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FReSH Discussion Paper

TRUE COST OF FOOD:

Unpacking the value of the food system

FReSH

Content

1. Executive Summary

Today's food systems are broken: 800 million people are hungry[1], and many more suffer from malnutrition. Simultaneously, two billion people are overweight or obese[2]. Food production largely drives climate change, water scarcity and biodiversity loss, while many smallholder farmers, who are the foundation of food production, live in extreme poverty[3].

Food prices for consumers are low, reducing barriers to access food, but health services, the environment, farmers and farming communities often bear the cost of cheap food in terms of its impact. A 2017 report from the UK[4] shows that every £1 spent on food products generates 50 pence in externalities on healthcare systems alone (and £1 in total external costs). IDH and True Price have established similar numbers for the water impacts of coffee production in Vietnam[5]. This shows that the lack of transparency in the food system cost structure hides the true value of food, which can be much higher than what consumers spend.

The True Cost of Food is an initiative run by Food Reform for Sustainability and Health (FReSH), a key element of WBCSD's efforts to create a system-wide narrative and set of business solutions to transform the food system.

True Cost of Food aims to improve the contribution of food systems to sustainability and human health by increasing economic efficiency and the full cost accounting of food systems.

Together with aligned policies and civil society interventions, market dynamics based on true cost accounting (TCA) have the potential to transform food systems. If market prices (along the supply chain as well as for the consumer) integrate the true costs of food and are supported by effective policies and civil society interventions, the right incentives will be given and investments will flow to where capital creates the most social and environmental value. For instance, sustainably produced fruits, nuts and whole grains, which are key components of healthy diets, will be cheaper than food with low dietary quality.

This discussion paper summarizes the data and methodologies that are available to assess the true cost of food today. We find that there are still gaps in the data needed to make such assessments more robust and useable, which is an opportunity for further work in this space. We also explore what is required to establish true cost approaches in the business environment in the short and medium term, and which key stakeholders in companies need to be involved to transition TCA from company sustainability teams to the desks of CEOs and CFOs. These organizational dimensions are especially critical in moving TCA from a niche activity within the sustainability realm to a core tool of strategic business decision-making. Finally, we discuss how to work with NGOs and policy experts to integrate aspects of true cost in long-term planning and implementation, either directly through taxes, incentives and subsidies, or through softer approaches such as public purchasing guidelines. Ultimately, these policy levers could drive widespread and systemic changes in the production and consumption of food.

Collaboration is key to advancing TCA, but not enough is taking place. We observe that collaboration with and among methods and data developers is needed to both establish reliable methods that are simple to apply and to develop trustworthy data that is affordable to purchase. Second, we observe that collaboration across companies and within industry can help to establish best practices for adopting TCA. This includes linking with progressive investors and asset managers looking to invest in sustainable companies – TCA can be used to communicate sustainable value creation once a coherent framework and approach is widely adopted. Finally, collaboration can help bring systemic changes into the policy environment. True cost approaches will become much more powerful once market prices better reflect true costs. In this way, the business case for true cost will be directly visible in financial accounting. This discussion paper identifies several ongoing initiatives that could contribute to mainstreaming true cost approaches for food. We encourage stakeholders to align on priorities, share outcomes and avoid duplication.

The role of the businesses involved in FReSH is to demonstrate that there is a business case for TCA – that companies can generate better value and jobs for society if market prices better reflect the true costs generated in food systems. This will ultimately help public leaders justify changes to the policy environment. We advocate the FReSH rationale for working on true cost and aim to encourage other organizations to collaborate on using TCA as a key lever to achieve the common goal of healthy and sustainable food systems for all.

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[1] Food and Agriculture Organization of the United Nations (FAO). (2017). "World hunger again on the rise, driven by conflict and climate change, new UN report says". Retrieved from http://www.fao.org/news/story/en/item/1037253/icode/

[2] Word Health Organization (WHO). (2018). "Obesity and overweight – Key facts". Retrieved from http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

[3] World Bank. (2014). "For Up to 800 Million Rural Poor, a Strong World Bank Commitment to Agriculture". Retrieved from http://www.worldbank.org/en/news/feature/2014/11/12/for-up-to-800-million-rural-poor-a-strong-world-bank-commitment-to-agriculture

[4] Sustainable Food Trust. (2017). "The Hidden Cost of UK Food". Retrieved from https://sustainablefoodtrust.org/articles/hidden-cost-uk-food/

[5] True Price. (2016). *The True Price of Coffee from Vietnam*. Retrieved from http://trueprice.org/wp-content/uploads/2016/04/TP-Coffee.pdf

2. **Perspectives**

Lauren Baker

Director of Programs, Global Alliance for the Future of Food

The Global Alliance for the Future of Food is a strategic alliance of philanthropic foundations working together and with others to transform global food systems now and for future generations. Our work on true cost accounting (TCA) aims to make the full costs and impacts of food visible by investing in efforts to identify, measure and value the positive and negative environmental, social and health externalities of food systems, and to deploy innovative strategies to effect associated policy and market changes.

TCA is a critical tool to help us, as a global community, better understand the impacts of food systems, address the most harmful practices and find new, positive pathways forward.

By evaluating the impacts – both positive and negative – inherent in different food systems and making these impacts transparent, decision-makers on farms and in governments, institutions and businesses can make better-informed decisions that consider the economic, environmental and social impacts of their choices.

Through our work on TCA, the Global Alliance aims to see:

- TCA established as a scientifically-validated approach that informs policy and practice toward healthy and sustainable food systems among governments, agriculture stakeholders, corporations, the finance and investment community, and other relevant stakeholders.
- A robust global dialogue on the importance and potential of TCA for food systems that strengthens TCA's systemic approach (including climate, health and agroecology) and the use of shared frameworks and tools to inform decision-making.
- TCA actively applied to business analysis, dietary comparisons, farm typologies, policy analyses, and national or corporate accounting, informing and informed by the broader TCA work of Global Alliance member foundations.

The Global Alliance supports the work of TEEBAgriFood, which recently launched a Scientific and Economic Foundations Report, as well as a True Cost Accounting Community of Practice for food systems.

Patrick Holden

Founding Director, Sustainable Food Trust

Professor Johan Rockström and others have highlighted the negative impact of our current farming and food systems as key contributors to the exceeding of our "planetary boundaries" - areas where the activities of humanity are beyond the carrying capacity of the planet or the maintenance of the health of its population. These include greenhouse gas emissions, climate change, natural capital depletion and damage to public health.

Food companies and retailers are already well aware that they have a potentially key contribution to make to improving the environmental and social impact of food production systems. However, one of the biggest barriers that is currently preventing them from acting is the failure to internalize food system "externalities" – the currently uncosted negative impacts of our food production systems on natural capital, the environment, nutrition and public health.

Farmers using food production practices that cause damaging outcomes are not currently financially accountable for these negative impacts. As a result, the price differential between conventionally and sustainably produced commodity crops is distorted to such an extent that it is virtually impossible for companies to switch to sustainable sourcing without dramatically increasing the price of their products – and consequently reducing profitability – as well as losing market share to their competitors.

The objective of the emerging discipline and science of TCA is to overcome these key barriers to change by identifying, categorizing, quantifying and monetizing the range of impacts, both positive and negative, of different farming and food production systems on environmental, natural, social and human capital.

The establishment of accurate financial data on these impacts will lay the ground work for policymakers to introduce corrective measures – both "carrots" and "sticks" – that will ensure that in the future the polluter pays and producers whose farming practices result in public benefits can be rewarded for these outcomes.

Examples of corrective policy instruments could include the redirection of subsidies, for instance within the US farm bill or the reform of Europe's Common Agricultural Policy (CAP), tax breaks for food producers delivering public benefits and the introduction of polluter pays taxes on practices that are damaging to the environment and public health.

A number of initiatives and collaborations are building on the Natural Capital Coalition's valuation framework to respond to this challenge. These include the Economics of Ecosystems and Biodiversity (TEEB) agri-food initiative, the Global Alliance for the Future of Food's True Cost Accounting community of practice, and a project coordinated by the Sustainable Food Trust developing an internationally harmonized framework for on-farm sustainability assessment.

Rodney Irwin

Managing Director, Redefining Value, WBCSD

The current aim of the financial system is too narrow. It moves and manages the returns on financial capital and that's pretty much it. It was not designed to consider impacts and dependencies on other forms of capital, such as the value of nature or people, or the full value of food. As a result, it misses a lot of value-creating information.

Focusing solely on financial performance has meant that companies and their investors have blind spots with respect to their risk profiles and performance. The incentives simply do not cover all relevant risks and opportunities.

In the context of today's turbulent geopolitical environment, businesses need to redefine their conception of "value" to go beyond traditional financial terms.

It is only by taking such an integrated approach that we will create a socially, environmentally and economically successful future.

It all starts with better business decision-making. If companies can get better at understanding and disclosing environmental, social and governance (ESG) risks, they will better inform their decision-making processes and improve their business ove the long term. Companies need to future-proof their enterprise risk management processes to capture and prioritize ESG risks and improve their corporate governance. Demands are increasing on business to anticipate, manage and mitigate risks, as well as to communicate more transparently and consistently on their performance and actions.

3. Introduction

A growing number of companies today include significant work programs on environmental, social and governance issues (ESG). In the food and agriculture sector, these programs cover the environmental impacts of food throughout the supply chain – from farm to fork. They can also include the social conditions of employees and upstream supply chain workers, including their families, and the health impacts of the products sold. The rationale for such programs usually includes obtaining a "social license to operate", increasing company reputation or brand value, or increasing employee motivation. Paybacks from ESG programs can be complex to quantify beyond traditional return on investment.

Many of the issues that ESG aims to address are related to the malfunctioning of today's markets – and more specifically to the way that different types of capital[6] are valued:* existing financial accounting methods address (and value) produced capital only. Human capital is undervalued and social capital (including relationships) and natural capital are generally not valued. Market incentives (such as investment decisions and cost optimizations) are driven by financial and manufactured capital and disregard most impacts on other types of capital.

It is important to note that financial capital is inextricably linked to the health of nature.

** Note that different frameworks use different capital classification. TEEBAg classifies capital into four groups: produced, human, social and natural capital. IIRC splits produced capital into financial and manufactured capital and separates intellectual capital from human capital. Other frameworks with other classifications exist.*

According to *Wealth of Nature*[7], "natural capital provides the foundation for human life and economic activities. (...) The natural capital stock of a country or region entails the natural resource endowments from which benefits can be derived. Renewable natural capital stocks (e.g. fisheries, forests and other ecosystems) deliver goods and services in perpetuity, provided they are properly managed. Hence, it is the rate at which these resources are utilized that matters." Managing natural capital well thus also supports the long-term growth of financial capital, as well as other types of capital.

The true cost of food approach aims to change the way the various types of capital are valued, suggesting that greater recognition of natural, social and human capital would optimize purchasing decisions, resulting in greater market efficiency and greater delivery of multiple societal benefits.

Furthermore, the paybacks from ESG programs could be more easily demonstrated and they might even no longer be required if all company decisions take a broader capital approach into account.

Many ongoing initiatives are already active in this space in the food and agriculture sector and in other industry sectors or with an even broader scope. The United Nations Environment Programme (UNEP) TEEB initiative (The Economics of Ecosystems & Biodiversity) has been active in this area since 2007. In June 2018, it published the *Scientific & Economic Foundations* Report for the agri-food sector[8].The Natural Capital Coalition is a network where leading initiatives and organizations have agreed on a generally-accepted framework – the *Natural Capital Protocol*[9] – on how to value natural capital (including sector guidance for food and beverage[10]). Similarly, the Social & Human Capital Coalition is currently updating a draft version of the *Social & Human Capital Protocol*[11].

Several projects, without a specific focus on true cost, are developing methods and data that enable true cost approaches (without evaluating impacts financially). For example, life cycle assessment (LCA), a scientific method to evaluate environmental performance [12], is used to quantify the environmental impacts of products and services (without a monetary focus). LCA quantifies environmental or other externalities (e.g. in kilograms of carbon dioxide equivalent – $kgCO_2eq$); TCA then assigns a financial value to a given externality (e.g. $\$/kgCO_2eq$). Similarly, social impact assessment approaches, such as the Roundtable for Product Social Metrics[13], have developed frameworks and methods to evaluate social impacts (in qualitative or quantitative terms) and lay the foundation to associate financial values with those impacts. Several organizations have also developed nutrition footprinting approaches to evaluate the human capital impacts of food on human health and nutrition (e.g. nutrient balance [14], nutrition footprint[15]).

Companies and consultants have also developed a large body of literature exploring specific case studies. Organizations have also developed initial databases for food impact assessment, enabling users to access data on the impacts of common products and processes (e.g. food ingredients) on social and human as well as natural capital. The commonly used LCA databases (such as the ecoinvent database) are often used, as well as more recent databases on social impacts (Social Hotspot Database). The Global Value Exchange is a database containing a broad range of impact measurement metrics (outcomes, impacts and valuations) for true cost.

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[6] For more information, see TEEB (The Economics of Ecosystems & Biodiversity). (2018). *TEEB for Agriculture and Food*. Retrieved from http://teebweb.org/agrifood/home/scientific-and-economic-foundations-report/. See also IIRC. (2018). "The IIRC". Retrieved from http://integratedreporting.org/the-iirc-2/

[7] Cohen, F. et al. (2017). "The Wealth of Nature." https://www.greeneconomycoalition.org/assets/reports/webWealthofNature.pdf

[8] TEEB (The Economics of Ecosystems & Biodiversity). (2018). *TEEB for Agriculture and Food*. Retrieved from http://teebweb.org/agrifood/home/scientific-and-economic-foundations-report/

[9] Natural Capital Coalition. (2016). *Natural Capital Protocol*. Retrieved from https://naturalcapitalcoalition.org/natural-capital-protocol/

[10] Natural Capital Coalition. (2016). *Natural Capital Protocol – Food and Beverage Sector Guide*. Retrieved from https://naturalcapitalcoalition.org/wp-content/uploads/2016/07/NCC_FoodAndBeverage_WEB_2016-07-12.pdf

[11] Social & Human Capital Coalition. (2018). "Social and Human Capital Protocol". Retrieved from http://social-human-capital.org/download-social-capital-protocol

[12] International Organization for Standardization (ISO). (2006). *ISO 14040: 2006 Environmental Management, Life Cycle Assessment, Principles and Framework*. Retrieved from https://www.iso.org/standard/37456.html

[13] Pré Sustainability. (2018). "The Roundtable for Product Social Metrics". Retrieved from https://product-social-impact-assessment.com/roundtable-for-product-social-metrics/

[14] Fern, E.B. et al. (2015). "The Nutrient Balance Concept: A New Quality Metric for Composite Meals and Diets". *PLOS ONE*. Retrieved from http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130491

[15] Lukas, M. et al. (2016). "The nutritional footprint – integrated methodology using environmental and health indicators to indicate potential for absolute reduction of natural resource use in the field of food and nutrition". *Science Direct,* Vol. 132. Retrieved from https://www.sciencedirect.com/science/article/pii/S0959652615001948

4. Where we are today: Existing data, methods and initiatives

Materiality framework

When establishing a method for a comprehensive true cost of food framework, the first element to consider is the identification of material issues†, and the way these issues are classified.

Knowing what the material issues are ensures that the true cost framework will address the issues that are the most important to companies and external stakeholders.

Previous work from FReSH has established a *Materiality Mapping* for FReSH member companies that identifies the sustainability and health topics that matter most to FReSH member companies. To ensure the credibility of the True Cost Materiality Framework with external stakeholders, this member company perspective has to be complemented with the material issues identified by relevant external stakeholders.

Key sources to complement the materiality framework are the guidance provided by other initiatives on true cost (e.g. TEEBAgriFood), as well as existing initiatives on health and sustainability impact assessments not related to true cost (e.g. planetary boundaries[16] and LCA frameworks). Also, it must be acknowledged that it will likely not be possible to establish a single consensus framework to which everybody adheres: differences in agri-food supply chains globally are substantial and it might be more productive to develop a general framework to which other frameworks can easily be linked.

† Materiality is both a general and legal concept. Materiality in the current context does not equate to the legal concept of materiality, which applies to formal corporate reporting.

[16] Steffen, W. et al. (2015). "Planetary boundaries: Guiding human development on a changing planet". *Science Magazine*, Vol. 347, Issue 6223. Retrieved from http://science.sciencemag.org/content/347/6223/1259855; Stockholm Resilience Center. (2018). "The nine planetary boundaries". Retrieved from http://www.stockholmresilience.org/research/planetary-boundaries/planetary-boundaries/about-the-research/the-nine-planetary-boundaries.html

[17] Sustainable Food Trust. (2017). "The Hidden Cost of UK Food". Retrieved from https://sustainablefoodtrust.org/articles/hidden-cost-uk-food/

Table 1: Materiality framework for the true cost of food - see figure for a graphical illustration

Impact area	Sub-indicators	Link with other frameworks and initiatives
Environmental /natural capital	Climate change Freshwater use Nitrogen & phosphorus cycles Land-use change Biodiversity loss Soil Mineral & fossil resource use Animal welfare	Closely related to planetary boundaries and complemented with aspects specific to food sector (soil & animal welfare).
Socio-economic /human capital	Employment & remuneration Skills & knowledge Health/safety/well-being Basic human rights Farmer livelihoods Cultural rights/community engagement Profits/taxes/sustainable growth Social values & risks/uncertainties	Many different systems of classification exist, but a set of indicators is common to most existing frameworks (the first five indicators on the left). Cultural rights/ community engagement as well as social values & risks/uncertainties are summarized representations of additional indicators in the TEEBAgriFood framework; profits/taxes/ sustainable growth combines indicators from the Social & Human Capital Protocol.
Nutritional /health impacts	Nutrition Malnutrition Non-communicable diseases Overweight Obesity Hypertension Food poisoning Pesticide exposure	Conventionally included in the socio-economic capital, this area is mentioned separately here, given the large impact the food sector has on health through the consumption of the finished product. Health impacts related to supply chain workers would, however, be included in the socio-economic/human capital area. This area is least mature, given that nutrition/ human health impacts are relevant only in food system evaluations. The framework is closely related to the indicators used in the Hidden Cost of UK Food assessment[17].

The current project has, therefore, taken the materiality mapping developed previously and combined it with the most relevant external initiatives. The result is presented in Table 1. The three **impact areas** represent the broad goals of FReSH on environmental sustainability, social sustainability and nutrition/health.

These broad goals are based on **sub-indicators**, as described in the second column, representing the most important material issues. The last column links the current materiality framework to other frameworks and initiatives.

This framework should enable efficient TCA for agri-food companies, yet enable linking with **frameworks** developed by other stakeholder groups.

Data mapping

A previous FReSH project developed a mapping of data availability for relevant indicators for food systems. Table 2 provides a highly summarized account at the global level: dark green areas highlight indicators for which significant high-quality data are available, pale green indicates little data availability, and medium green indicates intermediate data availability.

The table highlights that data availability for social dimensions is relatively low compared to data availability for environmental and food safety/nutritional dimensions. Economic data is readily available (a testimony to the importance that is currently given to the financial and manufactured capital categories).

We flag that data ownership, the format in which it is made available and data quality assurance need additional attention. We also recognize that the corporate sector has an important role to play in helping improve data availability and quality.

Table 2: Mapping of data availability on different food system sustainability and health indicators

Environmental	Social	Economic	Food safety/nutrition
Atmosphere (GHG & air quality emissions) *widely available*	**Farmer livelihoods** Product Social Impact Assessment Handbook[18] PRé[19] & SHDB[20]	**Investment** Food Security Index, EIU[21] & CIA Factbook[22] – community investment & long-ranging investment lacking	**Residues** *not available*
Water (quantity and quality) *widely available*	**Labor rights** SHDB	**Resilience** Food Security Index, EIU – liquidity lacking	**Hazardous substances** *some models available*
Land *not widely available,* in particular regarding production practices	**Equity** *not widely available*	**Product quality and information** n/a	**Dietary Energy** FAOSTAT & Global Burden of Disease[23]
Biodiversity *in progress*	**Human safety and health** some in SHDB	**Local economy** CIA Factbook, World Bank[24], Knoema[25]	**Macronutrients** FAOSTAT & Global Burden of Disease
Materials and energy *widely available*	**Cultural diversity** some in SHDB, but generally complex	**Technology** FAOSTAT[26], HDR[27]	**Micronutrients** some info in Global Burden of Disease
Waste reduction and disposal			**Dietary diversity** *missing*
Animal welfare *rarely available*			

good data availability *partial data availability* *poor data availability*

Note: GHG = greenhouse gas; SHDB = Social Hotspots Database; EIU = Economist Intelligence Unit; FAOSTAT = Food and Agriculture Organization of the United Nations data; HDR = United Nations Development Programme *Human Development Report*

[17] Sustainable Food Trust. (2017). "The Hidden Cost of UK Food". Retrieved from https://sustainablefoodtrust.org/articles/hidden-cost-uk-food/
[18] Product social impact assessment. (2018). "Handbook for product social impact assessment." Retrieved from https://product-social-impact-assessment.com/
[19] PRé Sustainability. (2018). Retrieved from https://www.pre-sustainability.com/
[20] Social Hotspots Database. (2018). Retrieved from https://www.socialhotspot.org/
[21] Global Food security Index. (2018). Retrieved from https://foodsecurityindex.eiu.com/
[22] CIA World factbook. (2018). Retrieved from https://www.cia.gov/library/publications/the-world-factbook/
[23] Global Burden of Disease. (2018). http://www.healthdata.org/gbd
[24] World Bank. (2018). Retrieved from https://www.worldbank.org/
[25] Knoema. (2018). Retrieved from https://knoema.com/
[26] FAOSTAT. (2018). Retrieved from http://www.fao.org/faostat/en/#home
[27] United Nations Human Development Reports. (2018). http://hdr.undp.org/en

Methods maturity mapping

True cost approaches generally evaluate different types of capital using stock and flow metrics. In financial accounting, the balance sheet describes different stocks of produced capital, whereas the earnings statement describes how financial flows are exchanged between those different types of capital. Similarly, stocks and flows for other types of capital are evaluated in true cost approaches. For instance, the human capital of a company (stock) can be increased through a training program (flow) that in turn makes employees more productive, leading to a higher financial benefit (flow) for the company.

Evaluating the maturity of the methods in the framework is somewhat subjective and dependent on the expectation vis-à-vis a given indicator: a carbon footprint is expected to be quantitative and sufficiently precise to enable comparisons, whereas a human rights assessment is generally considered to be useful even if it remains qualitative and does not enable direct comparisons.

In the environmental/natural capital space, life cycle assessment is probably the most routinely performed assessment approach. Common life cycle assessments of food systems measure carbon footprints, water scarcity impact, non-renewable energy demand and land-use change – nitrogen/phosphorous (N/P) cycling (or equivalent indicators) are also sometimes performed. Biodiversity and soil conservation assessments are more challenging; and animal welfare assessments are rarely performed in LCA.

In the social impact area, different approaches exist; and they sometimes follow conflicting methodologies. Social life cycle assessment aims to evaluate social performance in a quantitative manner – corresponding databases have been developed (e.g. Social Hotspots Database). One of the most mature approaches probably is the *Handbook on Social Impact Assessment*[28], which also includes smallholder farmers as a specific stakeholder group and tracks the majority of indicators in the proposed framework. However, not all social impacts can be meaningfully evaluated using a quantitative approach. Cultural rights/community engagement and profits/taxes/sustainable growth are not routinely assessed today and therefore have a much lower maturity. At the other extreme, some approaches quantify social impacts by their economic consequences[29], as reported in national statistics. This allows for easy access to high-quality data on the overall social impacts but makes it more difficult to distribute the overall impact among different social drivers.

Two different perspectives can be taken when valuing nutrition:

1. Estimating nutritional intakes with respect to fulfilling dietary guidelines
   (comparing the amount of nutrition consumed with an estimate of what should be consumed)
2. Putting a value on health outcomes
   (e.g. increase/decrease of disease risk).

As for the first perspective, one common way to measure dietary health is by calculating a "nutritional index". Several different nutritional index methods exist. Generally, a nutritional index indicates how well the nutrition in a food, meal or diet fulfills the daily values of nutrients for a balanced diet (e.g. for an average 2,500 kcal diet). Calculating nutritional values in this way is quite a mature field of work as information regarding the nutritional content of foods and daily values, and the mathematical formulas for the indices are generally available information and are easy to understand. One challenge in this field is that nutritional indexes have not been robustly correlated with health outcomes or productivity. Because of this disconnect, valuing a nutritional index output is not obviously meaningful. For example, an individual food item, ingredient or even a diet can have a well-performing nutritional index but not contribute to a healthy diet with respect to quantities of vegetables, whole grains, or nuts and seeds.

[28] Pré Sustainability. (2018). "The Roundtable for Product Social Metrics". Retrieved from https://product-social-impact-assessment.com/roundtable-for-product-social-metrics/
[29] Weidema, B.P. (2018). "The Social footprint – a practical approach to comprehensive and consistent social LCA". *The International Journal of Life Cycle Assessment*, Vol. 23, Issue 3. Retrieved from https://link.springer.com/article/10.1007%2Fs11367-016-1172-z

The challenge of relating nutrition to health outcomes is generally addressed by the field of health economics and valuing health outcomes. This second perspective can consider changes in disease risk or the risk of dying from a disease once contracted. Such increases and decreases in risks and mortality can be valued by looking at, for example, life years saved or avoided medical costs. The global burden of disease studies[30] can provide information on health outcomes and dietary risk factors and be used to value changes in diets, for example. This field of work is relatively mature for a select few dietary risk factors, for example with respect to years of epidemiology evidence and at times mechanistic understanding of what is being influenced in the body (e.g. organ functioning). In general, however, linking dietary patterns to health outcomes must be carefully applied. First, there are many lifestyle factors that are highly correlated with a poor- or high-quality diet (e.g. income, exercise, etc.). Due to these interrelated and often unmeasured factors, the conclusions of health outcome research tend to change as the science evolves and matures.

Given years of research, several aspects of diets and their impacts on health are well established, such as overconsumption of sugar-sweetened beverages and sodium, and underconsumption of fruits, vegetables and whole grains. Secondly, even when the scientific evidence of a specific dietary pattern is well established, whether or not a change in a specific product formulation (e.g. reducing sodium) or a company's portfolio (e.g. selling a confectionary business) will actually cause a change in consumption behavior is often unknown. Consumers may decide to buy a different brand or add sugar or sodium themselves. Therefore, when one company makes a change, their responsibility is decreased but an overall change in societal value may not occur (i.e. disease risks stay the same without a change in consumer consumption behavior). Given this challenge, the potential power of collective initiatives like FReSH are essential to making transformational change and increasing societal value. If the top manufacturers collectively change their portfolios or their product composition, consumers may not have access to as many "unhealthy" options and a change in their behavior may decrease health risks.

[28] Institute for Health Metrics and Evaluation (IHME). (2018). "Measuring what matters". Retrieved from http://www.healthdata.org/gbd

For all three impact areas – environment, social and nutrition – it is important to acknowledge that not all open methodological questions are purely scientific. Some questions will require value choices.

One example of a value choice is between protecting current generations (e.g. by focusing on water scarcity, which has immediate impacts today), versus protecting future generations (e.g. by focusing on climate change, which will impact future generations more strongly). Science will not be able to say what weight should be given to current versus future generations. Therefore, different approaches will first have to be tested in order to build a better understanding of the consequences of those value choices. We expect scientific questions to be solved first and a broader discussion around value choices with involved stakeholders in the medium term.

Another issue in valuing true cost is associated with perceived well-being: convenience foods increase the well-being of a person with respect to their time available for other things. A recent paper[31] argues that "well-being" or happiness should be included in LCA. Similarly, the Food and Agriculture Organization of the United Nations (FAO) has used a "Subjective Wellbeing Valuation" methodology[32] to quantify the subjective well-being impacts of diseases when evaluating the health impacts of food systems. These approaches are, for the moment, not yet common practice. It remains to be seen to what extent they can be mainstreamed.

Capital accounting also needs to be combined with approaches integrating thresholds and carrying capacities for the different types of capital, such as planetary boundaries. This is due to the fact that the impacts of capital depletion will be context dependent: if a given type of capital is still abundant in one context, it might be acceptable to deplete part of it. The same nominal depletion of capital in another context might have a far greater effect. Work on combining carrying capacities with capital approaches is currently in its infancy (e.g. Reporting 3.0 Global Thresholds & Allocations Council (GTAC)[33]).

[31] Schaubroeck, T. & Rugani, B. (2017). "A Revision of What Life Cycle Sustainability Assessment Should Entail: Towards Modeling the Net Impact on Human Well-Being". *Journal of Industrial Ecology* Vol. 21, Issue 6. 31 August 2017. Retrieved from https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.12653

[32] Food and Agriculture Organization of the United Nations (FAO). (2017b). *Methodology for valuing the Agriculture and the wider food system Related Costs of Health (MARCH).* Retrieved from http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/MARCH.pdf

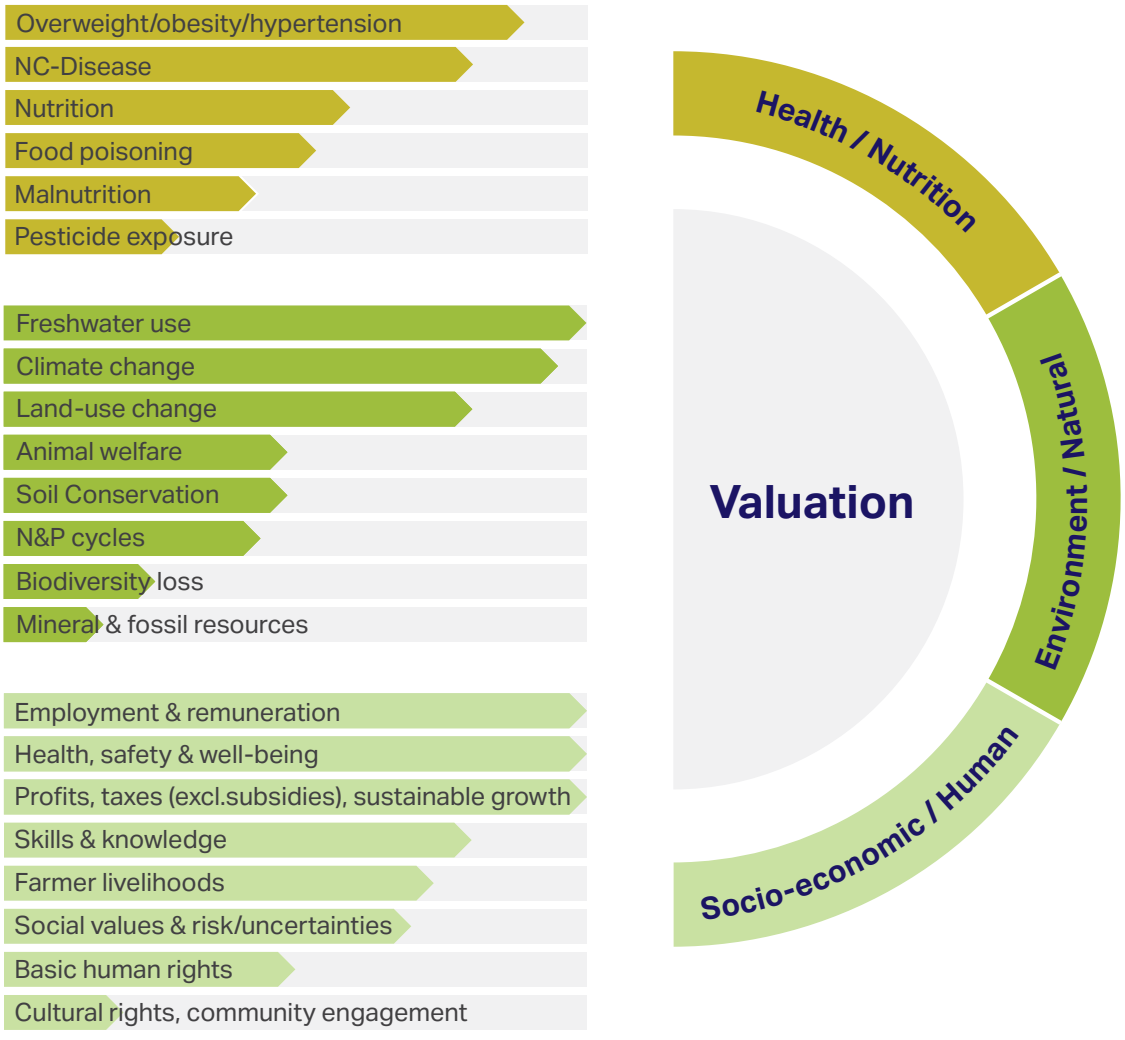
[33] Reporting 3.0. (2018). Global Thresholds & Allocations Council. Retrieved from https://reporting3.org/gtac/

Combined view

The information above is useful to direct methods and data developers towards areas where additional contributions are most meaningful. Therefore, the information from the above sections is combined in a graphical form in the Valuation Chart below. The figure groups externalities in three main areas: environmental/natural, nutrition/ health, and socio-economic/ human externalities. Further, each area is subdivided into the indicators described in the Valuation Framework.

The arrows represent the information on data availability and method's maturity as described in the above two sections. The information is combined with insights from true cost case studies already in the literature. The longer the arrow, the more data is available and the underlying methodologies are more mature. There is subjectivity in the length of the arrows. We also expect that initial information on some indicators may remain qualitative or non-monetized over a long period as we wait for more mature monetized values to become available.

Figure 1: Valuation Chart combining the materiality framework (in colors) with the data availability & method maturity (arrows with different lengths)



5. Applications in companies and with internal and external stakeholders

Systematically implementing a true cost approach has the potential to profoundly affect decision-making processes internally and externally.

At a very high level, the report *Valuing the SDG Prize in Food and Agriculture*[34] found that business opportunities amounting to a total value of USD $2.3 trillion annually by 2030 could be realized through business actions in support of the Sustainable Development Goals (SDGs). If TCA can reprioritize investments and change decision-making in companies, a significant part of this could be achieved over the coming years.

The first concrete projects have already emerged. They show the positive implications of true cost decision-making in companies:

- Olam has completed an impact valuation statement that provides an understanding of the relationships between its financial and non-financial performance across IIRC-reported capitals. It allows Olam to identify sources of risk and opportunity as well as drivers of long-term value creation for its different business units. **By better understanding the impact each Olam business unit has on the different types of capital that support its financial performance and position (Olam's financial profit and loss and balance sheet) and the dependencies they have on them, Olam is better informed of future risks to and opportunities for their business.** By using the Impact Valuation Statement to account for both past and future impacts, such as the value at risk from climate change related to the Task Force for Climate Related Financial Disclosure (TCFD), Olam hopes to support the evolution of the Olam 2.0 business model to focus on the drivers of long-term value and put sustainability at the heart of its business.
- **Nestlé has been using true cost approaches to better understand the value for business and society generated by different projects in its Creating Shared Value program. Results have shown that the intangible value generated for the business and for society is not necessarily correlated with the resources spent on running these programs.** On the one hand, this enables Nestlé to better prioritize its investments; on the other hand, it enables the company to calculate a social return on investment and to demonstrate to external stakeholders the intangible benefits that the company creates for business and the society at large.
- The Dutch consultancy True Price has published several reports[35] that evaluate the true price of the production of tropical crops (coffee, cocoa, etc.). The studies demonstrate that the social and natural externalities of these crops are usually significantly higher than the market prices currently paid for these crops. Companies involved in the production and trade of these crops can use the insights from the reports to target training programs where they matter most: helping farmers become more profitable and establishing long-lasting business relationships.

[34] AlphaBeta. (2016). *Valuing the SDG prize in food and agriculture.* Commissioned by the Business and Sustainable Development Commission. Retrieved from http://s3.amazonaws.com/aws-bsdc/Valuing-SDG-Food-Ag-Prize-Paper.pdf?_sm_au_=iVVjr5qV0MsNG5ds

[35] True Price. (2018). "Publications". Retrieved from http://trueprice.org/publications/

The examples above show how business decision-makers (beyond the sustainability team) can benefit from true cost approaches. **The financial and enterprise risk management teams can use TCA to identify material risks for their business units; investor relations teams can demonstrate how long-term value is generated; and supply chain specialists can identify sourcing strategies that generate long-term value for suppliers and customers.** Identifying quick wins is key: not all measures to improve sustainability and health will be equally costly; and it will be possible to identify projects that increase societal value for limited financial investments (as demonstrated by the Nestlé project mentioned above). Showcasing examples of societal value generation that do not result in high additional costs to the company or consumers will generate traction for the true cost approach in general.

The WBCSD Redefining Value Program[36] demonstrates that impact measurement, valuation and disclosure are happening well beyond the food system – growing acceptance and scale are helping these efforts gain traction. The program looks at internal decision-making tools and how these have the potential to change external disclosure and reporting. **Greater external transparency on sustainability information in turn is expected to change investor decision-making and redirect money towards businesses with the greatest potential for value creation.** An example of this is the USD $300 million Social Bond that Danone has been issued[37]. It has preferential financial terms linked to the achievement of positive social impacts in their supply chain. Similarly, Olam secured a three-year sustainability-linked revolving credit facility aggregating to USD $500 million. It is Asia's first sustainability-linked club loan. Such examples highlight the active interest investors have in directing investment to where it generates the most societal benefit and demonstrates the financial benefit of comprehensive sustainability and health initiatives for companies via reduced cost of capital.

Policymakers, on the other hand, will see that TCA frameworks help channel money to where it is most efficient to create value for society. By creating tax benefits or subsidies for desirable production systems and removing subsidies (or introducing fines and taxes) for undesirable production systems, among others, policymakers have the potential to fundamentally change the behavior and outcomes of market.

Beyond taxes and subsidies, policymakers also have the potential to influence more gently. For example, true cost approaches could be integrated into public purchasing guidelines, as is the case in the United Kingdom. HM Treasury's *Green Book*[38] integrates guidance on how to value health and life expectancy, greenhouse gas emissions and other environmental impacts. Other options could include sustainability and health approaches in European Union public purchasing guidelines, or the inclusion of such criteria in the Codex Alimentarius [39].

There is also a caveat in the introduction of a true cost approach into food systems, whereby food prices will increase with immediate effect (e.g. if fair wages are being paid to farmers) while some of the cost reductions (e.g. reduced healthcare costs because farmers can afford to see a doctor early on) will only take effect after several years. Increased food prices may create food insecurity in poor populations. Smallholder farmers (who make up a large part of the poor populations in many countries and generate roughly half of their livelihoods from farming[40]) should benefit from higher incomes when a true cost approach is introduced (farmer livelihoods is one of the criteria in the figure) and should be able to pay an increased price for any complementary food they need to purchase (which represents roughly half of their household expenses). However, poor populations outside food systems (e.g. urban poor) would not necessarily benefit from increased incomes and might find it difficult to cope with increased food prices. This highlights the importance of having policymakers implement mitigation measures for specific populations, at least during a transitional period.

[37] Danone. (2018). "Danone successfully issues a pioneer €300m social bond continuing to invest for sustainable value for all". Retrieved from http://danone-danonecom-prod.s3.amazonaws.com/user_upload/Investisseurs/Communique_de_presse/2018/Social_Bond/Danone_Press_Release_Social_Bond_EN.pdf

[38] UK Government. (2013). *The Green Book: appraisal and evaluation in central government*. Retrieved from https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

[39] Food and Agriculture Organization of the United Nations (FAO) & World Health Organization (WHO). (2018). Codex Alimentarius, International Food Standards. Retrieved from http://www.fao.org/fao-who-codexalimentarius/en/

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6. **Collaborating to reach our goals**

Collaboration is required if we want to achieve our goal of better reflecting the true cost of food in market prices.

First, collaboration with and among methods and data developers is needed to both develop reliable methods that are simple to apply and to establish trustworthy data that is affordable to purchase. These could be organizations that specialize in a specific true cost of food issue, such as soil impact valuation [41], the assessment of social impacts among smallholder farmers [42], or databases specific to the food sector (e.g. the World Food LCA Database by Quantis[43]). There are also organizations that specifically work on harmonizing true cost methods for food systems. The Oxford Food System Impact Valuation Initiative[44] is one example; the Global Alliance for the Future of Food [45], which has a community of practice on TCA for food systems, is another. Major consulting companies have also been active in true cost approaches; the methodologies that have been developed would be useful as a baseline. Most of these methodologies, though, are currently proprietary and not very transparent. Ideally, this will change in the future. If such approaches are to be used routinely, they cannot be based on proprietary methods that are not fully documented. The Natural Capital Coalition[46] and the Social and Human Capital Coalition[47] provide valuable guidance on measurement and valuation related to the agri-food sector and beyond and can also be used as platforms to facilitate greater collaboration among the wide mix of players in the space.

Beyond methodologies and data, collaborations are also required across companies and with industry to better understand how to use true cost approaches in companies. This includes linking with progressive investors and asset managers looking to invest in sustainable companies.

True cost approaches can be used to communicate sustainable value creation, but there is a need to agree on a true cost framework if such information is to be used systematically for better investment decisions. The Redefining Value program at WBCSD has active projects to link investor relations and risk management teams[48] in its members companies, which could be a starting point. These teams can actively benefit from using true cost methods to better communicate the value of sustainability to investors and to better understand the financial risks that could originate from sustainability issues.

Finally, collaborations are also required to bring systemic changes into the policy environment.

True cost approaches will become much more powerful once market prices better reflect true costs: the business case for true cost will become directly visible in financial accounting. Quick wins to advance true cost approaches could be to reduce subsidies to produce unhealthy food ingredients (e.g. sugar). Several countries are also discussing taxes on greenhouse gas emissions. Accelerating change in the food system policy environment needs to be linked with regional and global organizations that have access to policymakers. For example, the World Economic Forum could be an interesting platform to access a global, multi-stakeholder audience interested in sustainable and impact investing [49]. Similarly, the World Bank is active in the WAVES Partnership[50], a project on national accounting of natural capital. A further initiative led by the Sustainable Food Trust has drawn upon the TEEB Agri Food valuation table to develop a framework for on-farm sustainability assessment. This initiative, which is now gaining momentum and receiving attention from the United Kingdom's Department for Environment, Food and Rural Affairs as a potential component of post-Brexit farm support, would involve an annual farm sustainability audit using 10 assessment categories, each with unified metrics. This would provide governments, certifiers, food companies and the farmers themselves with a common resource upon which policy support packages, certification decisions, market-based premiums and management improvements can be based.

The role of the businesses involved in FReSH would be to demonstrate that there is a business case for TCA – that companies can generate better value and jobs for society if the market prices better reflect the true costs generated in food systems. This will help policymakers justify changes to the policy environment.

7. Conclusion

There is an urgent need for companies in the food sector to develop and implement solid metrics that comprehensively measure and value the different types of capital created in food systems, for businesses and for society. Over the past years, policymakers have started to focus on health and sustainability externalities: introducing sugar taxes and implementing bans on plastic. There is a considerable risk to reputation – and business – if companies continue to observe and act only after such legislation is implemented. The preferable approach would be to stay ahead of the curve and develop and implement true cost metrics that take key health and sustainability metrics into account. This enables companies to anticipate and steer legislation, creating business and societal value simultaneously.

We propose several areas for further work and alignment:

1. Invest in the development of the data and methodological approaches that are least mature today to strengthen the discipline and enable companies to comprehensively assess the true costs and value of their business.
2. Integrate true cost accounting across all business units, especially finance, investor relations, and risk management, using it to inform strategic decision-making.
3. Collaborate with governments, NGOs and other stakeholders to mainstream true cost accounting, advancing policy levers that drive widespread and systematic changes in the production and consumption of food.

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8. Acknowledgements

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Disclaimer

This report is released in the name of WBCSD. Like other WBCSD publications, it is the result of a collaborative effort by WBCSD staff, experts, and executives from member companies. A wide range of members and experts reviewed drafts, thereby ensuring that the document broadly represents the perspective of the WBCSD membership. It does not mean, however, that every member company and partner agrees with every word.

About FReSH

FReSH (Food Reform for Sustainability and Health) is one of the key initiatives of the WBCSD's effort to drive the transformation of the food system and to create a set of business solutions for industry change.

We take a 'fork to farm' approach, starting with what people consume and focusing on the dietary and production shifts that are required, to develop, implement and scale transformative business solutions that are aligned with science-based targets. FReSH emerged from the World Business Council for Sustainable Development (WBCSD) and EAT Partnership.

About the World Business Council for Sustainable Development (WBCSD)

WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than $8.5 trillion and 19 million employees. Our Global Network of almost 70 national business councils gives our members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability: united by our vision of a world where more than nine billion people are all living well and within the boundaries of our planet, by 2050.

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