native or locally/regionally adapted crops*
3. ***Non-crop plants****: Incorporating non-crop plants in agroecological systems for ecological functions such as conservation, water quality, or pest management.*
4. ***2-Crop rotation****: Implementing a simple crop rotation with just two crops or where the number of crops included is unclear, but excluding cases where the second crop is specified to be a cover crop.*
5. ***3+-Crop rotation****: Implementing a more complex crop rotation system with at least three crops.*
6. ***Spatially diversified farms****: Introducing diversity over space by multi-, poly-, or inter-cropping.*
7. ***Agroforestry****: Diversified farming system including crops and forests.*
8. ***Integrated crop-livestock systems****: Diversified farming system including both crops and livestock.*
9. ***Rotational/regenerative grazing****: Improved grazing methods to improve soil quality and forage yield.*
10. ***Biodiversity****: Specific attention to quantify, protect, or enhance biodiversity.*
11. ***Pollinators****: Specific attention to quantify, protect, or enhance pollinators.*
12. ***Climate mitigation (soil C, GHG)****: Identifying or adopting practices that can mitigate climate change by sequestering soil carbon or reducing greenhouse gas emissions.*
13. ***Other Level 3 system (fish/meat)****: Other redesigned systems for increased sustainability of fish or meat production.*

Level 4:

1. ***Community support****: Re-establishing the connection between producers and consumers by developing community programs or centres that include, for example, community gardens, cooking or nutrition classes using local foods, accessible lessons on farming system for the public.*
2. ***Business support****: Re-establishing the connection between producers and consumers by assisting in the development of local food systems by through community-supported agriculture (CSA) programs, farmers markets, or similar programming.*
3. ***Policy development****: Developing or informing policies to help re-establish the connection between producers and consumers.*

Annex H: Indicators on biodiversity and soils health

Indicators:

1) Agricultural biodiversity (FAO, 2019a) is the average of the following indexes.

Name	Calculation	Details	
Gini-Simpson index for crops	$1 - D = 1 - \sum p_i^2$	D = diversity p_i = the abundance i = the proportion of individuals found in the i-th species	
Natural vegetation, trees and pollinators	Average of 3 indicators: Beekeeping Productive area covered by natural or diverse vegetation Presence of pollinators and beneficial animals	Beekeeping	Score
		No	0
		Yes, wild	0.5
		Yes, raised	1
		Productive area	Score
		Absent	0
		Small	0.25
		Medium	0.5
		Significant	0.75
		Abundant	1
		Pollinators and other	Score
		Absent	0
		Little	0.33
		Significant	0.66
		Abundant	1

Unsustainable: the average is core is less than 50%

Acceptable: the average is core is between 50% and 70%

Desirable: the average is core is more than 70%

2) SOCLA 10 indicators of soil health (Nicholls et al., 2004)

Table 1. Soil quality and crop health indicators in grape systems, with corresponding characteristics and values (values between 1 and 10 can be assigned to each indicator).

Indicators of soil quality	Established value	Characteristics
Structure	1	Loose, powdery soil without visible aggregates
	5	Few aggregates that break with little pressure
	10	Well-formed aggregates – difficult to break
Compaction	1	Compacted soil, flag bends readily
	5	Thin compacted layer, some restrictions to a penetrating wire
	10	No compaction, flag can penetrate all the way into the soil
Soil depth	1	Exposed subsoil
	5	Thin superficial soil
	10	Superficial soil (> 10 cm)
Status of residues	1	Slowly decomposing organic residues
	5	Presence of last year's decomposing residues
	10	Residues in various stages of decomposition, most residues well-decomposed
Color, odor, and organic matter	1	Pale, chemical odor, and no presence of humus
	5	Light brown, odorless, and some presence of humus
	10	Dark brown, fresh odor, and abundant humus
Water retention (moisture level after irrigation or rain)	1	Dry soil, does not hold water
	5	Limited moisture level available for short time
	10	Reasonable moisture level for a reasonable period of time
Soil cover	1	Bare soil
	5	Less than 50% soil covered by residues or live cover
	10	More than 50% soil covered by residues or live cover
Erosion	1	Severe erosion, presence of small gullies
	5	Evident, but low erosion signs
	10	No visible signs of erosion
Presence of invertebrates	1	No signs of invertebrate presence or activity
	5	A few earthworms and arthropods present
	10	Abundant presence of invertebrate organisms
Microbiological activity	1	Very little effervescence after application of water peroxide
	5	Light to medium effervescence
	10	Abundant effervescence

3) Indicators of Soil Health (Gliessman, 2015):

    1. Earthworm presence: greater than 10 worms/ft3; many castings and holes in tilled clods.
    2. Colour of organic matter: topsoil distinctly darker than subsoil.
    3. Presence of plant residues: residue apparent on most of soil surface.
    4. Condition of plant roots: roots extensively branched, white, extended into subsoil.
    5. Degree of subsurface compaction (before tillage or after harvest): a stiff wire goes in easily to 2× plough depth.
    6. Soil tilth or friability: soil crumbles easily, feels spongy when walked on.
    7. Signs of erosion (after heavy rainfall): no gullies or rills; runoff from fields is clear.
    8. Water-holding capacity (after rainfall during growing season): soil holds moisture well more than a week w/o signs of drought stress.
    9. Degree of water infiltration (after rainfall): no ponding or runoff; soil surface does not remain excessively wet.
    10. pH (at same time each year): near neutral and appropriate for crop.
    11. Nutrient-holding capacity (at same time each year): N, P, and K trending up, but not into very high zone.

Annex I: Legal frameworks and international regulation

Area	Links
Universal Declaration of Human Rights (UDHR)	• Universal Declaration of Human Rights, 1948
International Covenant on Civil and Political Rights (ICCPR)	• International Covenant on Civil and Political Rights, 1966 • Optional Protocol to the International Covenant on Civil and Political Rights, 1966
International Covenant on Economic, Social and Cultural Rights (ICESCR)	• International Covenant on Economic, Social and Cultural Rights, 1966 • Optional Protocol to the International Covenant on Economic, Social and Cultural Rights, 2008

Other core international human rights conventions [137]	• International Convention on the Elimination of All Forms of Racial Discrimination, 1965 • Convention on the Elimination of All Forms of Discrimination Against Women, 1979 • Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, 1984 • Convention on the Rights of the Child, 1989 • International Convention on the Protection of All Migrant Workers and Members of Their Families, 1990 • International Convention for the Protection of All Persons from Enforced Disappearance, 2006 • Convention on the Rights of Persons with Disabilities, 2006 • Second Optional Protocol to the International Covenant on Civil and Political Rights aiming at the Abolition of the Death Penalty, 1989 • Optional Protocol to the Convention on the Elimination of All Forms of Discrimination against Women, 1999 • Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict, 2000 • Optional Protocol on the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography, 2000 • Optional Protocol to the Convention on the Rights of the Child on a communications procedure, 2014 • Optional Protocol to the Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment, 2002 • Optional Protocol to the Convention on the Rights of Persons with Disabilities, 2006 • Human rights of youth • The human right to water and sanitation • United Nations declaration on the rights of peasants and other people working in rural areas (UNDROP) • UN The Right to Adequate Food • The International Covenant on Economic, Social and Cultural Rights • The human right to safe and healthy working conditions • United Nations Convention on the Rights of the Child (1989)

137 OHCHR list of international human rights instruments

International Labour Organisation (ILO) fundamental conventions	• Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87) • Right to Organise and Collective Bargaining Convention, 1949 (No. 98) • Forced Labour Convention, 1930 (No. 29) • Abolition of Forced Labour Convention, 1957 (No. 105) • Minimum Age Convention, 1973 (No. 138) • Worst Forms of Child Labour Convention, 1999 (No. 182) • Equal Remuneration Convention, 1951 (No. 100) • Discrimination (Employment and Occupation) Convention, 1958 (No.111) • Occupational Safety and Health Convention, 1981 (No. 155) • Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

Other ILO conventions[138]	• ILO Declaration on Fundamental Principles and Rights at Work, 1998 • ILO Hours of Work (Industry) Convention, 1919 (No. 1) • ILO Hours of Work (Commerce and Offices) Convention, 1930 (No. 30) • ILO Night Work of Young Persons (Non-Industrial Occupations) Convention, 1946 (No. 79) • ILO Labour Inspectors Convention, 1947 (No. 81) • ILO Night Work of Young Persons Employed in Industry Convention, 1948 (No. 90) • ILO Protection of Wages Convention, 1949 (No. 95) • Migration for Employment Convention (Revised), 1949 (No. 97) • ILO Social Security (Minimum Standards) Convention, 1952 (No. 102) • Plantations Convention, 1958 (No. 110) • ILO Social Policy (Basic Aims and Standards) Convention, 1962 (No. 117) • ILO Equality of Treatment (Social Security) Convention, 1962 (No. 118) • Employment Injury Benefits Convention, 1964 [Schedule I amended in 1980] (No. 121) • ILO Employment Policy Convention, 1964 (No. 122) • ILO Minimum Age (Underground Work) Convention, 1965 (No. 123) • ILO Medical Care and Sickness Benefits Convention, 1969 (No. 130) • ILO Minimum Wage Fixing Convention, 1970 (No. 131) • ILO Holidays with Pay (Revised) Convention, 1970 (No. 132) • ILO Workers' Representatives Convention, 1971 (No. 135) • ILO Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143) • ILO Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148) • ILO Workers with Family Responsibilities Convention, 1981 (No. 156) • ILO Termination of Employment Convention, 1982 (No. 158) • ILO Indigenous and Tribal Peoples Convention, 1989 (No. 169) • ILO Night Work Convention, 1990 (No. 171) • ILO Prevention of Major Industrial Accidents Convention, 1993 (No. 174) • ILO Maternity Protection Convention, 2000 (No. 183)

138 ILO list of conventions

Environmental Instruments	• Stockholm Convention on Persistent Organic Pollutants, 2001 • Kyoto Protocol, 1997 • United Nations Convention on Biological Diversity, 1993 • United Nations Framework Convention on Climate Change (UNFCCC), 1994 • Paris Agreement, 2015 • Montreal Protocol on Substances that Deplete the Ozone Layer, 1987 • Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, 1989 • UN Convention on Biological Diversity (CBD) • Post-2020 Global Biodiversity Framework (draft) • The Nagoya Protocol • The Cartagena Protocol on Biosafety • Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (revised 2019) • DECLARATION OF NYÉLÉNI – Food sovereignty
Other International Instruments, for list of universal human rights instruments[139] see here	• Declaration on the Rights of Indigenous Peoples • Rome Statute of the International Criminal Court, 1998 • UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage, 1972 • Convention Against Corruption, 2000 • Convention Against Transnational Organized Crime, 2000 • Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the UN Convention against Transnational Organised Crime, 2000 • The human right to safe and healthy working conditions • Occupational Safety and Health Convention, 1981 (No. 155) • Safety and Health in Agriculture Convention, 2001 (No. 184) • Employment Injury Benefits Convention, 1964 [Schedule I amended in 1980] (No. 121) • Medical Care and Sickness Benefits Convention, 1969 (No. 130) • Medical Examination of Young Persons (Industry) Convention, 1946 (No. 77) • Medical Examination of Young Persons (Non-Industrial Occupations) Convention, 1946 (No. 78)

139 OHCHR international instruments and mechanisms

Regional Instruments	• African Charter on Human and People´s Rights, 1998 • Protocol to the African Charter on Human and People´s Rights on the Rights of Women in Africa, 2003 • African Convention on the Rights and Welfare of the Child • African Convention on Nature and Natural Resources, 1968 • African Union Convention on Preventing and Combating Corruption, 2003 • European Convention on Human Rights, 1950 • The European Social Charter, 1961 • European Convention for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment, 1987 • Council of Europe, 1949 • Council of Europe Convention on Action against Trafficking in Human Beings, 2005 • European Charter for Regional or Minority Languages, 1992 • Charter of Fundamental Rights of the European Union, 2000 • American Convention on Human Rights, 1969 • Inter-American Convention to Prevent and Punish Torture, 1985 • Inter-American Convention on the Prevention, Punishment, and Eradication of Violence against Women • Inter-American Convention on the Elimination of All Forms of Discrimination against Persons with Disabilities • EU Proposal for a regulation on deforestation-free products • EU Directive on Mandatory Human Rights, Environmental and Good Governance Due Diligence • Upcoming EU observatory on deforestation and forest degradation • EU Nature and biodiversity laws • European Green Deal (EU) - Farm to Fork • European Green Deal (EU) - Biodiversity strategy for 2030 • International Treaty on Plant Genetic Resources for Food and Agriculture • The Green Deal (EU) - Waste and recycling • The Green Deal (EU) - Circular economy action plan • EU Directive on Mandatory Human Rights, Environmental and Good Governance Due Diligence • EU “Organic Directive and “Eco Directive”

National regulations	On due diligence e.g.: • German Mandatory Human Rights Due Diligence, • French French Fair Trade law ("LOI n° 2014-856 du 31 juillet 2014 relative à l'économie sociale et solidaire"). Other: • Directive 2001/18/EC Environmental risk assessment (ERA) of genetically modified organisms; • The Green Deal approach for EU support to biodiversity conservation in Africa – NaturAfrica.

Annex J: Organisations recommended for partnership

Organizations	Topic/area
60 decibels	Data collection at producer and worker level (through surveys).
AIRBUS Satellite Imagery Services	Earth monitoring.
Biodiversity International	Biodiversity, soil health, water.
CIAT | The International Center for Tropical Agriculture	Research on various sustainable topics (food security and nutrition, landscape, climate change, agrobiodiversity, digital inclusion, gender).
CIFOR: Center for International Forestry Research	Soil health, land degradation.
CLASP | Collaborative Labelling and Appliance Standards Program	Climate change and energy.
Cool Farm Tool	On farm-data (degree of sustainability, biodiversity levels, water, GHG emissions).
Datastake	Data collection and monetisation.
Development International	Research (concerning sustainability).
ECOWAS | Regional Centre for Renewable Energy and Energy Efficiency (ECREEE)	Renewable energy, energy efficiency.
Energy 4 Impact	Renewable energy, energy efficiency.
FIAN	Land rights and food security.
GAF	Earth monitoring, remote sensing, polygons, predict PO performance.
GWA | Gender and Water Alliance (GWA)	Gender, water.
German Agro-Action	Food security.
GIZ	Climate change, biodiversity, water, soil health, agroecological practices.
Global Forest Watch	Earth monitoring, remote sensing.
Global March	Child labour, youth.
Global Nature Fund	Climate change, biodiversity, water, soil health, agroecological practices.
Global Soil Partnership	Soil health, land degradation.
Gold Standard Foundation	Carbon removal.
Heifer International	Living income.

Hummingbird Technologies	Geo-localisation, earth monitoring, predict POs performance.
Impact Institute	Data (Fairtrade already works with this organisation).
ISEAL's Certification Atlas	Polygon data to map areas of certified activities.
IUCN	Climate change, biodiversity, water, soil health, agroecological practices.
MPS	Certification scheme recommended for Fairtrade Flowers.
One earth	Climate change.
Perennial	Carbon removal.
Phys	Soil health, efficient use of fertilisers.
Plan Vivo	Carbon removal.
Planet - Planet Labs	Earth monitoring and remote sensing.
Rabobank	Carbon removal.
Regenerative Organic Agriculture Alliance	Certification scheme on regenerative organic.
SustainCert	Climate and SDG impact accounting and certification.
The centre for the child rights and business	Child labour, Youth.
Ulula	Grievance mechanism, audits, technology-assisted worker surveys.

Annex K: List of selected Fairtrade publications on improving the sustainability of the system

List of selected Fairtrade-related academic publications between 2010-2022. The publications provide information about some of the sustainability 'victories' and challenges. They also offered suggestions on how to improve the sustainability of the system.

Short abstracts	Reference
"The presence of hunger challenges sustainable coffee marketing claims. Increased investments and integrated strategies will be needed to reduce threats to food security, livelihoods, and biodiversity associated with the rapid spread of coffee leaf rust and falling commodity prices. Partnership-based response that integrates agroecological farm management with the use of fair trade cooperative institutions could re-localize the corn distribution system."	Bacon, C. M., Sundstrom, W., Flores Gómez, M., Méndez, V., Santos, R., Goldoftas, B., & Dougherty, I. (2014.) Explaining the 'hungry farmer paradox': Smallholders and fair trade cooperatives navigate seasonality and change in Nicaragua's corn and coffee markets. *Global Environmental Change* 25, 133-149. https://doi.org/10.1016/j.gloenvcha.2014.02.005
"Fairtrade cotton programs are producing some positive effects, notably women's participation in cash crop cultivation and higher cotton quality. An innovative direct marketing agreement linking the National Cotton Growers' Union of Burkina Faso with US women's apparel company Victoria's Secret indicates that alternative trading relations can be constructed."	Bassett, T. J. (2010). Slim pickings: Fairtrade cotton in West Africa. *Geoforum*, 41(1), 44-55. https://doi.org/10.1016/j.geoforum.2009.03.002.
"This paper draws on four years of fieldwork in Ethiopia and Uganda to examine the mechanisms linking agricultural exports with poverty reduction, the functioning of rural labour markets, and the relevance to the lives of the poorest people of Fairtrade. It highlights the relatively poor payment and non-pay working conditions of those employed in research sites dominated by Fairtrade producer organisations. We conclude that Fairtrade is not an effective way to improve the welfare of the poorest rural people."	Cramer, C. *et al.* (2017). Fairtrade and Labour Markets in Ethiopia and Uganda. *The Journal of Development Studies*, 53(6), 841-856. https://10.1080/00220388.2016.1208175
"Considered whether voluntary certification of tropical agricultural commodities has achieved environmental benefits and improved economic and social outcomes for small-scale producers. We conclude that certification is associated with positive outcomes for 34% of response variables and no significant difference for 58% of variables. Results indicate that voluntary certification programs can sometimes play a role in meeting sustainable development goals."	DeFries, R. *et al*. (2017). Is voluntary certification of tropical agricultural commodities achieving sustainability goals for small-scale producers? A review of the evidence. *Environmental Research Letters*, 12(3), 03300.

"This paper examines how the process of corporate mainstreaming influences the structure and outcomes of Fairtrade. It argues that whilst tea producers have experienced tangible benefits from Fairtrade's social premium, these development 'gifts' have been conferred through processes marked less by collaboration and consent than by patronage and exclusion. The paper concludes that these technologies have divested exchange of mutuality, as standards, procedures and protocols increasingly render north South partnerships ever more virtual and depoliticized."	Dolan, C. S. (2010). Virtual moralities: The mainstreaming of Fairtrade in Kenyan tea fields. *Geoforum*, 41(1), 33-43. https://doi.org/10.1016/j.geoforum.2009.01.002
"This research compares environmental and socioeconomic benefits of Brazil nut certification for 231 producers in 17 communities in the trinational border region of Bolivia, Brazil, and Peru. Organic and Fairtrade certification associated with better postharvest practices and higher prices. Certification was viewed most positively in Bolivia, where producers gleaned financial and social benefits. Partnerships with cooperatives, donors, government, and nongovernmental organizations were essential to maximize conservation and development objectives."	Duchelle, A.E., Kainer , K.A. & Wadt, L.H.O. (2014). Is Certification Associated with Better Forest Management and Socioeconomic Benefits? A Comparative Analysis of Three Certification Schemes Applied to Brazil Nuts in Western Amazonia, *Society & Natural Resources*, 27(2), 121-139. https://doi-org.ezproxy.uvm.edu/10.1080/08941920.2013.840022.
"This paper argues that the Fairtrade community needs to be reinvigorated through dialogical communication, impactful participation and cultural synthesis. "Being-with" its multiple stakeholders makes space for a more responsive, contextual and connected system. A Fairtrade built on solidarity through a participatory and decentralised system would allow for discussions of the ideals and practices essential to negotiating, and not swallowing up, the shifting "we" of Fairtrade."	Herman, A. (2020). Building a Politics of Connectivity: Intercultural In-Commonness in Fairtrade. Antipode, 52(5), 1310-1330. https://doi-org.ezproxy.uvm.edu/10.1111/anti.12633
"Three distinct 'factors' (or perspectives) are identified, and discussed in relation to a multi-dimensional framework for exploring fairness. The three factors reflect debates within carbon and fair trade spheres about who should be playing which roles, who should be accessing which benefits, and how people should be supported to interact on an uneven playing field. Our research provides a critical reflection on these plural notions of fairness, identifying areas of (dis) agreement within the FCC dialogue, and provides a wider, yet manageable, set of inputs for supporting the FCC process during its inception and subsequent implementation."	Howard, R.J., Tallontire, A. M., Stringer, L.C. & Marchant, R.A. (2016). Which "fairness", for whom, and why? An empirical analysis of plural notions of fairness in Fairtrade Carbon Projects, using Q methodology. *Environmental Science & Policy,* 56, 100-109. https://doi.org/10.1016/j.envsci.2015.11.009.

"Can Fairtrade certification improve farmers' livelihoods in small-scale coffee farming tribal communities in India? Has Fairtrade contributed to capacity-building among the farmers? Using the propensity score matching technique, the empirical findings show that Fairtrade has a positive impact on farmers' income. But while the benefits are modest and the process is slow, challenges remain in terms of improving the effectiveness and management of the cooperative system, as well as raising the awareness of farmers about Fairtrade certification."	Jena, P. R., & Grote, U. (2017). Fairtrade Certification and Livelihood Impacts on Small-scale Coffee Producers in a Tribal Community of India. Applied Economic Perspectives and Policy 39(1), 87-110. https://doi-org.ezproxy.uvm.edu/10.1093/aepp/ppw006
"This paper investigates the impact of Fairtrade and organic certification on household income of smallholder coffee farmers in Nicaragua. The results found that Fairtrade and organic certification standards have different effects on the certified farmers. However, the overall impact of these certification standards on the total household income is found to be statistically not significant. While some of the Fairtrade-certified cooperatives have used the social premium in creating community-level infrastructure, there is a need for more investment."	Jena, P.R., Stellmacher, T. & Grote, U. (2017). Can coffee certification schemes increase incomes of smallholder farmers? Evidence from Jinotega, Nicaragua. *Environment, Development, and Sustainability* 19, 45–66. https://doi-org.ezproxy.uvm.edu/10.1007/s10668-015-9732-0
"While the market for sustainably certified products grows, the debate on whether smallholder farmers benefit from this certification movement is far from over. Identical household surveys were conducted among 738 smallholder coffee farmers organized in primary cooperatives in Ethiopia, India and Nicaragua. We conclude that coffee cooperatives and the motivation and capability of their staff play a central role in training their member farmers about each aspect of coffee growing and certification."	Jena, P. R. & Grote, U. (2022). Do Certification Schemes Enhance Coffee Yields and Household Income? Lessons Learned Across Continents. Frontiers of Sustainable Food Systems. https://doi.org/10.3389/fsufs.2021.716904
"Conceptually, the paper draws on global production network analysis as well as analysis of credibility through convention theory and sources of justification. Empirically, it reviews the changing dynamics in cocoa sustainability including independent sustainability standards and major chocolate company-led programmes. It argues that the increasing reliance on corporate-led cocoa sustainability initiatives constitutes a significant shift in terms of sources of credibility, which risks exacerbating power and embeddedness asymmetries. It remains open whether this will enhance or undermine sustainability in future."	Krauss, J. (2021). Fairtrade and beyond: Shifting dynamics in cocoa sustainability production networks. Geoforum 120, 186-197. https://doi.org/10.1016/j.geoforum.2021.02.002
"Sustainability standards, such as Fairtrade, play an important role in agri-food markets of horticultural produce. We assess its effect on workers' hourly wages and their level of job satisfaction with primary survey data from eight different export-oriented pineapple companies in Ghana. Our findings show that both hourly wages and job satisfaction are indeed higher on Fairtrade-certified plantations. Factors of increased job satisfaction are likely driven by higher wages, permanent employment contracts, training opportunities and company services such as medical care and paid leave as well as established labor unions."	Krumbiegel, K., Maertens, M., & Wollni, M. (2018). The Role of Fairtrade Certification for Wages and Job Satisfaction of Plantation Workers. World Development, 102, 195-212. https://doi.org/10.1016/j.worlddev.2017.09.020.

"Prospects for improved gender equity rest on answers to three key questions. Fairtrade organizational norms combine with organic procedural norms to bring significant impacts in three areas: women's organizations have greater access to network benefits and women gain greater control over farm practices. However, the burden of complying with norms together with stagnant real prices excludes some women who might otherwise benefit from expanded participation."	Lyon, S., Bezaury, J. A. & Mutersbaugh, T. (2010). Gender equity in fairtrade–organic coffee producer organizations: Cases from Mesoamerica. *Geoforum*, 41(1), 93-103, https://doi.org/10.1016/j.geoforum.2009.04.006.
"Coffee producer associations in Oaxaca, Mexico, have seen a significant increase in the number of active female coffee association members. But women experience significant time poverty as they engage in coffee production while bearing a disproportionate share of domestic labor obligations. The time poverty they experience limits their ability to fully participate in coffee organizational governance. Our findings indicate that targeted agricultural development programs should involve creative ways to ease women's labor burdens and reduce their time poverty."	Lyon, S., Mutersbaugh, T. & Worthen, H. (2017). The triple burden: the impact of time poverty on women's participation in coffee producer organizational governance in Mexico. *Agriculture and Human Values* 34**,** 317–331. https://doi-org.ezproxy.uvm.edu/10.1007/s10460-016-9716-1
"Fairtrade improves wages and reduces poverty among cooperative workers, but not among farm workers, even though the latter are particularly deprived. Ensuring that labour standards are met at all levels may require innovative and more efficient monitoring approaches."	Meemken, E.M.., Sellare, J., Kouame, C.N. *et al.* (2019). Effects of Fairtrade on the livelihoods of poor rural workers. *Nature Sustainability* 2**,** 635–642. https://doi-org.ezproxy.uvm.edu/10.1038/s41893-019-0311-5.
"A growing body of literature has analyzed the welfare effects, with mixed results. We address these shortcomings using panel data from small-scale coffee producers in Uganda. Results show that Organic and Fairtrade both have positive effects on total consumption expenditures, but notable differences in the other outcomes. Organic contributes to improved nutrition but has no effect on education; for Fairtrade it is exactly the other way around."	Meemken, E. M., Spielman, D. J. & Qaim, M. (2017). Trading off nutrition and education? A panel data analysis of the dissimilar welfare effects of Organic and Fairtrade standards. *Food Policy* 71, 74-85, https://doi.org/10.1016/j.foodpol.2017.07.010.
"We analyse responses from a global survey of Fairtrade producers to explore how Fairtrade operates as a credential. The credentialism literature sheds light on Fairtrade's ability to create social and economic mobility. We conclude with research and policy recommendations, including the need to track and monitor initial conditions of Fairtrade producers and measure progress over time."	Mook, A., & Overdevest, C. (2020). Fairtrade credentialism: towards understanding certified producer organizations' perceptions of Fairtrade as a credential. *Globalizations*, *17*(1), 110–125. https://doi-org.ezproxy.uvm.edu/10.1080/14747731.2019.1638113
"This paper aims to unpack marketing channels available for small-scale coffee producers, unveiling potential sources of uncertainty and tensions, and identifying and assessing the strategies used by organizations to influence farmers' marketing decisions. Results show the limitations of standard fairtrade mechanisms to secure farmers' engagement with cooperative organizations. Rather, technical advice to improve farming practices and quality construction seem to be an effective mechanism to govern this collective supply chain."	Ortiz-Miranda, D. & Moragues-Faus, A. M. (2015). Governing Fair Trade Coffee Supply: Dynamics and Challenges in Small Farmers' Organizations. *Sustainable Development*, 23(1), 41-54 https://doi-org.ezproxy.uvm.edu/10.1002/sd.1570.

"Coffee farmers are predominantly economically motivated to adopt the Fairtrade system. Women are significantly more environmentally driven to adopt Fairtrade certification, compared to men. Moreover, lower-income and smaller-scale coffee farmers are less economically and environmentally motivated for Fairtrade certification. Fairtrade certification among smallholder growers should be designed in ways that balance economic, social, and environmental outcomes. Findings call for targeted measures to strengthen Fairtrade's commitment to empowering disadvantaged smallholder farmers."	Pyk, F., & Assem, A. H. (2018). Fairtrade and sustainability: Motivations for fairtrade certification among smallholder coffee growers in Tanzania. *Sustainability, 10*(5), 1551. http://dx.doi.org/10.3390/su10051551
"Analyzing the nature of US Fair Trade Rooibos buyers and their South African sourcing arrangements, we identify key variations in Fair Trade commitment and engagement between mission-driven and market-driven distributors. While mission-driven buyers engage small-scale Rooibos cooperatives in multifaceted partnership networks, market-driven buyers pursue conventional sourcing strategies favoring purchases from large plantations and exporters. Tensions between radical and commercial orientation toward Fair Trade mirror those in the broader movement in many ways."	Raynolds, L. T., & Ngcwangu, S. U. (2010). Fair Trade Rooibos tea: Connecting South African producers and American consumer markets. *Geoforum*, 41(1), 74-83. https://doi.org/10.1016/j.geoforum.2009.02.004.
"Fairtrade's engagement in the hired labor sector is shaped by tensions between traditional market and industrial conventions and alternative domestic and civic conventions. At the global level, these tensions shape Fairtrade's global standard setting as reflected in its recently revised labor standards. In Ecuador, a case study of certified flower production reveals the varied impacts of certification on the ground."	Raynolds, L.T. (2014). Fairtrade, certification, and labor: global and local tensions in improving conditions for agricultural workers. *Agriculture and Human Values* 31**,** 499–511. https://doi-org.ezproxy.uvm.edu/10.1007/s10460-014-9506-6
"Certification programs seek to promote decent work in global agriculture, yet little is known about their gender standards and implications for female workers. Some programs prioritize addressing gender equality in employment and others incorporate wider gender rights. My findings reveal how promoting women's individual empowerment serves as a precondition for collective empowerment; targeting traditional labor rights is insufficient for empowering female workers."	Raynolds, L.T. (2021). Gender equity, labor rights, and women's empowerment: lessons from Fairtrade certification in Ecuador flower plantations. *Agriculture and Human Values* 38(3), 657-675.
"Fairtrade and other sustainability standards can affect agrochemical input use through various mechanisms with possible positive and negative health and environmental effects. Fairtrade increases chemical input quantities and aggregated levels of toxicity, but reduces the incidence of pesticide-related acute health symptoms among farmers and workers. Certified cooperatives are more likely to offer training and other services related to the safe handling of pesticides and occupational health, which can reduce negative externalities."	Sellare, J., Meemken, E.-M. & Qaim, M. (2020). Fairtrade, Agrochemical Input Use, and Effects on Human Health and the Environment. *Ecological Economics* 176, 106718. https://doi.org/10.1016/j.ecolecon.2020.106718.

"Certification is promoted to improve rural welfare through better market access and improved agricultural practices. Comparing net effects of Fairtrade- and Utz-Certified coffee production in Central Kenya, using a matched panel from 218 farm-households. Fairtrade farmers increased their coffee specialization, while Utz farmers reduced coffee areas but increased yield. Both certification regimes improved coffee returns, but Fairtrade was more effective in coffee processing, whereas Utz contributed to productivity."	van Rijsbergen, B., Elbers, W., Ruben, R., & Njuguna, S. N. (2016). The Ambivalent Impact of Coffee Certification on Farmers' Welfare: A Matched Panel Approach for Cooperatives in Central Kenya. *World Development*, 77, 277-292. https://doi.org/10.1016/j.worlddev.2015.08.021.--

Bibliography

Acker, D., Gasperini, L., & Food and Agriculture Organization of the United Nations. (2009). *Education for rural people : the role of education, training and capacity development in poverty reduction and food security*. 130.

Adams, C. A., Alhamood, A., He, X., Tian, J., Wang, L., & Wang, Y. (2021). *The Double-Materiality Concept: Application and Issues*. Global Reporting Initiative.

Adams, C. A., Druckman, P. B., & Picot, R. C. (2020). *Sustainable Development Goal Disclosure (SDGD) Recommendations*. ACCA, Chartered Accountants ANZ, ICAS, IFAC, IIRC and WBA.

Adaptation Fund. (2016). *New Meteorological Stations for a Family Farming Project in Argentina - Adaptation Fund*. https://www.adaptation-fund.org/new-meteorological-stations-for-a-family-farming-project-in-argentina/

Adeoye, O. J., & Aina, S. A. (2019). An Appraisal of Ozone Layer Depletion and Its Implication on the Human Environment. *Journal of Law, Policy and Globalization*, *83*. https://doi.org/10.7176/JLPG/83-02

Akilli, H. S. (2012). Mobile voting as an alternative for the disabled voters. *Lecture Notes in Informatics (LNI), Proceedings - Series of the Gesellschaft Fur Informatik (GI)*, *P-205*.

Aktar, M. W., Sengupta, D., & Chowdhury, A. (2009). Impact of pesticides use in agriculture: their benefits and hazards. *Interdisciplinary Toxicology*, *2*(1), 1. https://doi.org/10.2478/V10102-009-0001-7

Alig, M., & Frischknecht, R. (2018). *Life Cycle Assessment Cut Roses*. https://www.researchgate.net/publication/331089969_Life_Cycle_Assessment_Cut_Roses_Migros-Genossenschafts-Bund_MGB_Switzerland_Fairtrade_International_Imprint_Title_Life_Cycle_Assessment_Cut_Roses?channel=doi&linkId=5c655bf2a6fdccb608c24919&showFulltext=true

Alluvione, F., Moretti, B., Sacco, D., & Grignani, C. (2011). EUE (energy use efficiency) of cropping systems for a sustainable agriculture. *Energy*, *36*(7). https://doi.org/10.1016/j.energy.2011.03.075

Alpízar, F., Saborío-Rodríguez, M., Martínez-Rodríguez, M. R., Viguera, B., Vignola, R., Capitán, T., & Harvey, C. A. (2020). Determinants of food insecurity among smallholder farmer households in Central America: recurrent versus extreme weather-driven events. *Regional Environmental Change*, *20*(1), 1–16. https://doi.org/10.1007/S10113-020-01592-Y/TABLES/6

Altieri, M. A., & Nicholls, C. I. (2005). Agroecology and the search for a truly sustainable agriculture . *Nations Environment Programme*. https://agroeco.org/doc/agroecology-engl-PNUMA.pdf

Altieri, M. A., Nicholls, C. I., Henao, A., & Lana, M. A. (2015). Agroecology and the design of climate change-resilient farming systems. *Agronomy for Sustainable Development*, *35*(3), 869–890. https://doi.org/10.1007/S13593-015-0285-2/TABLES/2

American Society of Agronomy. (1989). *Decision reached on sustainable agriculture*.

Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., & Pimbert, M. P. (2019). From Transition to Domains of Transformation: Getting to Sustainable and Just Food Systems through Agroecology. *Sustainability*, *11*(19), 5272. https://doi.org/10.3390/su11195272

Anderson, C. R., Maughan, C., & Pimbert, M. P. (2019). Transformative agroecology learning in Europe: building consciousness, skills and collective capacity for food sovereignty. *Agriculture and Human Values*, *36*(3), 531–547. https://doi.org/10.1007/S10460-018-9894-0/FIGURES/2

Anderzén, J., Guzmán Luna, A., Luna-González, D. V., Merrill, S. C., Caswell, M., Méndez, V. E., Hernández Jonapá, R., & Mier y Terán Giménez Cacho, M. (2020). Effects of on-farm diversification strategies on smallholder coffee farmer food security and income sufficiency in Chiapas, Mexico. *Journal of Rural Studies*, 77. https://doi.org/10.1016/j.jrurstud.2020.04.001

Arellanes, P., & Lee, D. R. (2003). The determinants of adoption of sustainable agriculture technologies: evidence from the hillsides of Honduras. *Proceedings of the 25th International Conference of Agricultural Economists*, *August*.

Armengot, L., Barbieri, P., Andres, C., Milz, J., & Schneider, M. (2016). Cacao agroforestry systems have higher return on labor compared to full-sun monocultures. *Agronomy for Sustainable Development*, *36*(4), 70. https://doi.org/10.1007/s13593-016-0406-6

Arsenault, C., & Reuters. (2014). *Only 60 years of farming left if soil degradation continues* . Reuters. https://www.reuters.com/article/us-food-soil-farming-idUSKCN0JJ1R920141205

Baca, M., Läderach, P., Haggar, J., Schroth, G., & Ovalle, O. (2014). An Integrated Framework for Assessing Vulnerability to Climate Change and Developing Adaptation Strategies for Coffee Growing Families in Mesoamerica. *PLOS ONE*, *9*(2), e88463. https://doi.org/10.1371/JOURNAL.PONE.0088463

Baerenklau, K. A. (2005). Toward an understanding of technology adoption: Risk, learning, and neighborhood effects. *Land Economics*, *81*(1). https://doi.org/10.3368/le.81.1.1

Banerjee, B., & Menon, H. (2015). *Traceability in food and agricultural products*. International Trade Center.

Beare, D. J., Bennett, E. M., Hall-Spencer, J. M., I Ingram, J. S., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J. A., Shindell, D., Campbell, B. M., Beare, D. J., Bennett, E. M., Hall-Spencer, J. M., I Ingram, J. S., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J. A., & Shindell, D. (2017). Agriculture production as a major driver of the Earth system exceeding planetary boundaries. *Ecology and Society, Published Online: Oct 12, 2017 | Doi:10.5751/ES-09595-220408*, *22*(4). https://doi.org/10.5751/ES-09595-220408

Becker-Olsen, K., & Potucek, S. (2013). Greenwashing. *Encyclopedia of Corporate Social Responsibility*, 1318–1323. https://doi.org/10.1007/978-3-642-28036-8_104

Bell, M. M., & Bellon, S. (2018). Generalization without universalization: Towards an agroecology theory. *Agroecology and Sustainable Food Systems*, *42*(6), 605–611. https://doi.org/10.1080/21683565.2018.1432003

Bellon, M. R., Ntandou-Bouzitou, G. D., & Caracciolo, F. (2016). On-Farm Diversity and Market Participation Are Positively Associated with Dietary Diversity of Rural Mothers in Southern Benin, West Africa. *PLOS ONE*, *11*(9), e0162535. https://doi.org/10.1371/JOURNAL.PONE.0162535

Bezabih, M., Di Falco, S., Mekonnen, A., & Kohlin, G. (2021). Land rights and the economic impacts of climatic anomalies on agriculture: evidence from Ethiopia. *Environment and Development Economics*, *26*(5–6), 632–656. https://doi.org/10.1017/S1355770X2100022X

Bezner Kerr, R., Madsen, S., Stüber, M., Liebert, J., Enloe, S., Borghino, N., Parros, P., Mutyambai, D. M., Prudhon, M., & Wezel, A. (2021). Can agroecology improve food security and nutrition? A review. *Global Food Security*, *29*, 100540. https://doi.org/10.1016/j.gfs.2021.100540

Biodynamic Association. (n.d.). *What Is Biodynamics?* Retrieved November 9, 2021, from https://www.biodynamics.com/what-is-biodynamics

Birrer, S., Zellweger-Fischer, J., Stoeckli, S., Korner-Nievergelt, F., Balmer, O., Jenny, M., & Pfiffner, L. (2014). Biodiversity at the farm scale: A novel credit point system. *Agriculture, Ecosystems & Environment*, *197*, 195–203. https://doi.org/10.1016/J.AGEE.2014.08.008

Blanka, V., Mezosi, G., & Meyer, B. (2013). Projected changes in the drought hazard in Hungary due to climate change. *Idojaras*, *117*(2).

Boer, I. D., & Ittersum, M. (2018). Circularity in Agricultural production. In *undefined*. https://edepot.wur.nl/470625

Borkowska-Waszak, S., Diamantopoulos, S. E., Lavelle, P., & Martinello, O. (2020). *Good Practices of Youth Participation Mid-term Deliverable Report of the project "Youth for a Just Transition" realised for DG REGIO within the Junior Professionals Programme*. https://ec.europa.eu/info/sites/default/files/eu_regional_and_urban_development/topics/documents/youth_for_a_just_transition_mid-term_deliverable_report_final.pdf

Borza, M. (2014). The Connection between Efficiency and Sustainability – A Theoretical Approach. *Procedia Economics and Finance*, *15*, 1355–1363. https://doi.org/10.1016/S2212-5671(14)00599-1

Boushey, H., & Glynn, S. J. (2012). *There Are Significant Business Costs to Replacing Employees*. Center for American Progress.

Brandmayr, C., Peake, L., Elliot, J., & Cripps, I. (1967). *Futureproofing supply chains: Options for long term low carbon resilience of key Faitrade products*.

Brennen, J. S., & Kreiss, D. (2016). Digitalization. *The International Encyclopedia of Communication Theory and Philosophy*, 1–11. https://doi.org/10.1002/9781118766804.WBIECT111

Britannica, T. E. of E. (2019). *Trade union*. Encyclopedia Britannica. https://www.britannica.com/topic/trade-union

Brundtland, G. H. (1987). *Our Common Future: Report of the World Commission on Environment and DevelopmentOur Common Future: Report of the World Commission on Environment and Development*. UN-Dokument A/42/427. http://www.un-documents.net/ocf-ov.htm

Calabres, A., Costa, R., Levialdi Ghiron, N., & Menichini, T. (2019). Materiality Analysis in Sustainability Reporting: A Tool for Directing Corporate Sustainability Towards Emerging Economic, Environmental and Social Opportunities. *Technological and Economic Development of Economy*, *25*(5), 1016–1038. https://doi.org/10.3846/tede.2019.10550

Calace, D. (2020). *Double and Dynamic: Understanding the Changing Perspectives on Materiality - SASB*. https://www.sasb.org/blog/double-and-dynamic-understanding-the-changing-perspectives-on-materiality

Carbon Cycle Institute. (n.d.). *Carbon Farming*. Retrieved November 9, 2021, from https://www.carboncycle.org/carbon-farming

Carney, M. (2015). Breaking the tragedy of the horizon - climate change and financial stability - speech by Mark Carney | Bank of England. In *Bank of England* (Issue September). https://www.bis.org/review/r151009a.pdf

Caron, P., Biénabe, E., & Hainzelin, E. (2014). Making transition towards ecological intensification of agriculture a reality: the gaps in and the role of scientific knowledge. *Current Opinion in Environmental Sustainability*, *8*, 44–52. https://doi.org/10.1016/J.COSUST.2014.08.004

Carvajal-Muñoz, J. S., & Carmona-Garcia, C. E. (2012). Benefits and limitations of biofertilization in agricultural practices. In *Livestock Research for Rural Development* (Vol. 24, Issue 3).

Caswell, M., Méndez, V. E., Baca, M., Läderach, P., Liebig, T., Castro-Tanzi, S., & Fernández, M. (2014). *Revisiting the "Thin Months"-A Follow-up Study on the Livelihoods of Mesoamerican Coffee Farmers Key messages*. www.ciat.cgiar.org

Caswell, M., Méndez, V. E., Juncos-Gautier, M. A., Hurley, S. E., Gould, R. K., Márquez Sánchez, D., & Lewis, S. (2020). Agroecological Transformations in Urban Contexts: Transdisciplinary Research Frameworks and Participatory Approaches in Burlington, Vermont. In *Urban Agroecology* (pp. 299–320). CRC Press. https://doi.org/10.1201/9780429290992-14

CBI. (2021). *The European Due Diligence Act*. https://www.cbi.eu/news/european-due-diligence-act

CCAFS. (2012). *Agriculture and Food Production Contribute Up to 29 Percent of Global Greenhouse Gas Emissions According to Comprehensive Research Papers*. https://ccafs.cgiar.org/media/press-release/agriculture-and-food-production-contribute-29-percent-global-greenhouse

CDP, CDSB, GRI, IIRC, & SASB. (2020a). *Reporting on enterprise value Illustrated with a prototype climate-related financial disclosure standard*. https://29kjwb3armds2g3gi4lq2sx1-wpengine.netdna-ssl.com/wp-content/uploads/Reporting-on-enterprise-value_climate-prototype_Dec20.pdf

CDP, CDSB, GRI, IIRC, & SASB. (2020b). *Statement of Intent to Work Together Towards Comprehensive Corporate Reporting Summary of alignment discussions among leading sustainability and integrated reporting organisations*. https://29kjwb3armds2g3gi4lq2sx1-wpengine.netdna-ssl.com/wp-content/uploads/Statement-of-Intent-to-Work-Together-Towards-Comprehensive-Corporate-Reporting.pdf

Cedergreen, N., & Rasmussen, J. J. (2017). Low Dose Effects of Pesticides in the Aquatic Environment. In *Pesticide Dose: Effects on the Environment and Target and Non-Target Organisms* (pp. 167–187). American Chemical Society. https://pubs.acs.org/isbn/9780841232112

Centre for the Study of Existential Risk. (2021). *Extreme Risks and the Global Environment*.

Chartered Institute of Personnel and Development. (2021). *Employee Voice*. https://www.cipd.co.uk/knowledge/fundamentals/relations/communication/voice-factsheet#gref

Chris Evans. (2017). *Himalayan Permaculture Centre (HPC)*. http://permaculturenews.org/2010/01/06/farmers-handbook/

Čiarnienė, R., Vienažindienė, M., & Adamonienė, R. (2021). Linking the employee voice to a more sustainable organisation: The case of Lithuania. *Engineering Management in Production and Services*, *13*(2), 18–28. https://doi.org/10.2478/EMJ-2021-0009

CIDSE (Coopération Internationale pour le Développement et la Solidarité). (2018). *The principles of agroecology: Towards just, re- silient and sustainable food systems*. https://www.cidse.org/wp-content/uploads/2018/04/EN_The_Principles_of_Agroecology_CIDSE_2018.pdf

CLAC Comercio Justo. (2020). *CLAC calls for promoting food sovereignty*. https://clac-comerciojusto.org/en/2020/10/clac-hace-un-llamado-a-promover-la-soberania-alimentaria

ClientEarth. (2019). *What is forest conversion?* https://www.clientearth.org/latest/latest-updates/stories/what-is-forest-conversion/

Climate NASA. (n.d.). *Global Warming vs. Climate Change* . Retrieved April 30, 2022, from https://climate.nasa.gov/resources/global-warming-vs-climate-change/

Committee on Sustainability Assessment. (n.d.-a). *Indicator Library: About Cosa indicators*. https://thecosa.org/about-cosa-indicators/

Committee on Sustainability Assessment. (n.d.-b). *Tea Indicators*. Retrieved December 30, 2021, from https://thecosa.org/tea-indicators/

Consultative Group on International Agricultural Research. (1988). *Sustainable Agricultural Production: Implications for International Agricultural Research*. https://cgspace.cgiar.org/handle/10947/1347

Convention on Biological Diversity. (2019). *Invasive Alien Species*. Secretariat of the Convention on Biological Diversity. https://www.cbd.int/invasive

Cordell, D., Rosemarin, A., Schröder, J. J., & Smit, A. L. (2011). Towards global phosphorus security: A systems framework for phosphorus recovery and reuse options. *Chemosphere*, *84*(6), 747–758. https://doi.org/10.1016/j.chemosphere.2011.02.032

COSA. (n.d.). *COSA | Committee on Sustainability Assessment*. Retrieved May 24, 2022, from https://thecosa.org/

Crane, A., & Livesey, S. (2003). Are you talking to me?: Stakeholder communication and the risks and rewards of dialogue. In J. Andriof, S. Waddock, B. Husted, & S. Rahman Sutherland (Eds.), *Unfolding Stakeholder Thinking 2: Relationships, Communication, Reporting and Performance*.

Datastake. (n.d.). *Applications*. Retrieved June 13, 2022, from https://datastake.io/applications

de Buhr, E., Bertrand, W. E., Ayerakwa, H., Cooper, A. J., Gonzalez Torres, E., & Bayer, C. N. (2020). *Contextual Analysis of Workers in Fairtrade-certified Small-scale Producer Organisations: Cocoa Production in Côte d'Ivoire and Ghana; Banana Production in Colombia, the Dominican Republic and Perú*.

De Muro, P., & Burchi, F. (2007). Education for rural people and food security. A cross country analysis. In *FAO*.

Declaration of Nyéléni. (2007). *Declaration of the Forum for Food Sovereignty*. https://nyeleni.org/spip.php?article290

DeLonge, M. S., Miles, A., & Carlisle, L. (2016). Investing in the transition to sustainable agriculture. *Environmental Science and Policy*, *55*, 266–273. https://doi.org/10.1016/j.envsci.2015.09.013

Demeke, M., Meerman, J., Scognamillo, A., Romeo, A., & Asfaw, S. (2017). *Linking farm diversification to household diet diversification: Evidence from a sample of Kenyan ultra-poor farmers*. https://www.researchgate.net/publication/326742028_Linking_farm_diversification_to_household_diet_diversification_Evidence_from_a_sample_of_Kenyan_ultra-poor_farmers

Demeter International. (n.d.). *Biodynamic approach and principles*. Retrieved November 10, 2021, from https://www.demeter.net/biodynamics/biodynamic-approach

Demeter International. (2021a). *GMO: European Commission threatens our freedom of choice*. Springer. https://www.demeter.net/gmo-european-commission-threatens-freedom-choice

Demeter International. (2021b). *GMO free Agriculture*. https://www.demeter.net/no-gmo/

Demeter International. (2021c). *Position paper New Genetic engineering techniques*. https://doi.org/10.1186/s12302-020-00361-2

Demeter USA. (n.d.). *Demeter: Frequently Asked Questions*. Retrieved November 10, 2021, from https://www.demeter-usa.org/about-demeter/demeter-faq.asp

Department for International Trade. (2020). *Trade barriers: what you need to know*. https://www.gov.uk/guidance/report-a-trade-barrier

Dickson, M., & Harmon, C. (2011). Economic returns to education: What We Know, What We Don't Know, and Where We Are Going—Some brief pointers. *Economics of Education Review*, *30*(6), 1118–1122. https://doi.org/10.1016/J.ECONEDUREV.2011.08.003

Döll, P. (2009). Vulnerability to the impact of climate change on renewable groundwater resources: aglobal-scale assessment. *Environmental Research Letters*, *4*(3), 035006. https://doi.org/10.1088/1748-9326/4/3/035006

Doorn, A. van, Melman, D., Westerink, J., Polman, N., Vogelzang, T., & Korevaar, H. (2016). *Food-for-thought : natuurinclusieve landbouw*. https://doi.org/10.18174/401503

Duke, S. O. (2017). Pesticide Dose – A Parameter with Many Implications. In *Pesticide Dose: Effects on the Environment and Target and Non-Target Organisms* (pp. 1–13). American Chemical Society. https://doi.org/10.1021/bk-2017-1249.ch001

Dundon, T., Wilkinson, A., Marchington, M., & Ackers, P. (2004). The meanings and purpose of employee voice. *International Journal of Human Resource Management*, *15*(6). https://doi.org/10.1080/0958519041000167733 59

Earth Observing System. (2020). *Soil Conservation Methods For Maintaining Farmlands' Fertility*. https://eos.com/blog/soil-conservation

Eba, B. J. (2021). Using commodity exchanges for transparency in producer's price bargaining. In *UNCTAD*. https://unctad.org/system/files/information-document/cimem2_2021_9_Feb_Bla Josee Charlotte Eba.pdf

EESI. (n.d.). *Energy Efficiency*. Retrieved December 20, 2021, from https://www.eesi.org/topics/energy-efficiency/description

Ehie, I., & Ferreira, L. M. D. F. (2019). Conceptual Development of Supply Chain Digitalization Framework. *IFAC-PapersOnLine*, *52*(13), 2338–2342. https://doi.org/10.1016/J.IFACOL.2019.11.555

EIP-AGRI Agriculture & Innovations. (2016). *EIP-AGRI Focus Group Sustainable High Nature Value (HNV) farming*. www.caebinternational.it

Environment Go! (2021). *The most important things about biodynamic farming*. https://environmentgo.com/the-most-important-things-about-biodynamic-farming/#What_are_the_disadvantages_of_biodynamic_farming

EPA. (n.d.). *Sources of Greenhouse Gas Emissions*. Retrieved April 30, 2022, from https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

Erisman, J. W., van Eekeren, N., Van Doorn, A., Geertsema, W., & Polman, N. (2017). Maatregelen Natuurinclusieve landbouw. *Wageningen Environmental Research Rapport*, *2821*.

European Commission. (n.d.-a). *Carbon Farming*. Retrieved November 9, 2021, from https://ec.europa.eu/clima/eu-action/forests-and-agriculture/carbon-farming_es

European Commission. (n.d.-b). *Organics at a glance*. Retrieved November 8, 2021, from https://ec.europa.eu/info/food-farming-fisheries/farming/organic-farming/organics-glance_en

European Commission. (2015). *Growth of algae affected by ocean acidification and nutrient pollution*. https://ec.europa.eu/environment/integration/research/newsalert/pdf/growth_of_algae_affected_by_ocean_acidification_and_nutrient_pollution_417na7_en.pdf

European Commission. (2019). Guidelines on non-financial reporting: Supplement on reporting climate-related information. *Official Journal of the European Union*, *(2019/C 20*.

European Commission. (2021a). *Key policy objectives of the new CAP: The nine key objectives*. https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/new-cap-2023-27/key-policy-objectives-new-cap_en#nineobjectives

European Commission. (2021b). *When child labour is reduced, opportunities for youth increase*. https://ec.europa.eu/international-partnerships/stories/when-child-labour-reduced-opportunities-youth-increase_en

European Commission. (2022). *Proposal for a Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX-%3A52022PC0071

European Parliament. (2022). *Circular economy: definition, importance and benefits*. https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits

Fairtrade and CLAC. (2021). *Fairtrade youth demand urgent climate actions*. https://www.clac-comerciojusto.org/wp-content/uploads/2021/10/posicionamiento-juentudes-comercio-justo-y-cambio-climático-EN.pdf

Fairtrade Foundation. (2020). *Nurturing biodiversity and reducing carbon footprint*. https://www.fairtrade.org.uk/media-centre/news/nurturing-biodiversity-and-reducing-carbon-footprint/

Fairtrade Foundation. (2021a). *'The Climate Change Garden': Fairtrade Fortnight event explores how to grow plants sustainably in a time of climate crisis - Fairtrade Foundation*. https://www.fairtrade.org.uk/media-centre/news/the-climate-change-garden-fairtrade-fortnight-event-explores-how-to-grow-plants-sustainably-in-a-time-of-climate-crisis/

Fairtrade Foundation. (2021b). *12 Organic and Fairtrade products to try - Fairtrade Foundation*. https://www.fairtrade.org.uk/media-centre/blog/12-organic-and-fairtrade-products-to-try/

Fairtrade International. (n.d.-a). *Living income*. Retrieved June 11, 2022, from https://www.fairtrade.net/issue/living-income

Fairtrade International. (n.d.-b). *Our mission and vision*. Retrieved December 27, 2021, from https://www.fairtrade.net/about/mission

Fairtrade International. (n.d.-c). *Traceability in Fairtrade supply chains -*. Retrieved January 2, 2022, from https://info.fairtrade.net/what/traceability-in-fairtrade-supply-chains

Fairtrade International. (2013). *Building Commercial Capacity: Fairtrade and Ethical - An Alternative for Reducing Poverty*.

Fairtrade International. (2016). *Gender strategy: Transforming equal opportunity, access and benefits for all*. https://files.fairtrade.net/publications/2016_FairtradeGender-Strategy_Intro_EN.pdf

Fairtrade International. (2020). *Top 7 Products Dashboard*. https://www.fairtrade.net/impact/top-7-products-dashboard

FAO. (n.d.-a). *FAO Child labour in Agriculture*. Retrieved December 20, 2021, from https://www.fao.org/childlabouragriculture/en

FAO. (n.d.-b). *Food Loss and Food Waste* . Retrieved December 21, 2021, from https://www.fao.org/food-loss-and-food-waste/flw-data)

FAO. (n.d.-c). *Forests and Climate Change*. Retrieved November 22, 2021, from https://www.fao.org/3/ac836e/AC836E03.htm

FAO. (n.d.-d). *Gender-based violence affects food security and nutrition*. 2017. Retrieved December 16, 2021, from https://www.fao.org/fao-stories/article/en/c/1069792/

FAO. (n.d.-e). *Gender*. Retrieved December 16, 2021, from https://www.fao.org/gender/background/en

FAO. (n.d.-f). *Pest and Pesticide Management*. Retrieved November 1, 2021, from https://www.fao.org/pest-and-pesticide-management/pesticide-risk-reduction/pesticide-management/en

FAO. (n.d.-g). *Rural Youth Situation, Needs and Prospects - An overview with special emphasis on Africa - Part I: Current situation and needs of rural youth*. Retrieved December 17, 2021, from https://www.fao.org/3/x5636e/x5636e01.htm

FAO. (n.d.-h). *SDG 6. Clean water and sanitation - Sustainable Development Goals* . Retrieved June 22, 2022, from https://www.fao.org/sustainable-development-goals/goals/goal-6/en

FAO. (n.d.-i). *Sustainable Development Goals*. Food and Agriculture Organization of the United Nations. Retrieved November 4, 2021, from https://www.fao.org/sustainable-development-goals/indicators/241/en/

FAO. (n.d.-j). *What is Climate Smart Agriculture*. Retrieved November 8, 2021, from https://www.fao.org/climatechange/epic/activities/what-is-climate-smart-agriculture/en/#.YYl_O2DMLIU

FAO. (n.d.-k). *What is Conservation Agriculture?* Retrieved November 10, 2021, from https://www.fao.org/conservation-agriculture/overview/what-is-conservation-agriculture/en

FAO. (1990). *Sustainable Agricultural Resources Development*. https://www.fao.org/nr/sustainability/sustainability-assessments-safa/en

FAO. (2006). *Policy Brief Changing Policy Concepts of Food Security*. https://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf

FAO. (2008a). An international technical workshop Investing in sustainable crop intensification The case for improving soil health. Integrated Crop Management Vol.6-2008. In *Integrated Crop Management* (Vol. 6). https://www.fao.org/3/i0951e/i0951e.pdf

FAO. (2008b). Understanding forest tenure in Africa: Opportunities and challenges for forest tenure diversification. *Forestry Policy and Institutions Working Paper*, *No.19*. https://www.fao.org/forestry/13484-036b83d925cd6334e046d82ce60d157a7.pdf

FAO. (2010). *"Climate-Smart" Agriculture: Policies, Practices and Financing for Food Security*. https://www.fao.org/3/i1881e/i1881e00.pdf

FAO. (2014a). *Building a common vision for sustainable food and agriculture. Principles and approaches*. https://www.fao.org/3/i3940e/i3940e.pdf

FAO. (2014b). *SAFA Sustainability Assessment of Food and Agriculture Systems Guidelines*. https://www.fao.org/3/i3957e/i3957e.pdf

FAO. (2014c). *Sustainability Pathways: Food loss and waste*. https://www.fao.org/nr/sustainability/food-loss-and-waste/en

FAO. (2014d). *The Post-2015 Development Agenda and the Millennium Development Goals: Land and Soils* . FAO. https://www.fao.org/global-soil-partnership/resources/news/detail/en/c/215574

FAO. (2015). *Soil is a non-renewable resource*. https://www.fao.org/3/i4373e/i4373e.pdf

FAO. (2017). *A Literature Review on Frameworks and Methods for Measuring and Monitoring Sustainable Agriculture*. https://www.fao.org/3/ca6417en/ca6417en.pdf

FAO. (2018). The 10 elements of Agroecology Guiding the transition to sustainable food and agricultural systems. In *Fao*. https://www.fao.org/3/i9037en/i9037en.pdf

FAO. (2019a). *TAPE Tool for Agroecology Performance Evaluation 2019- Process of Development and Tape. Test version*.

FAO. (2019b). *The 3 pillars of Climate-Smart Agriculture and the Sustainable Development Goals*. https://www.fao.org/publications/card/es/c/CA5778EN/

FAO. (2019c). *The biodiversity that is crucial for our food and agriculture is disappearing by the day*. https://www.fao.org/news/story/en/item/1180463/icode

FAO. (2020). *Land use in agriculture by the numbers*. https://www.fao.org/sustainability/news/detail/en/c/1274219

FAO. (2021). *Price Volatility in Agricultural Markets: Evidence, impact on food security and policy responses*. FAO. https://www.fao.org/economic/es-policybriefs/briefs-detail/zh/?no_cache=1&uid=48900

FAO, & ICRAF. (2019). *Agroforestry and tenure* (No. 8; p. 40). Forestry Working Paper no.8. https://www.fao.org/3/ca4662en/CA4662EN.pdf

Feher, I., & Beke, J. (2013). The Rationale of Sustainable Agriculture. *Iustum Aequum Salutare*, *9*. https://heinonline.org/HOL/Page?handle=hein.journals/iaesal9&id=588&div=&collection=

Fernandez, M., & Méndez, V. E. (2019). Subsistence under the canopy: Agrobiodiversity's contributions to food and nutrition security amongst coffee communities in Chiapas, Mexico. *Agroecology and Sustainable Food Systems*, *43*(5). https://doi.org/10.1080/21683565.2018.1530326

Foley, J. A., DeFries, R., Asner, G. P., Barford, C., Bonan, G., Carpenter, S. R., Chapin, F. S., Coe, M. T., Daily, G. C., Gibbs, H. K., Helkowski, J. H., Holloway, T., Howard, E. A., Kucharik, C. J., Monfreda, C., Patz, J. A., Prentice, I. C., Ramankutty, N., & Snyder, P. K. (2005). Global Consequences of Land Use. *Science*, *309*(5734), 570–574. https://doi.org/10.1126/SCIENCE.1111772

Food and Land Use Coalition. (2019). *Growing Better: Ten Critical Transitions to Transform Food and Land Use*. https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/FOLU-GrowingBetter-GlobalReport.pdf

Fox, J. E., Gulledge, J., Engelhaupt, E., Burow, M. E., & McLachlan, J. A. (2007). Pesticides reduce symbiotic efficiency of nitrogen-fixing rhizobia and host plants. *Proceedings of the National Academy of Sciences*, *104*(24), 10282–10287. https://doi.org/10.1073/PNAS.0611710104

Fraanje, W., & Lee-Gammage, S. (2018). *What is sustainable intensification? (Foodsource: building blocks)*. https://www.tabledebates.org/building-blocks/what-sustainable-intensification

Gabel, C., Goodman, N., Bird, K., & Budd, B. (2016). Indigenous adoption of internet voting: A case study of whitefish river First Nation. *International Indigenous Policy Journal*, *7*(3). https://doi.org/10.18584/IIPJ.2016.7.3.3

Gabel, V., Home, R., Stöckli, S., Meier, M., Stolze, M., & Köpke, U. (2018). Evaluating On-Farm Biodiversity: A Comparison of Assessment Methods. *Sustainability 2018, Vol. 10, Page 4812*, *10*(12), 4812. https://doi.org/10.3390/SU10124812

Gallagher, E. J., Monterroso, I., & Sanjaya, I. M. (2020). *Women's access, equity and empowerment: Progress and uptake of the Fairtrade gender strategy*.

Gamon, J., Harrold, N., & Creswell, J. (1994). Educational Delivery Methods To Encourage Adoption Of Sustainable Agricultural Practices. *Journal of Agricultural Education*, *35*(1). https://doi.org/10.5032/jae.1994.01038

Gardi, C. (2017). Urban Expansion, Land Cover and Soil Ecosystem Services. In *Urban Expansion, Land Cover and Soil Ecosystem Services*. https://doi.org/10.4324/9781315715674

Gaudin, A. C. M., Tolhurst, T. N., Ker, A. P., Janovicek, K., Tortora, C., Martin, R. C., & Deen, W. (2015). Increasing Crop Diversity Mitigates Weather Variations and Improves Yield Stability. *PLOS ONE*, *10*(2), e0113261. https://doi.org/10.1371/JOURNAL.PONE.0113261

Gliessman, S. (2015). *Agroecology: The ecology of sustainable food systems* (3rd Editio). CRC Press/Taylor and Francis Group.

Gliessman, S., Friedmann, H., & Howard, P. H. (2019). Agroecology and Food Sovereignty. *IDS Bulletin*, *50*(2). https://bulletin.ids.ac.uk/index.php/idsbo/article/view/3038/Online article

Global Footprint Network. (2020). *Ecological Footprint*.

Global Reporting Initiative. (2020). *GRI Universal Standards: GRI 101, GRI 102, and GRI 103 – Exposure draft*.

Global Water Partnership. (2006). *Mainstreaming gender in integrated water resources management strategies and plans: practical steps for practitioners*. https://www.gwp.org/globalassets/global/toolbox/publications/technical-briefs/05-mainstreaming-gender-in-iwrm-strategies-and-plans.-practical-steps-for-practitioners-2006-english.pdf

Gold, M. V. (2007). *Sustainable Agriculture: Definitions and Terms. Related Terms – Low input agriculture*. Special Reference Briefs Series no. SRB 99-02. Updates SRB 94-05. Alternative Farming Systems Information Center. US Department of Agriculture. [online bibliography]. https://www.nal.usda.gov/legacy/afsic/sustainable-agriculture-definitions-and-terms-related-terms#term19

Goldman, A. (1995). Threats to sustainability in African agriculture: Searching for appropriate paradigms. *Human Ecology*, *23*(3). https://doi.org/10.1007/BF01190135

Gomiero, T. (2016). Soil Degradation, Land Scarcity and Food Security: Reviewing a Complex Challenge. *Sustainability 2016, Vol. 8, Page 281*, *8*(3), 281. https://doi.org/10.3390/SU8030281

Grindle, J., & Barraza, B. (2011). *Final Review of Outcomes and Learning: IFTN Fairtrade and Ethical Trade Programme Central America, 2006-2011*.

Gunderson, L. H. (2003). Ecological Resilience—In Theory and Application. *Http://Dx.Doi.Org/10.1146/Annurev.Ecolsys.31.1.425*, *31*, 425–439. https://doi.org/10.1146/ANNUREV.ECOLSYS.31.1.425

Gurr, G. M., Wratten, S. D., & Michael Luna, J. (2003). Multi-function agricultural biodiversity: pest management and other benefits. *Basic and Applied Ecology*, *4*(2), 107–116. https://doi.org/10.1078/1439-1791-00122

Guzmán, E. S., & Woodgate, G. (2013). Agroecología: Fundamentos del pensamiento social agrario y teoría sociológica. *Agroecología*, *8*(2).

Harris, D. R., & Fuller, D. Q. (2014). Agriculture: Definition and Overview. In *Encyclopedia of Global Archaeology* (pp. 104–113). Springer New York. https://doi.org/10.1007/978-1-4419-0465-2_64

Harrison, J. S., & Wicks, A. C. (2013). Stakeholder Theory, Value, and Firm Performance. *Business Ethics Quarterly*, *23*(1). https://doi.org/10.5840/beq20132314

Hartley, I. P., Hill, T. C., Chadburn, S. E., & Hugelius, G. (2021). Temperature effects on carbon storage are controlled by soil stabilisation capacities. *Nature Communications 2021 12:1*, *12*(1), 1–7. https://doi.org/10.1038/s41467-021-27101-1

Harvey, D. I., Kellard, N., Madsen, J. B., & Wohar, M. E. (2013). Erratum to "The Prebisch-Singer Hypothesis: Four Centuries of Evidence" (Review of Economics and Statistics, 2010, 92, 367-377). *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2202900

Hayes, A. (2021). *Price Transparency Definition*. Investorpedia. https://www.investopedia.com/terms/p/pricetransparency.asp

Healthline. (2021). *Morbidity vs. Mortality Rate: What's the Difference?* https://www.healthline.com/health/morbidity-vs-mortality#morbidity

Herweijer, C., Evison, W., Mariam, S., Khatri, A., Albani, M., Semov, A., Long, E., Hirsch, T. von, Jackson, L., Hols, P. A., & Pope, K. (2020). Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. In *World Economic Forum; PwC* (Issue January).

HLPE. (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition*. https://www.fao.org/3/ca5602en/ca5602en.pdf

HNV Farming in the UK. (n.d.). *What is High Nature Value Farming? - High Nature Value Farming*. Retrieved December 12, 2021, from http://www.highnaturevaluefarming.org.uk/what-is-high-nature-value-farming/

Holly, G., & Methven O'brien, C. (2021). *Human Rights Due Diligence Laws: Key Considerations*. https://www.humanrights.dk/sites/humanrights.dk/files/media/document/Human_rights_due_diligence_laws_-_briefing_on_civil_liability_for_due_diligence_failures_2021_accessible.pdf

IDMP. (2022). *Drought and Water Scarcity: Vol. WMO No. 1284*. https://library.wmo.int/doc_num.php?explnum_id=11108

IFOAM. (2008). *Definition of Organic Agriculture* . IFOAM General Assembly. https://www.ifoam.bio/why-organic/organic-landmarks/definition-organic

IFOAM. (2020). *Principles of Organic Agriculture Preamble*. www.ifoam.bio

International Labour Conference. (2022). *General Affairs Committee*. ILO. https://www.ilo.org/ilc/ILCSessions/110/committees/general-affairs/lang--en/index.htm

ILO, & UNICEF. (2021). *Child Labour: Global estimates 2020, trends and the road forward*. https://www.ilo.org/ipec/Informationresources/WCMS_797515/lang--en/index.htm

ILO. (n.d.). *Education and child labour in agriculture*. Retrieved December 16, 2021, from http://www.ilo.org/ipec/areas/Agriculture/WCMS_172347/lang--en/index.htm

ILO. (n.d.-a). *Agriculture: a hazardous work*. Retrieved June 23, 2022, from https://www.ilo.org/safework/areasofwork/hazardous-work/WCMS_110188/lang--en/index.htm

ILO. (n.d.-b). *Q&As on business and collective bargaining*. Retrieved June 23, 2022, from https://www.ilo.org/empent/areas/business-helpdesk/faqs/WCMS_DOC_ENT_HLP_CB_FAQ_EN/lang--en/index.htm

ILO. (n.d.-c). *What is child labour*. Retrieved January 1, 2022, from https://www.ilo.org/ipec/facts/lang--en/index.htm

ILO. (2022). *110th International Labour Conference: International Labour Conference adds safety and health to Fundamental Principles and Rights at Work*. https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_848132/lang--en/index.htm

ILO, OECD, & UNICEF. (2019). *Ending child labour, forced labour and human trafficking in global supply chains*. https://www.ilo.org/ipec/Informationresources/WCMS_716930/lang--en/index.htm

IPBES. (2018). *Media Release: Worsening Worldwide Land Degradation Now 'Critical', Undermining Well-Being of 3.2 Billion People*. https://ipbes.net/news/media-release-worsening-worldwide-land-degradation-now-'critical'-undermining-well-being-32

IPCC. (2020). Summary for Policymakers. In P. Z. P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, & J. M. Vyas, E. Huntley, K. Kissick, M. Belkacemi (Eds.), *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. In press. https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf

IPCC. (2021). Summary for Policymakers. In V. Masson-Delmotte, P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. In Press.

ISO. (2018). *ISO 31000:2018, Risk management — Guidelines*.

Jackson, L. (2011). Managing Nitrogen in Croplands: Implications for Increasing Ecosystem Services in Agricultural Landscapes. *AGUFM*, *2011*, B22B-01. https://ui.adsabs.harvard.edu/abs/2011AGUFM.B22B..01J/abstract

Jacobs, N., & Cotula, L. (2021). Land and labour: Agricultural workers' tenure rights. *Legal Brief 6*. https://www.fao.org/3/cb6129en/cb6129en.pdf

Jagoret, P., Michel-Dounias, I., Snoeck, D., Ngnogué, H. T., & Malézieux, E. (2012). Afforestation of savannah with cocoa agroforestry systems: a small-farmer innovation in central Cameroon. *Agroforestry Systems 2012 86:3*, *86*(3), 493–504. https://doi.org/10.1007/S10457-012-9513-9

Jezeer, R., & Verweij, P. (2015). *Shade grown coffee - double dividend for biodiversity and small-scale coffee farmers in Peru*. The Hague. https://doi.org/10.13140/RG.2.1.1393.2405

Johnson, K. M., & Lichter, D. T. (2019). Rural Depopulation: Growth and Decline Processes over the Past Century. *Rural Sociology*, *84*(1), 3–27. https://doi.org/10.1111/RUSO.12266

Jones, A. D., Shrinivas, A., & Bezner-Kerr, R. (2014). Farm production diversity is associated with greater household dietary diversity in Malawi: Findings from nationally representative data. *Food Policy*, *46*. https://doi.org/10.1016/j.foodpol.2014.02.001

Jouzi, Z., Azadi, H., Taheri, F., Zarafshani, K., Gebrehiwot, K., Van Passel, S., Lebailly, P., Jouzi, Z., Azadi, H., Taheri, F., Zarafshani, K., Gebrehiwot, K., Van Passel, S., & Lebailly, P. (2017). Organic Farming and Small-Scale Farmers: Main Opportunities and Challenges. *Ecological Economics*, *132*(C), 144–154. https://doi.org/10.1016/J.ECOLECON.2016.10.016

Jurgilevich, A., Birge, T., Kentala-Lehtonen, J., Korhonen-Kurki, K., Pietikäinen, J., Saikku, L., & Schösler, H. (2016). Transition towards circular economy in the food system. *Sustainability (Switzerland)*, *8*(1). https://doi.org/10.3390/su8010069

Kasalu-Coffin, E., Afenyo, J., & Mutiro, V. (2014). Smallholder conservation agriculture. In *Fund for Agricultural Development*. https://www.fao.org/family-farming/detail/es/c/380829

Kelley, E. C. (2014). *NMSU researcher's carbon sequestration work highlighted in 'The Soil Will Save Us.'* New Mexico State University. https://nmsu.scienceblog.com/2014/08/21/nmsu-researchers-carbon-sequestration-work-highlighted-in-the-soil-will-save-us

Kenton, W. (2021). *Market Access Definition*. Investorpedia. https://www.investopedia.com/terms/m/market-access.asp

Kerr, R. B., Lupafya, E., Shumba, L., Dakishoni, L., Msachi, R., Chitaya, A., Nkhonjera, P., Mkandawire, M., Gondwe, T., & Maona, E. (2016). "Doing jenda deliberatively" in a participatory agriculture-nutrition project in Malawi. In *Transforming Gender and Food Security in the Global South*. https://doi.org/10.4324/9781315564111-21

Khan, M. H. (2001). Rural Poverty in Developing Countries: Implications for Public Policy. *Economic Issues*, *26*(March).

Kinnunen, B., Manninen, P., & Taattola, K. (2009). Factors associated with farmers joining occupational health services. *Occupational Medicine*, *59*(4), 273–276. https://doi.org/10.1093/OCCMED/KQP036

Kleijn, D., Bommarco, R., Fijen, T. P. M., Garibaldi, L. A., Potts, S. G., & van der Putten, W. H. (2018). Ecological Intensification: Bridging the Gap between Science and Practice. *Trends in Ecology and Evolution*, *34*(2), 154–166. https://doi.org/10.1016/J.TREE.2018.11.002

Klein, K. (2019). *Pesticides and Soil Health*. https://1bps6437gg8c169i0y1drtgz-wpengine.netdna-ssl.com/wp-content/uploads/2019/08/PecticidesSoilHealth_Final-1.pdf

Kloppenburg, J. (2014). Re-purposing the master's tools: the open source seed initiative and the struggle for seed sovereignty. *Https://Doi.Org/10.1080/03066150.2013.875897*, *41*(6), 1225–1246. https://doi.org/10.1080/03066150.2013.875897

Kobak, P. (2016). *A human rights income: how a basic income could help states fulfil human rights obligations*. https://vps5.cloudfarm.it/handle/20.500.11825/208

Krieger, J., & Higgins, D. L. (2002). Housing and Health: Time Again for Public Health Action. *American Journal of Public Health*, *92*(5), 758. https://doi.org/10.2105/AJPH.92.5.758

Lal, R. (2020). Soil organic matter and water retention. *Agronomy Journal*, *112*(5), 3265–3277. https://doi.org/10.1002/agj2.20282

LandLinks. (n.d.). *What is Land Tenure?* Retrieved December 23, 2021, from https://www.land-links.org/what-is-land-tenure

Landry, H. (2015). Challenging Evolution: How GMOs Can Influence Genetic Diversity . *Genetically Modified Organisms and Our Food, Harvard University*. https://sitn.hms.harvard.edu/flash/2015/challenging-evolution-how-gmos-can-influence-genetic-diversity

Lei, Z., Yu, D., Zhou, F., Zhang, Y., Yu, D., Zhou, Y., & Han, Y. (2019). Changes in soil organic carbon and its influencing factors in the growth of Pinus sylvestris var. mongolica plantation in Horqin Sandy Land, Northeast China. *Scientific Reports 2019 9:1*, *9*(1), 1–12. https://doi.org/10.1038/s41598-019-52945-5

Lewis, S. L., & Maslin, M. A. (2015). Defining the Anthropocene. *Nature 2015 519:7542*, *519*(7542), 171–180. https://doi.org/10.1038/nature14258

Lindenmayer, D. B. (2011). *What Makes a Good Farm for Wildlife?* CSIRO Publishing. https://doi.org/10.1071/9780643101623

Linne, K., Donga, M., & Lottje, C. (2019). *Analysis of the Producer level Impact of Fairtrade on Environmentally Friendly Production, Biodiversity Conservation and Resilience and Adaptation to Climate Change*.

Lockeretz, W. (1988). Open questions in sustainable agriculture. *American Journal of Alternative* Agriculture, 3(4). https://doi.org/10.1017/S0889189300002460

LOI n° 2021-1104 du 22 août 2021 portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets (1) https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043956924

LOI n° 2005-882 du 2 août 2005 en faveur des petites et moyennes entreprises. (1) https://www.legifrance.gouv.fr/loda/id/JORFTEXT000000452052

Lowder, S. K., Sánchez, M. V., & Bertini, R. (2021). Which farms feed the world and has farmland become more concentrated? *World Development*, *142*, 105455. https://doi.org/10.1016/J.WORLDDEV.2021.105455

Lukuyu, B., Place, F., Franzel, S., & Kiptot, E. (2012). Disseminating Improved Practices: Are Volunteer Farmer Trainers Effective? *The Journal of Agricultural Education and Extension*, *18*(5), 525–540. https://doi.org/10.1080/1389224X.2012.707066

Lupiáñez-Villanueva, F., Devaux, A., Faulí, C., Stewart, K., Porcu, F., Taylor, J., Theben, A., Baruch, B., Folkvord, F., & Nederveen, F. (2018). *Study on the Benefits and Drawbacks of Remote Voting*. https://doi.org/10.2838/677948

MacKenzie, R., & Foyer, C. (2021). *A 150-Year-Old Note From Darwin Is Changing How We Plant Forests*. Science Alert. https://www.sciencealert.com/a-150-year-old-note-from-darwin-is-changing-how-we-plant-forests

Maghari, B. M., & Ardekani, A. M. (2011). Genetically Modified Foods and Social Concerns. *Avicenna Journal of Medical Biotechnology*, *3*(3), 109. /pmc/articles/PMC3558185/

McGee, B. (2020). *Regenerative Agriculture - Chesapeake Bay Foundation*. The Chesapeake Bay Foundation. https://www.cbf.org/issues/agriculture/regenerative-agriculture.html

Meier, M., Siegrist, F., Drapela, T., Pluschke, H., Pfiffner, L., & Stolze, M. (2015). Entwicklung Einer Wirkungsabschätzungsmethode Für Biodiversität. *FiBL Forschungsinstitut Für Biologischen Landbau*, 7–78. https://www.aramis.admin.ch/Default?DocumentID=61254&Load=true

Méndez, E. V., Bacon, C. M., & Cohen, R. (2013). Agroecology as a transdisciplinary, participatory, and action-oriented approach. *Agroecology and Sustainable Food Systems*, *37*(1), 3–18. https://doi.org/10.1080/10440046.2012.736926

Mendonça, E. de S., De Lima, P. C., Guimarães, G. P., Moura, W. de M., & Andrade, F. V. (2017). Biological Nitrogen Fixation by Legumes and N Uptake by Coffee Plants. *Revista Brasileira de Ciência Do Solo*, *41*, 160178. https://doi.org/10.1590/18069657RBCS20160178

Messina, J., & van Zanten, J. A. (2021). The Value of Everything. *The Sustainability Yearbook*.

Meylan, L., Gary, C., Allinne, C., Ortiz, J., Jackson, L., & Rapidel, B. (2017). Evaluating the effect of shade trees on provision of ecosystem services in intensively managed coffee plantations. *Agriculture, Ecosystems & Environment*, *245*, 32–42. https://doi.org/10.1016/j.agee.2017.05.005

Molina-Guzmán, L. P., & Ríos-Osorio, L. A. (2020). Occupational health and safety in agriculture. A systematic review. *Revista de La Facultad de Medicina*, *68*(4), 625–638. https://doi.org/10.15446/revfacmed.v68n4.76519

Mollison, B. (1988). *Permaculture: A Designers' Manual*. Tagari Publications.

Mollison, B. (1991). Introduction to permaculture. *Introduction to Permaculture*, 9–16.

Morris, K. S., Mendez, V. E., & Olson, M. B. (2013). "Los meses flacos": Seasonal food insecurity in a Salvadoran organic coffee cooperative. *Journal of Peasant Studies*, *40*(2). https://doi.org/10.1080/03066150.2013.777708

Morris, R. J. (2010). Anthropogenic impacts on tropical forest biodiversity: a network structure and ecosystem functioning perspective. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *365*(1558), 3709–3718. https://doi.org/10.1098/RSTB.2010.0273

Morrison, E. W. (2014). Employee Voice and Silence. *Annual Review of Organizational Psychology and Organizational Behavior*, *1*, 173–197. https://doi.org/10.1146/ANNUREV-ORGPSYCH-031413-091328

Müller, A., Gattinger, A., & Meier, M. (2014). *The Potential of Sustainable Farming Systems to Promote Adaptation to Climate Change*. *41*(0).

Muse, A. (2021). *'Soil is miraculous': How regenerative agriculture could transform fashion*. Euronews. https://www.euronews.com/green/2021/12/07/soil-is-miraculous-how-regenerative-agriculture-could-transform-fashion

National Geographic Society. (2019a). *Anthropocene*. https://www.nationalgeographic.org/encyclopedia/anthropocene

National Geographic Society. (2019b). *Climate Change*. https://www.nationalgeographic.org/encyclopedia/climate-change

National Geographic Society. (2019c). *Wildfires*. https://www.nationalgeographic.org/encyclopedia/wildfires

Nelson, V., Martin-Ortega, O., & Flint, M. (2020). *Making Human Rights Due Diligence Work: An Analysis of Impact and Legal Options*. https://fairtrade-advocacy.org/wp-content/uploads/2020/06/UoG-HRDD-Full-Report-60pp-FINAL-SECURED.pdf

Netter, L., Luedeling, E., & Whitney, C. (2022). Agroforestry and reforestation with the Gold Standard-Decision Analysis of a voluntary carbon offset label. *Mitigation and Adaptation Strategies for Global Change*, *27*(2), 1–26. https://doi.org/10.1007/S11027-021-09992-Z/FIGURES/8

Nicholls, C. I., Altieri, M. a., Dezanet, A., Lana, M., Feistauer, D., & Ouriques, M. (2004). A rapid, farmer-friendly agroecological method to estimate soil quality and crop health in vineyard systems. *Biodynamics*, *Outono*.

Nigh, R., & Diemont, S. A. (2013). The Maya milpa: fire and the legacy of living soil. *Frontiers in Ecology and the Environment*, *11*(s1). https://doi.org/10.1890/120344

NOAA. (2020). *Ocean acidification*. https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-acidification

NOAA. (2021). *What is nutrient pollution?* National Ocean Service Website. https://oceanservice.noaa.gov/facts/nutpollution.html

Norman, D., Janke, R., & Freyenberger, S. (1997). Defining and implementing sustainable agriculture. In *Kansas Sustainable Agriculture Series, Kansas State University, Manhattan*.

North Sea Region. (n.d.). *What is carbon farming?* Retrieved November 9, 2021, from https://northsearegion.eu/carbon-farming/what-is-carbon-farming/

NRDC. (2022). *Renewable Energy: The Clean Facts*. https://www.nrdc.org/stories/renewable-energy-clean-facts

Oberč, B. P., & Arroyo Schnell, A. (2020). Approaches to sustainable agriculture: exploring the pathways towards the future of farming. In *Approaches to sustainable agriculture: exploring the pathways towards the future of farming*. IUCN, International Union for Conservation of Nature. https://doi.org/10.2305/IUCN.CH.2020.07.en

Office of the Commissioner for Sustainability and the Environment. (2015). *ACT State of the Environment Report 2015*. http://reports.envcomm.act.gov.au/actsoe2015/downloads/index.html

OHCHR. (n.d.-a). *OHCHR and land and human rights*. Retrieved June 23, 2022, from https://www.ohchr.org/en/land

OHCHR. (n.d.-b). *The human right to adequate housing*. Retrieved December 28, 2021, from https://www.ohchr.org/EN/Issues/Housing/Pages/AboutHRandHousing.aspx

Olsson, L., Barbosa, H., Bhadwal, S., Manuel Moreno, J., Vera, C., Salisu Barau, A., Barbosa, H., Bhadwal, S., Cowie, A., Delusca, K., Flores-Renteria, D., Hermans, K., Jobbagy, E., Kurz, W., Li, D., Shukla, P., Skea, J., Calvo Buendia, E., Masson-Delmotte, V., … Malley, J. (2019). Land Degradation. In P. R. Shukla, J. Skea, E. C. Buendia, V. Masson-Delmotte, H.-O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. P. Pereira, P. Vyas, E. Huntley, … J. Malley (Eds.), *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Intergovernmental Panel on Climate Change. https://www.ipcc.ch/srccl/chapter/chapter-4/

Ontl, T. A., & Schulte, L. A. (2012). *Soil Carbon Storage*. Nature Education Knowledge 3(10):35. https://www.nature.com/scitable/knowledge/library/soil-carbon-storage-84223790/

Open Risk Manual. (n.d.). *Tragedy of the Risk Horizon*. Retrieved December 29, 2021, from https://www.openriskmanual.org/wiki/Tragedy_of_the_Risk_Horizon

OECD. (2001). *OECD Glossary of Statistical Terms - Water conservation Definition*. https://stats.oecd.org/glossary/detail.asp?ID=2903

OECD. (2020). *Digital trade - OECD*. https://www.oecd.org/trade/topics/digital-trade/

OECD. (2021). Delivering Quality Education and Health Care to All. In *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*. OECD. https://doi.org/10.1787/83025c02-en

Otto-Portner, H., Scholes, B., Agard, J., Archer, E., Arneth, A., Bai, X., Barnes, D., Burrows, M., Chan, L., Cheung, W. L. (William), Diamond, S., Donatti, C., Duarte, C., Eisenhauer, N., Foden, W., Gasalla, M. A., Handa, C., Hickler, T., Hoegh-Guldberg, O., … Ngo, H. (2021). *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*. https://doi.org/10.5281/ZENODO.4659159

Oxford English dictionary. (2014). *Digitization*. In OED Online. https://www.oed.com/

Pal, R., Chakrabarti, K., Chakraborty, A., & Chowdhury, A. (2006). Degradation and Effects of Pesticides on Soil Microbiological Parameters-A Review. *International Journal of Agricultural Research*, *1*(3), 240–258. https://doi.org/10.3923/ijar.2006.240.258

Parr, J. F., Stewart, B. A., Hornick, S. B., & Singh, R. P. (1990). *Improving the Sustainability of Dryland Farming Systems: A Global Perspective*. 1–8. https://doi.org/10.1007/978-1-4613-8982-8_1

Patton, M. Q. (2017). Principles-Focused Evaluation: The guide. In *Gastronomía ecuatoriana y turismo local.* (Vol. 1, Issue 69). The Guilford Press.

Phelan, J. (2022). *Desertification threatens food supply in Dubai. Can its fledgling green tech sector help to stem the encroaching sands?* BBC. https://www.bbc.com/future/article/20220125-how-dubai-is-pushing-back-its-encroaching-deserts

Philpott, S. M., Arendt, W. J., Armbrecht, I., Bichier, P., Diestch, T. V., Gordon, C., Greenberg, R., Perfecto, I., Reynoso-Santos, R., Soto-Pinto, L., Tejeda-Cruz, C., Williams-Linera, G., Valenzuela, J., & Zolotoff, J. M. (2008). Biodiversity Loss in Latin American Coffee Landscapes: Review of the Evidence on Ants, Birds, and Trees. *Conservation Biology*, *22*(5), 1093–1105. https://doi.org/10.1111/j.1523-1739.2008.01029.x

Pimentel, D. (1995). Amounts of pesticides reaching target pests: Environmental impacts and ethics. *Journal of Agricultural and Environmental Ethics*, *8*(1), 17–29. https://doi.org/10.1007/BF02286399

Poppy, G. M., Jepson, P. C., Pickett, J. A., & Birkett, M. A. (2014). Achieving food and environmental security: New approaches to close the gap. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *369*(1639). https://doi.org/10.1098/RSTB.2012.0272

Potera, C. (2007). Agriculture: Pesticides Disrupt Nitrogen Fixation. *Environmental Health Perspectives*, *115*(12), A579. https://doi.org/10.1289/EHP.115-A579A

Powell, B., Thilsted, S. H., Ickowitz, A., Termote, C., Sunderland, T., & Herforth, A. (2015). Improving diets with wild and cultivated biodiversity from across the landscape. *Food Security*, *7*(3), 535–554. https://doi.org/10.1007/S12571-015-0466-5/TABLES/2

Pretty, J. (1996). Sustainable Agriculture: Impacts on Food Production and Challenges for Food. *IIED Gatekeeper Series No. SA60*. https://pubs.iied.org/sites/default/files/pdfs/migrate/6106IIED.pdf

Project Drawdown. (n.d.). *Conservation Agriculture*. Retrieved November 10, 2021, from https://drawdown.org/solutions/conservation-agriculture

Project Drawdown. (2020). *Farming our way out of the climate crisis* (Issue December). Project Drawdown.

Project Drawdown. (2021). *Reduced Food Waste*.

Psacharopoulos, G., & Patrinos, H. A. (2018). Returns to investment in education: a decennial review of the global literature. *Education Economics*, *26*(5). https://doi.org/10.1080/09645292.2018.1484426

Rainforest Alliance. (2021). *What Is Climate-Smart Agriculture? | Rainforest Alliance*. https://www.rainforest-alliance.org/insights/what-is-climate-smart-agriculture/

Rasure, K. A. (2010). *Sustainable agricultural development*. Oxford Book Co.

Rathbone, M. (2018). *Organic vas Bio-dynamic Explained by Biodynamic Farmer Mark Rathbone*. https://biodynamic.com.au/blogs/bio-dynamic-difference-organic

Ravishankara, A. R. (2015). Nitrous Oxide: A Greenhouse Gas That is Also an Ozone Layer Depleting Gas. *AGUFM*, *2015*, B14A-01. https://ui.adsabs.harvard.edu/abs/2015AGUFM.B14A..01R/abstract

Ravishankara, A. R., Daniel, J. S., & Portmann, R. W. (2009). Nitrous oxide (N2O): The dominant ozone-depleting substance emitted in the 21st century. *Science*, *326*(5949), 123–125. https://doi.org/10.1126/SCIENCE.1176985

Raworth, K. (2017). A Doughnut for the Anthropocene: Humanity's Compass in the 21st Century. In *The Lancet Planetary Health* (Vol. 1, Issue 2).

Regenerative Agriculture Initiative, & The Carbon Underground. (2017). *What is Regenerative Agriculture?* https://regenerationinternational.org/wp-content/uploads/2017/02/Regen-Ag-Definition-2.23.17-1.pdf

Reisinger, A., Howden, M., Vera, C., Garschagen, M., Hurlbert, M., Kreibiehl, S., Mach, K. J., Mintenbeck, K., O'neill, B., Pathak, M., Pedace, R., Pörtner, H.-O., Poloczanska, E., Rojas Corradi, M., Sillmann, J., Van Aalst, M., Viner, D., Jones, R., Ruane, A. C., & Ranasinghe, R. (2020). The Concept of Risk in the IPCC Sixth Assessment Report: a Summary of Cross-working Group Discussions. *Intergovernmental Panel on Climate Change*, *Geneva, Switzerland.*, *September*, 15.

Responsible Conduct of Research. (n.d.). *Data Ownership*. Retrieved December 13, 2021, from https://ori.hhs.gov/education/products/n_illinois_u/datamanagement/dotopic.html

Revell, L. E., Tummon, F., Salawitch, R. J., Stenke, A., & Peter, T. (2015). The changing ozone depletion potential of N2O in a future climate. *Geophysical Research Letters*, *42*(22), 10,047-10,055. https://doi.org/10.1002/2015GL065702

Rikolto. (2021). *New project takes off: fostering human rights in food systems*. https://www.rikolto.org/en/news/new-project-takes-fostering-human-rights-food-systems

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E. F., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., De Wit, C. A., Hughes, T., Van Der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., … Foley, J. A. (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. In *Ecology and Society* (Vol. 14, Issue 2).

Rodriguez, J. M., Molnar, J. J., Fazio, R. A., Sydnor, E., & Lowe, M. J. (2009). Barriers to adoption of sustainable agriculture practices: Change agent perspectives. *Renewable Agriculture and Food Systems*, *24*(1), 60–71. https://doi.org/10.1017/S1742170508002421

Roman, R., Kelly, L., Andrews, R. H., & Parisse, N. (2022). *Can We Turn a Desert Into a Forest?* The New York Times. https://www.nytimes.com/2022/01/23/opinion/great-green-wall-niger.html

Rose, T. J., Kearney, L. J., Morris, S., Van Zwieten, L., & Erler, D. V. (2019). Pinto peanut cover crop nitrogen contributions and potential to mitigate nitrous oxide emissions in subtropical coffee plantations. *Science of The Total Environment*, *656*, 108–117. https://doi.org/10.1016/j.scitotenv.2018.11.291

Roser, M. (2019). *Pesticides*. Our World in Data. https://ourworldindata.org/pesticides

Runhaar, H. (2021). Four critical conditions for agroecological transitions in Europe. *Https://Doi.Org/10.1080/14735903.2021.1906055*, *19*(3–4), 227–233. https://doi.org/10.1080/14735903.2021.1906055

S, S., R, G., M, K., & S, S. (2015). Nontarget effects of chemical pesticides and biological pesticide on rhizospheric microbial community structure and function in Vigna radiata. *Environmental Science and Pollution Research International*, *22*(15), 11290–11300. https://doi.org/10.1007/S11356-015-4341-X

Saenz, H., Hinkel, J., & Bysong, T. (2021). *Traceability: The Next Supply Chain Revolution*. Bain & Company. https://www.bain.com/insights/traceability-the-next-supply-chain-revolution

Sanders, M. E., & Westerlink, J. (2015). *Een, Op weg naar Landbouw, natuurinclusieve duurzame*. https://edepot.wur.nl/360471

Sanders, R. (2012). *Fertilizer use responsible for increase in nitrous oxide in atmosphere* . Berkeley News. https://news.berkeley.edu/2012/04/02/fertilizer-use-responsible-for-increase-in-nitrous-oxide-in-atmosphere

Seppälä, E., & Cameron, K. (2015). *Proof That Positive Work Cultures Are More Productive*. Harvard Business Review.

SGS. (2018). *Understanding Transparency and Traceability in the Supply Chain* . https://www.sgs.com/en/news/2018/08/understanding-transparency-and-traceability-in-the-supply-chain

Silici, L. (2014). Agroecology. What It Is And What It Has To Offer. *International Institute for Environment and Development, London*, *June*.

Simpson, N. P., Mach, K. J., Constable, A., Hess, J., Hogarth, R., Howden, M., Lawrence, J., Lempert, R. J., Muccione, V., Mackey, B., New, M. G., O'Neill, B., Otto, F., Pörtner, H. O., Reisinger, A., Roberts, D., Schmidt, D. N., Seneviratne, S., Strongin, S., … Trisos, C. H. (2021). A framework for complex climate change risk assessment. *One Earth*, *4*(4), 489–501. https://doi.org/10.1016/j.oneear.2021.03.005

Smith, M. D., Hartnett, D. C., & Rice, C. W. (2000). Effects of long-term fungicide applications on microbial properties in tallgrass prairie soil. *Soil Biology and Biochemistry*, *32*(7), 935–946. https://doi.org/10.1016/S0038-0717(99)00223-0

Smith, P. (2008). Soil Organic Carbon Dynamics and Land-Use Change. *Land Use and Soil Resources*, 9–22. https://doi.org/10.1007/978-1-4020-6778-5_2

Snoeck, D., Zapata, F., & Domenach, A.-M. (2000). Isotopic evidence of the transfer of nitrogen fixed by legumes to coffee trees. *Biotechnol. Agron. Soc. Environ*, *4*(2), 95–100. https://agritrop.cirad.fr/263989/1/263989.pdf

Soil Capital, & Systemiq. (2020). *Regenerating Europe's soils: making the economics work*. https://www.systemiq.earth/wp-content/uploads/2020/01/RegeneratingEuropessoilsFINAL.pdf

Soto, G., Florian, E., de Melo Virginio Filho, E., Astorga, C., & CATIE. (2016). *Reduciendo la vulnerabilidad al cambio climático del sector cafetalero en Guatemala: Manual Técnico para el fortalecimiento del sector de café en Guatemala frente al cambio climático*. https://www.catie.ac.cr/programa-regional-cambio-climatico-usaid/wp-content/uploads/Manual-Cafe-Elena-Completo1.pdf

Stockholm Resilience Centre. (n.d.). *The nine planetary boundaries*. Retrieved June 22, 2022, from https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html

Stockholm Resilience Centre. (2016). *The SDGs wedding cake*. https://www.stockholmresilience.org/research/research-news/2016-06-14-the-sdgs-wedding-cake.html

Stony Brook University. (2021). *Sustainable Vs. Conventional Agriculture*. https://you.stonybrook.edu/environment/sustainable-vs-conventional-agriculture/

Streibig, J. C., Kudsk2, P., & Jensen1, J. E. (1998). A General Joint Action Model for Herbicide Mixtures. *Pestic. Sci*, *53*, 21–28. https://doi.org/10.1002/(SICI)1096-9063(199805)53:1

Struik, P. C., Kuyper, T. W., Brussaard, L., & Leeuwis, C. (2014). Deconstructing and unpacking scientific controversies in intensification and sustainability: why the tensions in concepts and values? *Current Opinion in Environmental Sustainability*, *8*, 80–88. https://doi.org/10.1016/J.COSUST.2014.10.002

Su, X., Liu, Y., & Hanson-Rasmussen, N. (2017). Voice behavior, supervisor attribution and employee performance appraisal. *Sustainability (Switzerland)*, *9*(10). https://doi.org/10.3390/su9101829

Summers, K., Quesenbery, W., & Pointer, A. (2016). *Making Voting by Mail Usable, Accessible and Inclusive* (pp. 53–64). https://doi.org/10.1007/978-3-319-41962-6_5

The Economics of Ecosystems and Biodiversity. (2019). *The Evaluation Framework*. http://teebweb.org/our-work/agrifood/understanding-teebagrifood/evaluation-framework

The Government of Western Australia. (n.d.). *Carbon farming | Agriculture and Food*. Retrieved November 9, 2021, from https://www.agric.wa.gov.au/climate-land-water/land-use/carbon-farming

The Royal Society. (2009). *Reaping the benefits: Science and the sustainable intensification of global agriculture*. https://royalsociety.org/-/media/Royal_Society_Content/policy/publications/2009/4294967719.pdf

The United Nation Refugee Agency. (n.d.). *Gender-based Violence*. Retrieved December 16, 2021, from https://www.unhcr.org/gender-based-violence.html

The World Bank. (2022). *Fact Sheet: An Adjustment to Global Poverty Lines*. https://www.worldbank.org/en/news/factsheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines

Therond, O., Duru, M., Roger-Estrade, J., & Richard, G. (2017). A new analytical framework of farming system and agriculture model diversities. A review. *Agronomy for Sustainable Development 2017 37:3*, *37*(3), 1–24. https://doi.org/10.1007/S13593-017-0429-7

Thompson, R. L., Lassaletta, L., Patra, P. K., Wilson, C., Wells, K. C., Gressent, A., Koffi, E. N., Chipperfield, M. P., Winiwarter, W., Davidson, E. A., Tian, H., & Canadell, J. G. (2019). Acceleration of global N2O emissions seen from two decades of atmospheric inversion. *Nature Climate Change 2019 9:12*, *9*(12), 993–998. https://doi.org/10.1038/s41558-019-0613-7

Tirado von der Pahlen, M. C., Briseño, A., Kinderlerer, J., Lee, S., Platais, G., & Rapallo, R. (2018). Social equity, justice and ethics: missing links in eco-agri-food systems. In *TEEB for Agriculture & Food: Scientific and Economic Foundations*. TEEB. http://teebweb.org/our-work/agrifood/reports/scientific-economic-foundations/

Tsang, D., & Zhang, Y. (2018). The Past and the Future of Employee Voice: Shenzhen's High Technology Industry. *Discussion Paper Number: JHD-2018-05*.

UN Climate Change Conference (COP26). (2021). *Nations and businesses commit to create sustainable agriculture and land use* . https://ukcop26.org/nations-and-businesses-commit-to-create-sustainable-agriculture-and-land-use/

Unerman, J. (2007). Stakeholder engagement and dialogue. In *Sustainability Accounting and Accountability* (pp. 86–103). Routledge. https://doi.org/10.4324/NOE0415384889.ch5

Union of Concerned Scientists. (1999). *Sustainable Agriculture FAQ*. https://web.archive.org/web/20100107032002/http://www.ucsusa.org/food_and_agriculture/science_and_impacts/science/sustainable-agriculture-faq.html

UN. (n.d.-a). *Gender Mainstreaming - Concepts and definitions*. Retrieved June 22, 2022, from https://www.un.org/womenwatch/osagi/conceptsandefinitions.htm

UN. (n.d.-b). *Rural Women's Day*. Retrieved December 16, 2021, from https://www.un.org/en/observances/rural-women-day

UN. (1981). *International Youth Year: Participation, Development, Peace*. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N81/165/83/PDF/N8116583.pdf?OpenElement

UN. (2019). *International Youth Day*. https://www.un.org/development/desa/youth/wp-content/uploads/sites/21/2019/08/WYP2019_10-Key-Messages_GZ_8AUG19.pdf

UN. (2022). *SDG indicator metadata*. https://unstats.un.org/sdgs/metadata/files/Metadata-06-04-02.pdf

UN, & Department of Economic and Social Affairs. (n.d.). *Policy Brief #105: Circular agriculture for sustainable rural development | Department of Economic and Social Affairs*. 2021. Retrieved December 12, 2021, from https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-105-circular-agriculture-for-sustainable-rural-development/

UN Global Compact. (2014). Driving Harmonization of Water-Related Terminology. *The CEO Water Mandate*, *Discussion Paper*. https://ceowatermandate.org/wp-content/uploads/2019/11/terminology.pdf

UN Water. (2021). *Human Rights to Water and Sanitation*. https://www.unwater.org/water-facts/human-rights/

US EPA. (n.d.). *Herbicides*. Retrieved November 1, 2021, from https://www.epa.gov/caddis-vol2/caddis-volume-2-sources-stressors-responses-herbicides

US EPA. (2014). *Community-Scale Gasification and Biochar Retort Hubs for Rural Areas: A "Closed Loop" System for Sustainable Agriculture and Bioenergy*. https://cfpub.epa.gov/ncer_abstracts/recent_updates/index.cfm/fuseaction/display.abstractDetail/abstract_id/10288/report/F

US EPA. (2021). *Recycling Basics*. https://www.epa.gov/recycle/recycling-basics

USDA Natural Resource Conservation Service. (2009). *General Manual (180-GM, Part 407). Select Title 180; Part 407 - Sustainable Agriculture; Subpart A - General*. https://www.nal.usda.gov/legacy/afsic/sustainable-agriculture-definitions-and-terms

Vermunt, D. A., Wojtynia, N., Hekkert, M. P., Van Dijk, J., Verburg, R., Verweij, P. A., Wassen, M., & Runhaar, H. (2022). Five mechanisms blocking the transition towards 'nature-inclusive' agriculture: A systemic analysis of Dutch dairy farming. *Agricultural Systems*, *195*, 103280. https://doi.org/10.1016/J.AGSY.2021.103280

Wageningen University & Research. (n.d.). *Nature inclusive transitions* . Retrieved November 9, 2021, from https://www.wur.nl/en/Research-Results/Research-programmes/Research-investment-programmes/Nature-inclusive-transitions.htm

Wandel, J., & Smithers, J. (2000). Factors affecting the adoption of conservation tillage on clay soils in southwestern Ontario, Canada. *American Journal of Alternative Agriculture*, *15*(4). https://doi.org/10.1017/s0889189300008754

Webbink, E., Smits, J., & de Jong, E. (2013). Household and Context Determinants of Child Labor in 221 Districts of 18 Developing Countries. *Social Indicators Research*, *110*(2), 819–836. https://doi.org/10.1007/S11205-011-9960-0/TABLES/1

Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. A review. *Agronomy for Sustainable Development 2009 29:4*, *29*(4), 503–515. https://doi.org/10.1051/AGRO/2009004

Wezel, A., Herren, B. G., Kerr, R. B., Barrios, E., Gonçalves, A. L. R., & Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agronomy for Sustainable Development*, *40*(6), 1–13. https://doi.org/10.1007/S13593-020-00646-Z/FIGURES/5

Wezel, A., Soboksa, G., McClelland, S., Delespesse, F., & Boissau, A. (2015). The blurred boundaries of ecological, sustainable, and agroecological intensification: a review. *Agronomy for Sustainable Development*, *35*(4), 1283–1295. https://doi.org/10.1007/S13593-015-0333-Y/TABLES/1

World Bank. (2005). World Development Report 2006. *World Development Report 2006*. https://doi.org/10.1596/978-0-8213-6249-5

World Bank. (2018). *Behavioral Solutions for Youth Unemployment*. https://documents1.worldbank.org/curated/en/265311532598490501/pdf/Youth-Unemployment-Policy-Note.pdf

World Bank. (2021a). *Climate-Smart Agriculture: Development news, research, data* . https://www.worldbank.org/en/topic/climate-smart-agriculture

World Bank. (2021b). *Employment in agriculture (% of total employment) (modeled ILO estimate) | Data*. https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?end=2018&most_recent_year_desc=true&start=1991&type=shaded&view=chart

World Health Organization. (2020). *Chemical safety: Pesticides*. https://www.who.int/news-room/q-a-detail/chemical-safety-pesticides

Yong Kim, J. (2018). *To build a brighter future, invest in women and girls*. https://blogs.worldbank.org/voices/build-brighter-future-invest-women-and-girls

Young, D. L. (1989). Policy barriers to sustainable agriculture. *American Journal of Alternative Agriculture*, *4*(3–4), 135–143. https://doi.org/10.1017/S0889189300002964

Zhang, X., Davidson, E. A., Mauzerall, D. L., Searchinger, T. D., Dumas, P., & Shen, Y. (2015). Managing Nitrogen for Sustainable Development. *Nature*, *528*, 51–59. https://doi.org/10.1038/nature15743

Zhang, X., Yao, G., Vishwakarma, S., Dalin, C., Komarek, A. M., Kanter, D. R., Davis, K. F., Pfeifer, K., Zhao, J., Zou, T., D'Odorico, P., Folberth, C., Rodriguez, F. G., Fanzo, J., Rosa, L., Dennison, W., Musumba, M., Heyman, A., & Davidson, E. A. (2021). Quantitative assessment of agricultural sustainability reveals divergent priorities among nations. *One Earth*, *4*(9), 1262–1277. https://doi.org/10.1016/j.oneear.2021.08.015