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REVIEW

Social Equity in True Cost Accounting of Food

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Abstract

Purpose of the Review This review examines how equity-related issues are addressed in the frameworks and guidelines of True-Cost Accounting (TCA). It analyzes the methods used to measure and value (in)equity in the agrifood sector. It identifies gaps and shortcomings and offers preliminary suggestions to advance the integration of equity considerations in future applications of TCA.

Recent Findings Societal expectations on human rights and ethical conduct in food production and consumption remain only half met by companies' ESG practices worldwide. TCA, being a child of sustainability reporting, faces additional challenges in capturing multiple equity-related values.

Summary Incorporating equity indicators within TCA provides critical information to guide investments and policy development. For comprehensive situational analysis, suitable statistics, indicators, and aggregate indices are needed to assess equity-related outcomes. TCA needs to incorporate equity indicators under the social capital pillar, ensuring they are customized to different social groups and linked to rights-based indicators.

Keywords True-Cost Accounting · Agrifood systems · Equity · Societal costs

Introduction

True-Cost Accounting (TCA) of food systems seeks to unveil the full range of costs and benefits of food production, processing and consumption by considering the connections of these activities to the underpinning combination of natural, produced, human and social capital. TCA builds on sustainability frameworks - which typically consider the environmental, social, and economic pillars of development - by providing a common framing to describe the connections between the three pillars and by monetizing impacts and dependencies. To this end, the environmental pillar is most directly connected to natural capital, the social pillar is connected to human and social capitals, and the economic pillar is connected to produced capital. At the same time, TCA recognises that each capital contributes to generating environmental, economic, and social outcomes. Then, by monetizing assessment results, both enterprises and policymakers tend to pay more attention to the multi-capital trade-offs of any aspect of development decision.

Despite a growing library of groundbreaking TCA studies and recognition of the potential of TCA to aid policymakers, the application of equity-based principles and coverage of equity issues in TCA remains inadequately addressed in current practice. In many cases, the different methodological and conceptual approaches adopted by institutions to measure equity complicates analyses. Without further development and integration of equity measures, TCA will fail to achieve its goal of making all costs and benefits transparent.

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More generally, while sustainable development is founded on, and fully embodied by, equity (or rights) across and between generations, sustainability assessment tools poorly address the social preconditions of sustainability, in how they account for diverse value systems. For instance, the *cost* of producing rice may be x, the market *price* of rice may be y, but the *value* given to rice will vary among stakeholders. In India, offerings of freshly harvested rice to local deities hold a theological value that a Western culture person ignores. Values are shaped by a variety of factors such as cultural significance, social networks, and socioeconomic status. Biodiversity offers another example. In this case, values range from utilitarian to the satisfaction from preserving a natural heritage, thus incorporating the current supply of provisioning goods to the supply of future services. In short, current approaches fail to recognise differences in the values of individuals or groups values regarding nature and its relationship with people [1].

Absent improvements in equity measurement, the use of TCA assessments in decision making may have unintended consequences, such as when TCA informs climate conservation decisions that penalize vulnerable groups, for example, where government conservation of forests undermines indigenous peoples' rights to self-determination. Also, TCA measurements of equity may lead to distorted conclusions, such as when impacts experienced by a lower-status group are costed at a lower value than impacts for a higher-status group; for example, those who are less likely to seek health care would face lower costs, but that does not imply that the burden on them is minimal and could be dismissed. Ultimately, TCA assessments cannot replace a rights-based approach to development but they can be used to inform on (in)equity, thereby bringing transparency to choices made decision-makers.

The objective of this review is to evaluate the extent to which current TCA frameworks and TCA agrifood studies address equity. We review the main approaches that have influenced the assessment of equity in recent years, according to their main fields of application: social evaluation, social responsibility, and social capital. From the overview of the methods employed, we provide insights on improved integration of equity considerations in future TCA practices.

Defining Equity

The term equity originates from the Latin word 'aequus' meaning fair. Equity is often confused with equality but these terms are not synonymous. Equity recognizes that we do not all start from the same place and that adjustments must occur to avoid imbalances (i.e. provide the right-size solution for each individual according to his/her needs). Equality means providing the same resources, rights and opportunities to all, regardless of their circumstances (i.e. one-size-fits-all solution).

The 2014 Food and Agriculture Organization's Guidelines for Sustainability Assessment of Food and Agriculture systems (SAFA) [2] is a fundamental reference and excellent launching point for consideration of approaches to equity. It disaggregates 'equity' into three sub-themes: non-discrimination, gender equality, and support to vulnerable people. Each sub-theme is described along with qualitative indicators indicating the appropriate measurement unit, measurement approaches, and clear thresholds for rating within a sustainability assessment [3]. Although equity metrics are often expressed qualitatively (e.g. Freedom of association and collective bargaining), they can also be quantitative, or translated into measures that can be used for costing in TCA (e.g. loss of 50% Disability-Adjusted Life Years per forced labour incident expressed in USD/DALY).

SAFA and other reviews of equity highlight the critical link to justice. Justice takes equity a step further by removing barriers (e.g. racism) to achieve equitable access to opportunities; as such, justice involves a proactive and preventive step. Social justice typically focuses on fairness for historically oppressed people who have disproportionately faced systemic discrimination on the ground of their membership to certain social groups, such as those based on ethnicity, sex, religion, cast or disability.

Methodologically, equity in TCA can be incorporated as variables that specifically address equity, or as a desired outcome of drivers that may lead to equity (or inequity). More broadly, even when equity is not a specific focus of TCA, the valuations estimated may trigger outcomes, such as commodity pricing inequity, and may eventually influence connected policies and regulations. Thus, equity underlies or frames most, if not all, human, social, environmental, and produced capital evaluations. However, TCA does not differentiate social groups to identify who is affected.

Both equality and equity are needed to sustain justice. Seeking equity, by default, involves pursuing social justice, and even environmental justice. In fact, putting equity and human rights at the core of decision-making is reflected in the concept of climate justice, which is concerned with low-income communities and future generations' vulnerability to climate change impacts, as well as the Convention on Biological Diversity framework that guides decision-making on equity towards indigenous people and local communities, women and girls, children and youth and persons with disabilities [4].

Challenges to Monetizing Equity

TCA can exacerbate the challenges of measuring equity because of its intent to aggregate the values that different people assign to different assets and associated costs and benefits by monetizing the range of impacts and dependencies on all capitals. Quantifying equity raises ethical questions when monetization is undertaken, especially because monetization approaches fail to differentiate negative impacts that affect different groups unequally (e.g. pesticide impact on children). Impacts on future generations are particularly tricky to monetize, due to the uncertainty posed by new threats (e.g. climate change) and evolving social norms (e.g. LGBTQ+rights). While the fundamental human rights enshrined in the Universal Declaration of Human Rights are not negotiable and thus not subject to monetization (e.g. freedom from slavery), future human rights may change with time (e.g. technological advancements and existential threats, AI and augmented humans).

No impact assessment approach – not TCA, Environmental, Social and Governance (ESG), Cost–Benefit Analysis (CBA) or any other – has comprehensively integrated or monetized equity issues. Several factors contribute to inconsistent, and sometimes altogether absent, monetization of equity. First and foremost, aspects of social capital, including equity, are not traded, and thus there is no observable price for things like quality of life, freedom, relationships, and happiness.

Second, there is disagreement as to whether it is ethical or moral to place a monetary value on certain things, such as the intrinsic value of a forest or eyesight, where people object to the notion that the value of certain things cannot be captured by a price tag.

Third, and as mentioned in the introduction, it is necessary to adjust valuations to account for the differences across population groups. One technique for this is to use equity weights but deriving and applying these weights is not straightforward.

Fourth, anybody seeking to monetize equity will encounter knowledge gaps. Data availability is always a constraint for any kind of assessment, or valuation. Surely, improving the accuracy and relevance of inequality-related benchmarks, rating and data depositaries is needed, along with access to what is today considered ‘sensitive’ information. In navigating the landscape of equity indicators for TCA, the main challenge is the limited availability of granular data, particularly concerning activity metrics and value factors, often compounded by the absence of location-specific or population group-specific data. The difficulty in achieving location- or population group-specific impact results is partly due to the fact that impacts are often modelled and not measured. On activity metrics, leveraging harmonized time-use surveys, distributional income accounts and artificial intelligence, if complemented with data triangulation, may offer a path towards harmonized and comprehensive datasets for TCA.

Fifth, value factors vary widely, depending on the different scopes of analysis (e.g. local vs. global views, now vs. future trade-offs), so the conversion of non-financial variables into monetary terms based on these value factors can result in different outcomes, depending on the intended application. Hence, when applying TCA, it is important to provide reasons for the use of specific value factors to avoid cherry picking [5].

Last, current TCA practice tends to prioritize quantitative metrics and monetization. While some methods are available for monetizing equity issues, the challenges in their implementation means that often equity issues are not incorporated. Additionally, qualitative equity indicators such as inclusion in decision-making, access to credit and loans, or power dynamics are also overlooked because hard to monetize. Since failing to include an indicator means that its associated impact is omitted, the accuracy of the analysis that aims to weigh the costs and benefits of different actions can be undermined and the guidance provided by the TCA becomes less reliable. Transparency of what is included in the value calculation is particularly important.

These challenges are difficult to overcome. And yet, there is a desire to proceed, in the hope that by valuing equity, it will find consideration in economic and political decision-making. For example, the UK Green Book, published by HM Treasury, requires all government departments to undertake ‘analysis which quantifies in monetary terms as many of the costs and benefits of a proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value.’ Government departments are ‘invited to revisit their past work in monetizing food system externalities and give fresh impetus to filling in gaps in the data and using this as the basis for future policy development’.

Furthermore, ensuring that the TCA evaluation process is inclusive and involves a wide variety of actors can help to avoid overlooking certain indicators or the undesirable consequences that such an evaluation could have on certain social groups.

Method

This analysis is based on a detailed review of most widely used frameworks, tools and metrics that address equity within the food and agriculture sector. The review examined

how equity is incorporated, with the dual objective of identifying Key Performance Indicators for use in TCA.[1]

This first screening further incorporated the most recent developments in both the sustainability and TCA-related space to analyse how TCA could better incorporate equity in the future, as reflected in the following section. By drawing on social valuation frameworks, sustainability standards, and databases beyond traditional TCA, this paper seeks to identify approaches that can help fill these gaps and provide actionable insights for more equitable TCA applications.

It is highlighted that the breadth of equity issues poses several challenges in setting boundaries for the TCA exercise. Although equity consideration span across all TCA capitals, this paper focuses primarily on equity within social capital, as this is where it is most commonly addressed by TCA practitioners. Nevertheless, by proposing the disaggregation of TCA results by social groups to capture differences in impacts (e.g. climate change effects on vulnerable people versus wealthy populations, variations in nutritional outcomes across age and gender), the article also touches on equity-related shortcomings in other capitals. Since the suggested approach applies to all indicators, not only those related to social capital, it captures equity concerns across all capitals.

This article did not address the many vested interests of major players in the global food systems, and their stubborn pursuing of unsustainable value chains to protect their business interests in the short-term. There is a need to analyse the effectiveness of explicit TCA-based equity considerations on current food system governance and hence, its potential translation of the current generic discussion of food system transformation into successful action.

Results

Equity Treatment within TCA Frameworks

TCA frameworks have built on sustainability assessment methods which usually identify driver, state and response indicators, or key performance indicators (KPIs) to measure how operations interact directly or indirectly with society, including employees, customers, suppliers, shareholders, and local communities. Such indicators usually focus on compliance with equality policies such as the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, and national laws. Related equity thresholds are then often related to minimal legal requirements,[2] while higher-targeted environmental or social sustainability indicators[3] are often voluntary and ignored in monitoring, evaluation, and reporting frameworks.

Over the past seven years, a range of global TCA guidance has emerged that has tackled equity in different ways. The 2018 seminal TEEB for Agriculture and Food's Scientific and Economic Foundations Report [6] that launched the analytical TCA framework has triggered the development of several guidance documents that develop environmental, human, social and produced capital valuation approaches. The proliferation of TCA guidance documents is due to the need to customize the approach according to the different purposes of enterprises, investors and policy-makers. TCA may be used for corporate reporting, investment decisions or adjusting policies, so the spatial and temporal boundaries, metrics and granularity of the assessment will differ.

The 2020 *Applying the TEEB-Agrifood Evaluation Framework: Overarching Implementation Guidance* [7] recommends choosing relevant social indicators to assess capital stock (i.e. quantity of an asset), flows (i.e. movements), and outcomes (i.e. effects) on communities but the choice of issues and indicators is left open to users. A few social capital examples are given but equity is not singled out.

The 2022 *TCA Agri-Food Handbook – Practical True Cost Accounting Guidelines for the Food and Farming*

[1] The review included: 3 TCA tools (i.e. WBCSB Social and Human Capital Protocol (2019), Capitals Coalition's TEEB for Agriculture and Food: Operational Guidelines for Business (2020), True Cost Initiative's TCA Agrifood Handbook (2022); 5 social valuation frameworks (i.e. Subjective Wellbeing Valuation (2013), OECD' Framework for Measuring Well-Being and Progress (2020), Impact-Weighted Accounts Initiative (2021), Value Balancing Alliance' Impact Statement Methodology for Social and Economic Aspects (2022), True Price' Monetization factors for true pricing (2023); 10 sustainability guidelines and disclosure standards (i.e. Social Accountability 8000 Standard, UNEP/SETAC Guidelines for the Social Life Cycle Assessment (2009 & 2020), SASB for the Consumption Sector (2015), WBCSD's Social Life Cycle Metrics for Chemical Products (2016), Handbook for Product Social Impact Assessment (2020), SDG Global Indicators Framework (2020), WEF Measuring Stakeholder Capitalism (2020), GRI Sector Standard for Agriculture, Aquaculture and Fishing (2022), OECD Guidelines for Multinational Enterprises (2023), EU Corporate Sustainability Reporting Directive (2024); and 8 databases with relevant metrics (i.e. World Values Survey Database (1981–2022), UNDP's Human Development Index (since 1990), EUROSTAT SDGs and microdata (since 2002), Quality of Life Index (since 2005), OECD Well-Being Dashboard and Database (since 2010), UNEP's Inclusive Wealth Index (since 2012), UN System of Environment-Economic Accounting (since 2012), World Bank's Human Capital Index (since 2018). Background paper available upon request.

[2] Even when legal requirement is the threshold, the 2024 Social Benchmark reports that only 4% of the 2,000 most influential companies pay their direct employees a living wage, with less than 1% setting a target to do so. Additionally, only 3% of companies meet the ILO minimum standards on working hours.

[3] An example is the legally required 'minimum wage' and the more sustainable 'decent wage' indicator for workers' wellbeing.

Sector on Impact Measurement, Valuation and Reporting [8] seeks to provide a baseline for establishing a standardized model for impact assessment for financial and sustainability reporting which captures all impacts of businesses. It describes human and social capital indicators of relevance to enterprises operating within legal requirements and which are relatively easy to monetize. For example, human health and workers' rights[4] are valued via the Disability-Adjusted Life Years (DALY) unit. Similarly, the 2022 Value Balancing Alliance's *Impact Statement*: *Topic-Specific Method Paper: Social and Economic* [9] provides monetary valuation for a handful of human and social capital indicators to enable its large international companies to meet the requirements of financial reporting standards. Generally, most businesses' equity considerations tend to be limited to workers' rights, as exemplified by the 2023 *Monetization Factors for True Pricing* [10] that considers 10 workforce impacts.

The 2023 *TEEB for Agriculture and Food: Operational Guidelines for Business* [11] identifies business impacts and dependencies, including capital risks and opportunities. Examples of potential quantitative indicators for impact drivers are given (e.g. workforce' rights), but the criteria for prioritization of impacts and dependencies to be considered ultimately depends on the assessor's choice of value perspective (i.e. business impacts, societal impacts, or dependencies) and the risk and opportunity categories considered (i.e. operational, legal and regulatory, financing, reputational and marketing, societal).

The UN Environment Programme has been applying the *TEEB for Agriculture and Food to Inform Food System Policy* (2024) [12] in developing countries by formulating scenarios to explore possible futures. Through a process of stakeholder consultations, a comprehensive modelling approach maps relationships between human activity and the environment; estimates current ecosystem extent and condition; forecasts changes; quantifies and monetizes impacts on human welfare; and conducts cost–benefit and cost-effectiveness analyses. However, equity is not specifically targeted.

In 2024, the Capitals Coalition released *Governance for Valuation* [13] to increase the confidence in the use of TCA. They propose preparation of a transparency report, where ethical choices made in estimating societal impacts are revealed, including equity weightings and income adjustments, accounting for future impacts, and other ethical considerations.

Overall, there is currently limited specific consideration of equity issues in TCA frameworks and limited guidance beyond workforce rights. Most initiatives take a cautious approach, addressing equity only within social and human capital assessments. However, truly integrating equity into TCA requires a comprehensive approach across all four capitals and demands that study boundaries be set appropriately to capture intergenerational and systemic impacts. To see this, take the example of synthetic pesticides which are claimed to be necessary to sustain and maximise agricultural yields[5] and hence feed the world. From a unilateral production perspective, supporting intensive production increases farms' productivity, providing greater calorie availability and lower food prices. At the same time, a large part of scientists and civil society oppose many synthetic inputs based on the harm caused to environmental and human health. This contraposition leaves governments facing multi-scaled decisions regarding pesticide reduction, such as those connected to the EU Farm-to-Fork policy (i.e. 50% reduction by 2030). By examining trade-offs and synergies across the four capitals, TCA reveals the hidden costs of pesticide usage, as well as the beneficiaries of public support (i.e. farmers, consumers, agrifood corporations). From an equity perspective, pesticide contamination disproportionately impacts marginalized communities and future generations, as in the case of 'nearly forever chemicals' (i.e. per- and polyfluorinated alkyl substances) [14]. Wealthier families, meanwhile, can afford cleaner, pesticide-free food. By revealing the hidden costs of pesticides, and effectively accounting for equity, a strong case emerges on distributional effects of specific food systems.

A study on synthetic phytosanitary products (2021) [15] used in French agriculture analyzed the value of pesticides, including societal costs borne and benefits captured by different actors in France and the European Union (EU). Environmental and health impacts were qualitatively estimated at a global level to account for traded foods. The study showed that health impacts varied greatly across the globe due to differences in production contexts. For example, impacts were higher where there was less protection equipment for pesticide application, especially where children participate in farm activities. Societal costs were estimated for four public expense categories: cost of pesticide regulation; public financial support for pesticide manufacturing; environmental costs; and public health costs. Benefits analysis included pesticide sales[6] and avoided social costs

[4] These include: human toxicity, living wage gap, occupational health & safety, excessive working hours, gender pay gap, forced labour, and child labour.

[5] The combined use of pesticides, synthetic fertilizers and mechanization, along with farm specialization and consolidation, have in fact doubled global agricultural yields between 1960 and 2016. Source: Phillips McDougall, 2018 Evolution of the Crop Protection Industry since 1960.

[6] Croplife reports that 27% of Highly Hazardous Pesticides sales occur in high-income countries, and that this ratio increases to 45% in low- and medium-income countries (up to 59% for India). Source: Public Eye, 2019. https://www.publiceye.ch/fr/thematiques/pesticides/analyse-ventes-pesticides-2018/toxicite-aigue

(e.g. by sustaining farmers' and distributors' income). Even this extensive treatment left factors out, such as indirect and cross-cutting costs (e.g. public research, waste incineration, lobbying expenditures) that are hard to attribute solely to pesticides. Consumer net benefits from cheaper food due to pesticide usage were also excluded due to the rebound effect of cheap food in terms of overconsumption and related non-communicable diseases. Nevertheless, the main study finding is that in 2017 societal costs attributable to the use of synthetic pesticides in EU agriculture were 2.44 times higher than the direct profit derived from synthetic pesticide sales of manufacturers (i.e. 2.3 billion euros societal costs compared to 940 million euros in profits). While not exhaustive, such integrated assessments, incorporating equity concerns through attribution of costs and benefits to different social actors, not only through quantitative metrics but also through design, provide valuable insights for policymakers and the public.

Equity Treatment within Other Approaches

While TCA is a nascent field and leaves much flexibility in how capitals information is generated and valued, financial accounting practices and related sustainability standards have benefited from a long history of development and refinement. Advances relevant to assessing equity are considered here, with a view to address the methodological TCA gap regarding equity valuation.

Since 1989, Social Accountability International has provided a framework to determine fair and decent treatment of workers. Its SA8000 Standard is based on internationally recognized standards of decent work and is supplemented by a Performance Indicator Annex [16] that establishes clear benchmarks for social criteria and provides quantitative or qualitative measures of performance. The 2014 version of the Standard for Decent Work is currently under revision to advance human rights risks and good practices [17]. The International Labour Organization frames decent work as the sum of "aspirations of people in their working lives" and involves not only fair income and safe working conditions but also dignity, equality, and inclusivity [18]. To this end, ILO advocates for non-discrimination and equal opportunities for all workers by creating a global database on labour conditions, including issues related to gender, ethnicity, race, disability, and other grounds of discrimination.

Environmental Life Cycle Analysis (LCA) is a common impact assessment tool in TCA analysis. The less common approach of social LCA (S-LCA) to measure cradle-to-grave social capital impacts matches stakeholder groups with qualitative and quantitative impacts indicators: worker/human rights; consumer/cultural heritage; local community/conditions; society/health and safety; value chain actors/governance; and children/organizational influence [19]. In a similar fashion, the Roundtable for Product Social Metrics [20] provides a method to assess positive and negative social impacts of products and services throughout the life-cycle of creation, use and disposal. Four stakeholder groups (workers, local communities, small-scale entrepreneurs, and users) and twenty-five social topics are identified with performance indicators scored according to a 5-point scale, ranging from best to unacceptable. Lessons from S-LCA suggest that TCA equity valuations be disaggregated by stakeholders' groups, which is challenging due to lack of sufficient data.

Environmental, Social and Governance (ESG) reporting is a common global practice in business and asset management, rooted in self-regulated Corporate Social Responsibility (CSR). While, ESG may be contaminated by greenwashing [21] there have also been substantial improvements in terms of metrics and directives. The ESG space is very diverse in terms of standards and compliance level but most often, legal responsibility over-rides ethical or philanthropic responsibility. Issues under the social pillar relate to occupational health and safety, community relations and human rights. For the latter, the major framework used is the 2011 United Nations Guiding Principles on Business and Human Rights [22], including compliance with ILO principles for workforce rights. Workforce rights valuations, as included in ESG reporting, have so far been swiftly incorporated into TCA qualitative and quantitative valuations.

Within ESG reporting, the Global Reporting Initiative (GRI) provides the most widely used global standard for sustainability reporting on economic, ecological, and social impacts. GRI standards include, among others, the GRI-400 for social topics, and the Sector Standard for Agriculture, Aquaculture and Fishing Sectors [23]. The latter contextualizes the socio-economic themes in specific GRI-400 disclosure topics, with workforce topics complemented with measurement of wider community rights and supply chain governance. The Standard identifies priority themes in all sustainability domains, where organizations are left to select what is most material to their operations. The 17 socio-economic themes include, among others, land and resource rights, rights of indigenous peoples, non-discrimination and workers' rights, economic inclusion, public policy, anti-competitive behaviour, and anti-corruption. The three last themes are of particular relevance to advancing TCA coverage to avoid enterprise lobby activities adversely influencing public policy, competitive behaviour and corruption.

The World Economic Forum's *Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation* [24], identifies a set of material ESG metrics and recommended disclosures

for the principal ESG domains: governance, planet, people and prosperity. The themes for the people' pillar include health and wellbeing, skills for the future, and dignity and equality. Additionally, an equality theme includes traditional workforce rights reinforced with diversity and inclusion, grievance, and slavery.

Private sector actors have recently reviewed TCA-related methodologies called 'impact accounting' [25] to quantify materiality and to effectively identify pertinent stakeholders. Measures of equity and fairness in employment practices across methodologies aim to address wage inequalities. Currently, a multi-stakeholder Taskforce on Inequality and Social-related Financial Disclosures (TISFD) [26] has been formed to develop an inequality disclosure framework and better integrate people and society into businesses and capital providers decision-making.

Yet, notwithstanding the existence of clear ESG frameworks and guidance for reporting on social issues, the World Benchmarking Alliance's Social Benchmark Report (2024) [27] reveals that ninety percent of the world's 2000 most influential companies (with annual revenue equal to 45% of global GDP) are not even halfway to meeting fundamental societal expectations or international agreements. Only 24% respect human rights, 20% promote decent work, and 23% act ethically for food production and consumption, locally and abroad. Regarding human rights compliance, companies in the food, agriculture, and forestry sector achieve an overall average score of only 28%.

On the policy-making side, a few well-being frameworks seek to inform policy decisions on more people-focused solutions that bring benefits across sectors and stakeholders. For instance, the *OECD Wellbeing Framework* offers a dataset [28] on current well-being where quality of life is influenced by three types of inequality: gaps between population groups by age, educational attainment and sex (horizontal inequalities); gaps between those at the top and those at the bottom of the achievement scale in each dimension (vertical inequalities); and deprivations (i.e. the share of the population falling below a given threshold of achievement). Well-being outcomes assess changes against specific thresholds[7] over time, and outcomes across countries are expressed by the *OECD Better Life Index*; the 2020 Index shows that countries with higher average levels of well-being tend to have greater equality between population groups and fewer people living in deprivation [29].The Social Wellbeing Valuation (SWV), an accepted OECD methodology for policy evaluation, has so far been applied in TCA only by FAO during the last decade [30, 36, 37]. The methodology quantifies the impact of operations/interventions to the change of income required to yield equivalent change in well-being. This approach allows for a detailed analysis of inequities and their impact on well-being. The monetary value provided by SWV factors expresses what would otherwise be shown in Quality-Adjusted Life Years (QALYs). SWV offers great opportunities to advancing TCA equity valuations but requires econometric methods that few practitioners are familiar with.

Lastly, a growing approach that bridges policy and business domains is the assessment of 'societal costs,' which quantifies actual expenses borne by public authorities, households, businesses, and other stakeholders. By exploring economic drivers and institutional dynamics throughout the agrifood chain, power asymmetries are exposed, as well as their interactions with authorities at different levels. In the context of the French food system [31], modeling was conducted to trace the root causes and dependencies of negative impacts, identifying who bears the costs of externalities and who benefits from avoiding them. The study highlights those societal costs, ranging from household expenditures and public support for the agrifood sector to state-funded harm mitigation, all raised social justice questions, as the private profits generated by certain actors was to the detriment of others who incurred deferred costs.

Conclusions: Opportunities to Move Forward

Our analysis reveals that the limited integration of equity in current TCA frameworks is not only due to methodological gaps, but also because existing tools often prioritize aggregate social outcomes, overlook distributional effects, or do not systematically involve affected communities in defining system boundaries, relevant costs, and valuation methods. The failure of current TCA frameworks to fully address issues of equity risks undermining TCA's ability to drive a transformation toward socially fair food systems. Building on the current practices reviewed above, suggestions are offered below to enhance the integration of equity into TCA frameworks, ensuring that social costs and benefits are transparently assessed, fairly distributed, and effectively internalized in economic and policy decision-making.

Explicitly Integrate Equity and Governance Metrics and Considerations

TCA frameworks should include equity indicators at both the input (e.g., fair wages, access to resources) and outcome (e.g., health disparities, economic resilience) levels. The SAFA Guidelines could serve as a starting point for developing equity indicators tailored to TCA, but also expanding

[7] For example, the indicator 'vertical inequality in job satisfaction, defined as 'Ratio of the score of the top 20% over the score of the bottom 20% for job satisfaction' has a threshold of ± 0.1 point.

equity concerns to intergenerational and environmental justice. TCA could greatly benefit from ESG experiences to integrate governance topics (e.g. due diligence, grievance and slavery, corruption, lobbying expenditures, etc.) that permeate all capitals regarding costs and benefit sharing of operations or policies, and thus consider equal treatment and opportunities for all, and the respect of human rights.

Improve the Data Basis, Disaggregate Outcomes by Social Groups and Analyze Distributional Effects

Valuing equity requires social scientist involvement in econometric modelling[8] of various social well-being data sets; improvements are needed on data collection, compilation and standardization, the accuracy and relevance of inequality-related benchmarks, and access to 'sensitive data' depositaries. Full embodiment of equity in TCA demands a comprehensive treatment across all four capitals. Therefore, impacts should not only be aggregated for an overview but also be disaggregated by societal groups to reveal disparities in how different populations are affected. TCA-equity attribution to specific groups of stakeholders may offer more concrete opportunities for effective consideration of equity issues, provided that information is accessible, and not derived from theoretical models. Internalizing externalities seeks to correct market failures through norms and taxes. However, social costs relate to power redistribution, not to market failure correction. Therefore, societal costs imply distributive effects: when certain actors who have the capacity and/or duty to bear these costs do not assume them, the burden often shifts to groups with fewer resources, exacerbating existing social inequities. TCA analysts should identify who bears the costs and who captures the benefits, through a stakeholder analysis that includes a power versus interest grid [32].

Complementing Monetized Outcomes with Social Equity Impact Assessments

Although objections to monetizing non-market benefits, like happiness, have largely come from liberal critics, the irony could be that finding successful ways to monetize social and human capital could be what ultimately justifies stronger regulations [33]. Translating environmental and social performance into monetary units greatly serves the awareness process of decision-makers, as ultimately 'money talks.' Awaiting the development of improved and robust methods for the valuation of components of social justice and equity, monetized TCA assessments should be complemented by reporting developed along the UN Human Rights Indicators [34], which include structural, process and outcome indicators (respectively, commitments, efforts, and results indicators), to allow decision-makers to incorporate equity with imperfect information. Also, translating qualitative and quantitative valuations into a simple index [35] offers enlarged opportunities to act upon the computed information, while making use of data available on public dashboards (e.g. OECD Wellbeing Framework, International household Survey).

We are convinced that TCA will not be able to reveal its full potential in transforming food systems – especially in making the use of all natural resources more sustainable - if it does not put equity at the centre of its considerations. A strong assessment of equity and implementing strategies to improve livelihoods and working conditions is the link to the everyday life of many people. The opportunities outlined here should be seized such that TCA can prove that it serves people's needs. Without considering equity, TCA will remain a technocratic concept. To state the obvious, further integration of equity within TCA frameworks will not be easy. It will require continued engagement by a community of scholars and practitioners who recognize the value of TCA and believe in its analytical power to guide, and ultimately, reshape food system decision-making. The authors deeply appreciate that to tackle and integrate equity as proposed will take time. We expect the investment will be worth it.

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  The document establishes global expert consensus on key social and governance indicators, among others, and guidance on how to measure.

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[8] Modelling approaches include: computable general equilibrium models, partial equilibrium models, system dynamics models, spatial models, optimal crop allocation models, etc.

This international standard covers all ESG topics applicable to food systems, including GRI-400 disclosure for socio-economic themes.

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