

Conclusion

Mobilizing the Power and Potential of True Cost Accounting

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There is an increasing public and scientific debate about the potential for True Cost Accounting (TCA) and the need for TCA to play an important role in the policies and decisions of all agri-food system stakeholders, including those of governments, businesses, communities, and every citizen. In recent decades, the recognition of the need for a new and encompassing accounting system that takes into account the hidden environmental costs of production has started to change the economic thinking far beyond conservation circles. The appreciation of the negative (and sometimes positive) impacts of production on the environment has become common, together with the recognition that economic reporting does not adequately consider the impacts of activities on the natural resource base, or on social wellbeing and human health. However, there is a wide gap between the multitude of colorful Corporate Social Responsibilities reports and actual company impacts on natural, human, and social resources, precisely because the mainstream international standards of economic accounting and reporting exclude externalities. With the current awareness of the true (or full) costs of economic activities, it is time to go beyond discussion and design of TCA approaches and move towards implementation. A range of opportunities is explored in this chapter, as well as likely challenges.

From a theory of change perspective, much is being done by the TCA community of practice, but less attention is paid to who needs to do what differently for TCA to succeed. Scientific and methodological breakthroughs will keep emerging and offering new opportunities to improve TCA measurements. However, tangible effects on policy and decision-making are essentially related to socio-political processes. It is only through social processes that lead to a consensus on an agreed set of processes and overall framework that trust will be built for making choices that establish sustainable food systems. Thus, it is the mobilization of governments and multi-stakeholder community networks that will be crucial to the effective realization of TCA's potential.

True Cost Accounting (TCA) cannot be a panacea, and nor can TCA advocates assume that wide adoption of the process will magically change the current way of doing business and making policy. As highlighted through advancing the United Nations (UN) Sustainable Development Goals (SDGs), mindsets and institutional structures are far from the trumpeted integrated,

transdisciplinary approaches that cut across all human and natural spheres. Moving towards holistic approaches is not easy, but it is encouraging to see that TCA has already heightened public awareness on food system externalities. TCA is an important tool to advance a global transition to sustainable food systems, but each societal actor has a role to play in making change happen.

Where We Came From and Are Going To

TCA has successfully changed mindsets. The Food and Agriculture Organization of the United Nations launch of the Food Wastage Footprint in 2014 marked a sudden shift in public awareness about the environmental and social impacts of food loss and waste. The mantra “if food wastage was a country, it would represent the third largest emitting country in the world” went global within days. For the first time, food system externalities were quantified, and people woke-up to reality. It did not really matter if the emissions were 3.5 Gt or 4.4 Gt of CO₂ equivalents per year (depending on the year of the dataset used), or which emission factor or carbon price was used to quantify the social cost of carbon at \$394 billion per year. The huge hidden costs of food wastage were made visible. Donor funds, which were scarce for investment in reducing post-harvest losses, rapidly became available, thanks to allocations made by environmental (rather than agricultural) budgets.

Similarly, efforts to quantify the climate impacts of agricultural practices that accelerate soil erosion have opened new dialogue about the need for public support and market mechanisms to support soil-enhancing practices. Nowadays, the link between food and agriculture systems, climate change, antibiotic resistance, and noncommunicable diseases is clear to all, even if the interaction pathways are not fully established. Looking back, it can confidently be stated that TCA has played a significant role in changing political debates and public mindsets, beyond the dollar values that one can assign to individual TCA assessments.

Gross Domestic Product (GDP) for successful economies. The scientific effort and political debate to define the “true costs” of food must be placed within the successful measurement of the economy that perceives annual GDP growth as the world’s most powerful statistical indicator (Lepenies, 2016). GDP is not only the measure of a country’s economic output; it also is understood to describe, in a single number, the success of the overall development of a country. GDP is not a general law of nature expressed in statistical calculations, but rather the result of a long process of attempts to measure the economic reality of a country and express it as a single statistical indicator. As such, GDP is a “social construct” created by people and accepted by society. GDP measures the total economic output of a country based on monetary values; the fact that the value of goods and services is based only on their market value automatically excludes whatever has no market value. Thus, the value of biodiversity and fertile soils, which have no market price, do not influence GDP, at least in the short run. TCA, however, by considering natural, social, human, and produced capitals involved in food and agriculture systems (The Economics

of Ecosystems and Biodiversity, 2018), provides a social construct that reconsiders the basic concept of how all countries in the world measure their development. Adopting and implementing TCA for food and agriculture systems is therefore bound to change the overarching perception of economic success and its actual expression in annual GDP growth.

TCA is a tool. Experts are continuing to refine TCA approaches by structuring accounts and assigning values that speak to the wonderful complexity of issues and relationships that constitute our lives. The nascent TCA toolbox is currently in an adolescent stage, actively exploring possible futures and confident in its genuine capacity to change the world. However, any tool, even the most mature and well developed one, is a lifeless instrument unless people engage in using it. The ultimate responsibility for responding to the implications highlighted by using the tool rests with the user. Thus, the social and political process surrounding TCA's development and implementation, as well as actors' accountability, are of crucial importance for a transparent and effective food system transformation.

Towards informed decision-making. While acknowledging the unavoidable gap between scientific evidence and policy processes, TCA seeks to provide evidence for decision-makers to consciously manage complexity. Complexity is defined as a network of multiple interacting factors and unknowns that cannot be addressed in a piecemeal approach. TCA's broad lens aims to offer a high-resolution snapshot of our agri-food ecosystems, by giving a meaningful place to the variety of mineral, plant, animal, human, and produced goods and services, and hence providing a richer picture of the dynamic canvas of life. Developing this richer picture also supports better recognition and understanding of clouds on the horizon that indicate unknowns, risks, or patterns that deserve attention. By providing a clear picture, policymakers, investors, producers, and communities can better evaluate what to support (or not) for the future of food. When TCA is eventually embedded in standard reporting systems of enterprises, measuring and valuing all positive and negative externalities will provide a very different picture of the interaction of businesses with nature, society, and individuals. Currently, several frameworks try to capture the complex reality of a defined eco-agri-food system; an inventory of methodological frameworks, resources, databases, and case studies provides an overview of where we stand today (Bandel *et al.*, 2020).

Where Do We Stand?

The richness of material that this book has drawn together under the banner of TCA is impressive. The richness speaks to the desire for new and more encompassing approaches to assessing and analyzing food systems; to the breadth of the skills and experience that can and must be applied; and to the momentum that is building for change. This chapter draws out some key insights from considering the chapters as a reflection, on the part of the authors, of the status of TCA. It provides suggestions for taking TCA forward

so that it can positively influence the sustainability of our food systems around the world.

Seven insights emerge from stepping back and considering the book chapters as a whole.

Complex systems. The first is that there are many “pieces” in the TCA puzzle. Joining together material on the health consequences of diets, with the need for the conservation of natural resources, the growing of crops and breeding livestock, the supply chain risks of major food conglomerates, and the precarious nature of work of those employed in the processing and dining sector is both magnificent and overwhelming. How can these all possibly be fit together by a long-standing systems thinker, let alone a short-term financial analyst, a policy specialist, a politician, a farmer, or a voter? There thus remains a significant challenge to demonstrate how all of the pieces that legitimately fall under the TCA banner can be brought together, such that food and agricultural systems can be assessed holistically and results can be presented in simple terms.

System boundaries and responsibilities. Second, food supply chain boundaries extend very far, upstream and downstream, with sustainability impacts on the environment and communities that become less visible as the spatial coverage increases. Studies have so far set TCA assessment boundaries according to data, resources, and time available for individual projects. Excluding or including a geographic impact area yields results that are bound to remain incomplete and potentially unfair to affected populations. While, ideally, TCA assessments should set boundaries within the realm of control or influence of financial and operating policies and practices, the “system” impacts are often planetary. This interconnectedness points to the need for a greater understanding of the responsibilities and accountabilities of all societal actors, at community, national, and international scales. Furthermore, it calls for the development of meaningful legal and institutional frameworks that are conducive to TCA implementation and adoption.

Incorporating the social dimension. Third, notwithstanding the broad coverage of topics in this book, there are important areas poorly reflected in the chapters that should, ideally, be the heart of the conversation. These include social capital, particularly in terms of individual and culturally important connections, and the wider suite of ecosystem services beyond the inputs to food production on which farm management and related supply chains can have significant influence. This is not to say that these topics are not mentioned across the chapters, but rather that these distinctly “non-market” aspects of food systems do not appear to receive the level of discussion that most people supportive of TCA would agree is needed. Social issues are difficult to quantify, and creating science-based targets for worker welfare or racial justice is not value-free. However, addressing deeply rooted systemic inequalities requires particular efforts to measure and communicate: 2020 is a turning point, and we need to completely rethink how we approach social issues.

Risks and thresholds. Fourth, and building on the previous point, because of the common interest in using TCA to “amend the bottom line” and move

away from financial profit as the sole measure of success, there is a tendency to focus on applying standard economic pricing approaches in a more holistic way. Put differently, a general flavor of the chapters is how to adjust or extend current marginal pricing approaches to production decisions and applying standard approaches to the pricing of externalities. For many, this is a general understanding of the intent of TCA. However, what is missing in this application is a broader appreciation of systemic and non-marginal risks and the extent to which we are approaching, or passing, ecological or societal thresholds. While in theory, prices should rise in order to reflect scarcity, history reveals that humanity regularly ignores any such signals or finds substitutes. Moreover, when there are no prices for non-marketed goods that are present in the prevailing institutional framing (i.e., there are externalities) there will be no price signals. In this context, the importance of applying other aspects of economic theory (and accounting) around wealth and balance sheets becomes fundamental. Understanding risks and thresholds in terms of the available natural, produced, human, and social capital is a central thesis of the UN Environment TEEBAgriFood framework. This is not a perspective that is well developed in the chapters. What is required is a stronger focus on the stocks of capitals themselves and their condition/quality, in addition to consideration of the benefits (or loss of benefits) associated with their use. A focus on stocks of capital directly facilitates measurement of thresholds and non-linearities and provides a basis for establishing informed targets and benchmarks. TCA on its own cannot determine the target thresholds, but it can structure the discussion. However, to do so, TCA requires not only a profit and loss statement but also a rich and comprehensive balance sheet.

Post COVID-19 narrative. Fifth, while only one paper tackles the challenges raised by the coronavirus disease (COVID-19), there is an opportunity for TCA to contribute further to the discussion in this space. Of course, the challenges facing agriculture and food systems have been both long-standing and will, unfortunately, continue to be faced beyond (hopefully) the time horizon in which solutions to the COVID-19 can be found. In that sense, the contexts for the papers are commonly focused on long standing environmental, social, and health challenges that are attributable to our current food systems. Nonetheless, it is also clear that COVID-19 has starkly highlighted many systemic concerns, but the policy responses have often been framed as choices between health and economics rather than in terms of integrated solutions. Indeed, COVID-19 has fueled two contrasting narratives: the need for local, resilient food production and the need for more international food trade in times of social distancing and lockdowns. Seen through a TCA lens, poor food and agricultural practices (e.g., deforestation, confined animals, wet markets) can be held responsible for the global pandemic. Perhaps this points to a key challenge for implementing TCA. If TCA approaches had been standard practice, then we might have readily reached shared conclusions about preventing and dealing with the global and immediate impacts of the pandemic in different parts of the world, rather than battling between the economic and health-

focused solutions. TCA could provide advice on future health risks by assessing growing externalities, such as antibiotic resistances coming from the (over-)use of pharmaceuticals in industrialized livestock systems. We are more than capable, at least theoretically, of dealing with the complexity of balancing these objectives, but reaching that point will require a paradigm shift.

Government role. Sixth, if a paradigm shift is required and it needs to happen globally, the collected papers suggest that this will be either at local scale—farmers, True Price shops, communities—or from international processes. Both are undoubtedly required, but there is little discussion of the role of national governments in driving change. Perhaps it is failure at this level that motivates the search for solutions at other scales, but it seems difficult to imagine a pathway to the implementation of holistic food and agricultural systems that does not also involve the active engagement of national level jurisdictions. Undoubtedly, a prerequisite for national government-level TCA action is the standardization and harmonization of language, definitions, methods, and tools around TCA. While a few chapters speak to this—particularly Chapter 4 on methods and frameworks—the chapters as a whole reveal quite broad and relatively loose understandings of TCA. This is excellent for building a community but will be insufficient if large-scale adoption of TCA is the ambition. One possible pathway to greater government engagement is through substitution of TCA for cost-benefit analysis, as argued in Chapter 12 (“Embedding TCA Within US Regulatory Decision-Making”). To do so, it is necessary to understand the inner workings of governments in order to strategically embed TCA within existing processes. Among the many compelling arguments for national government adoption of TCA, two ideas seem particularly important. Given that governments are responsible for public goods, TCA would provide not only information on the value of these public goods but also make flows visible, leading to a different perception of public goods, the investments needed to maintain these goods, and the benefits that are derived from those investments. Second, the potential to introduce TCA into the taxation system to trigger a reconceptualization of the definition of assets could have far-reaching consequences.

Tool versus process. Finally, speaking to the ambition of TCA, many of the chapters point to the need to define success, that is, the purpose of establishing sustainable food systems. Chapter 15 (“Investing in the True Value of Sustainable Food Systems”) notes that in considering TCA approaches, it inevitably leads to questioning fundamental choices and goals of business, society, and government. The UN SDGs provide a powerful basis for making these choices at farm, community, national, and global levels, but a challenge remains to establish TCA as the tool of choice to evaluate progress towards these goals. The chapters reveal clearly that TCA can be applied—this is a tremendous step forward. However, as Chapter 1 (“From Practice to Policy: New Metrics for the 21st Century”) highlights, TCA is a technical tool—developing and implementing the process around using it must be the next focus.

Where Can We Go (and How Do We Get There)?

Communities, including food and agricultural practitioners and civil society organizations, have advanced scattered but widely diffused efforts for internalizing environmental and social externalities in market goods, such as witnessed by the organic agriculture and fair trade standards. A coalition of what so far has been considered an alternative movement, including environmental and human rights non-governmental organizations (NGOs), is starting to consolidate with initiatives such as Organic 3.0 (International Federation of Organic Agriculture Movement, 2016). Considering decades of practices with environmental and social Key Performance Indicators (KPIs) and the heightened awareness that any thematic focus is unlikely to succeed alone, a community of the willing is needed to identify and develop common TCA-KPIs, based on what can be achieved while keeping producers in business. In line with their respective mandates, NGOs already facilitate agri-food producers' recognition of externalities; this is evident in compliance with organic standards that reveal farmers' unintended environmental impacts. Most importantly, a push from the field and farming communities is the only way to blend important traditional knowledge of agri-ecosystems, the richness of communities' culture, and potential government regulation for TCA. The Global Alliance for the Future of Food Community of Practice for TCA has started to pool expertise to advance TCA, but it needs to extend its partnerships with farmer organizations, producer associations, standard-setting owners, and government representatives.

Businesses, including private companies, investors, and insurers, have been progressing fairly well with the idea of TCA, as a means to hedge against risk, as seen by the numerous initiatives of the Capitals Coalition (<https://capitalscoalition.org/>). In fact, in the face of supply disruption, companies have been leading change with Integrated Profit and Loss accounting. Tangible financial terms are being integrated in annual accounts and company valuations, as well as in credit ratings and insurance policies. Increasingly, due diligence tools are crafted to improve investors' decisions around capital allocation and portfolio goal setting. However, history teaches us that unless harmonized accounting standards are developed, TCA will follow the same fate as sustainability reporting where, depending on individual benchmark setting, all businesses will soon be flaunting successful operations in various shades of green. For TCA not to become a greenwashing highway, it must be integrated within a new accounting standard, together with the integration of clear thresholds within financial balance sheets. The Capitals Coalition, which united in January 2020 the Natural Capital Coalition and the Social & Human Capital Coalition, is a major effort of global collaboration of over 350 businesses and accountancies to bring nature and people into the heart of business decisions. Building on the Natural Capital Protocol, and on the Social and Human Capital Protocol, a variety of guidance documents (e.g., Biodiversity Guidance, September 2020) are being developed as companion decision-making frameworks. In addition, a

small group of European food companies is taking the first steps to measure all capitals in their respective companies, with a view to implement integrated reporting guidelines for the production and consumption of food. This initiative, called “True Cost – From Costs to Benefits in Food and Farming” (<http://tca2f.org/>) (TMG and Soil & More Impacts, 2020) aims to provide standardized guidance to make hidden costs and benefits visible along the entire value chain, providing a complete picture of the interaction of a company with people, society, and the environment. The US Sustainable Accounting Standards Board has been developing standards for the food and beverage sector that consider key issues and accounting metrics including environment, social capital, human capital, business model and innovation, and leadership and governance. The provisional Agricultural Products Sustainability Accounting Standard published in June 2015 (Sustainability Accounting Standards Board, 2015) could be joined, for instance, by the Capitals Coalition, TCA2F, and others, and collectively taken forward to reflect issues of global concern and consequent harmonious application for the whole business community. With a common baseline, internal and external reporting of companies and risk assessments would allow decisions-makers to create and develop long-term value, instead of focusing on short-term profits.

Governments have so far been virtually absent from the TCA landscape. Although they have agreed on the SDGs for national development, moving towards the Goals remains trapped within old-fashioned institutional structures. As demonstrated by the organic agriculture sector prior to the establishment of organic regulations, markets alone cannot trigger or scale-up change; worldwide, consumers’ demand for organic products largely exceeds supply, owing to a lack of policies for supporting organic producers. Most importantly, the public good can only be guaranteed by government rules and enforcement. Indeed, COVID-19 has pushed governments back into the center of the arena for the security of humanity. With contributions from civil society and businesses, governments need to advance TCA on three fronts:

- Establishing the legal framework for a TCA standard, such as is done for corporate accounting standards, in order to secure a fair playing field for all, prevent fraudulent practices, and reduce the cost of supporting multiple approaches.
- Adopting TCA as an administrative process for the elaboration of policy incentives (positive and negative), that orient all stakeholders (smallholder farmers, private multinationals and line ministries) to opt for the appropriate decisions. In particular, TCA should substitute the classical cost-benefit analysis to ensure that, to the greatest extent possible, distortion can be resolved once the externalities are evaluated, and the true-cost of various actions are transparent to policymakers; and
- TCA implies actions far broader than the food and agriculture system *per se*. With the current state of affairs, power and inequity are two obstacles to progress. Currently, cheap food policies are used as social safety nets.

Further, and most importantly, the power exerted from the highly concentrated agri-food input and retail sector often works against addressing externalities. In this context, regulations requiring TCA might work to dis-incentivize natural and human resources exploitation while, at the same time, opening the pathway for adopting alternative competition and anti-trust policies to address the agricultural input-machinery-insurance and food market oligopolies.

Inter-governmental institutions, including the UN system, Bretton Woods institutions, CGIAR research institutions and regional commissions, have been developing and practicing TCA, including: the World Bank project on mainstreaming Wealth Accounting and the Valuation of Ecosystem Services (WAVES) in national economies; the “beyond GDP” UN System of Environmental-Economic Accounting framework (United Nations *et al.*, 2014) that standardizes and classifies countries’ statistics and accounts for environmental data; and the UN Environment TEEBAgriFood framework for better understanding, managing, and valuing the impacts of food and agriculture systems. Inter-governmental institutions are precious entry points for governments in order to progress along three main fronts:

- To explore the implications of TCA and eventually develop a TCA Index that would complement—and eventually replace—Gross Domestic Product (GDP) or Human Development Index (HDI). In fact, GDP is a post-World Wars index focused on reconstruction and economic production capacity. The 1990 United Nations Development Programme’s HDI better reflects well-being by considering health, education, and living standards. In our globalized era of climate change and pandemics, we need an index that better reflects our modern issues, in particular one that encompasses environmental thresholds. Chapter One “From Practice to Policy: New Metrics for the 21st Century” introduces such a TCA Index, as a means to simplify complexity for decision-making, while moving away from actual monetization. It is interesting to note that SDG 17.19 hints to such an index: “*by 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.*”
- Through the UN statistical system, adopt universally accepted concepts and definitions for data across all dimensions of sustainability. Common data standards can form the basis for the development of a universal TCA standard and establishing relevant sustainability thresholds. This is the reality for economic measurement and has been for decades. The theory is in place for the other dimensions but it needs the institutional process in order to be driven forward.
- In the longer term, TCA practice and implementation could assist countries negotiating trade reforms that assess national stock flows through international trade, with trade rules accounting for virtual water, virtual

land, virtual pollution, and unsuitable labor conditions. The World Trade Organization (WTO) trade rules favor the lowest cost, that strongly lock-in negative externalities within national boundaries. Although the WTO allows countries to adopt trade measures regulating “product characteristics or their related Production and Processing Methods,” this concept remains controversial from a conceptual and policy point of view. Currently, the free flow of capital and labor flattens countries’ comparative advantage and we are witnessing a race to the bottom towards the lowest production cost possible. Thus far, the trade of certified organic products has been facilitated by the existence of international standards, as requested by Sanitary and Phytosanitary Measures (the SPS Agreement), because environmental requirements (e.g., no pesticides) are perceived as health and safety requirements. This highlights the importance of an eventual common international TCA reference standard. This could follow the blueprint of the European Union Organic Regulation that is in line with the international standard laid out by the Codex Alimentarius Guidelines; provides the basis for individual country regulations and conformity assessment procedures; and is open enough to private standards that may be more stringent than the national rule (e.g., Soil Association, Demeter).

Clearly, the different stakeholder group initiatives ought to progress in harmony. The current push from the base is changing the narrative in an effective way. Networks are forming but they need to link up with other networks and scale-up their efforts. Suppliers, clients, employees, companies, investors, communities, governments, and conservationists will have different scopes for TCA assessments, but the agreement of all parties on the TCA baseline is crucial.

This book reveals the extent to which TCA has, and can continue, to drive a broadening of mindsets in achieving the sustainability of our food and agricultural systems. This chapter has highlighted areas where more can be done and areas where increased collaboration is required. Fundamentally, the opportunities that exist for TCA are immense. The chance to build on changing mindsets is real and action is needed now. TCA’s history proves its potential; its future can drive us towards sustainable solutions.

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