14 The Business of TCA

Assessing Risks and Dependencies Along the Supply Chain

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Introduction

Climate change, resource scarcity, consumer awareness, and new regulations trigger practice changes in global supply chains regarding environmental and social aspects. These better practices go along with additional costs, which, based on current accounting schemes, could negatively impact the economic performance of companies. This causes a dilemma for the private sector: while trying to comply with these new requirements, the companies get financially punished as the higher costs for sustainable measures reduce their profits. True Cost Accounting (TCA) can be used to show the benefits of better practices at the company or supply chain levels, not only using sustainability language but in tangible financial terms. This chapter presents the experience of different actors from the corporate and financial sectors in applying TCA. The first case study offers a corporate perspective on assessing the True Cost of various regional and global supply chains, the second case study discusses a bank's experience with TCA, the third case study provides insights into the True Cost considerations from an insurance sector view, and the fourth case study shares the experience of a financial auditor.

A key finding from all case studies is that a true cost assessment across entire supply chains is possible, allowing for an assessment that crosses private and financial sector initiatives, integrating sustainable performance into financial market requirements. However, although data and models to assess the true cost of ecological or natural capital aspects already exist, there is still a substantial need for further research regarding social and human capital aspects such as health. The following four case studies demonstrate how TCA is a valuable tool for agri-food companies, banks, insurances, and financial auditors.

Case Study 1: Assessing the True Cost of Various Regional and Global Supply Chains

What are the true costs of food production, and what can be done to reduce these externalities to society? How can we quantify and monetize better farming practices to show that sustainably produced food costs society and taxpayers

less? These questions arose in 2014 when various companies had identified financial and reputational exposure and started to assess their true cost profile. The initial motivation to conduct true cost assessments was based purely on pioneering entrepreneurial spirit, trying to secure and further develop their future business cases by minimizing current and future risks.

In November 2019 Boston Consulting Group (BCG) published a report (Boston Consulting Group, 2019) about how to secure the future of German agriculture. The key finding was that today's German agricultural system causes externalities—that is, costs to the society and the environment, amounting to €90 billion. This is in addition to another €10 billion of subsidies and other direct payments, which are currently borne by society, in the form of taxpayers. This €100 billion only covers externalities related to climate, air, water, soil, livestock, and ecosystem services from the German agricultural sector. Social aspects are not covered. The study assumed that more sustainable production would reduce the costs to society. At the same time, Christian Heller, CEO of the Value Balancing Alliance presented to the European Business and Nature Summit in Madrid on how today's costs to society will become costs to businesses over time (Heller, 2019).

The cumulative experience of conducting true cost assessments with the following companies are included in this case study: Alnatura, Bauck, Demeter, Eosta, GLS Bank, Haciendas Bio, Hipp, Lebensbaum, Martin Bauer, Rapunzel, Tradin, Triodos, and Weleda. The assessments analyzed products and supply chains covering a variety of agricultural products from different origins worldwide and were conducted by Soil & More Impacts (SMI), in some cases in collaboration with EY. The focus was to assess the impact on natural capital aspects (biodiversity, climate, soil and water) (Natural Capital Coalition, 2016). Selected social and human capital aspects were analyzed as well. The intention of these pilot assessments was not only to generate true cost value but also to test the model for its applicability and scalability to global complex supply chains.

Priority was given to primary data available through existing audits such as organic, Fairtrade, Rainforest/UTZ, or financial accounts. To maximize the comparability and acceptance in the food and agricultural market, commonly used impact assessment models, reference values and monetization factors were used such as the Cool Farm Tool (Hillier et al., 2011), the RUSLE (Revised Universal Soil Loss Equation) (Renard, 1997), Aqueduct maps (Gassert et al., 2014), ClimWat (Muñoz and Grieser, 2006), CropWat (Smith, 1992), the DALY (Disability-adjusted life year) concept (Homedes, 1996) and EcoMatters (van Maurik et al., 2016). In most cases, the assessed supply chains were benchmarked against the common practice in the region, a baseline, or an improved scenario.

The overall finding was that despite the fact that TCA is a rather young and developing science, the most commonly used approaches, assumptions, and models seem to be good and detailed enough to generate meaningful results, identifying and highlighting strengths and weaknesses, costs and benefits of the different products and supply chains.

Figure 14.1 Calculated external costs in €/hectare for an organic farm in Germany.

The following figures show selected results from true cost assessments of the participating companies.

Figure 14.1 shows the true cost assessment of a cereal- and vegetable-producing German organic farm. The external cost due to CO₂ emissions was nearly offset by the amount of CO₂ sequestered. The major benefit of this farm was generated due to humus (soil) build-up. Overall, that farm created an external benefit of €1,401/hectare. This is a weighted average across the entire crop rotation which could be broken down to external costs and benefits per kilogram of product, factoring in the yield. From a scientific and modelling perspective, one of the key learnings was that the entire crop rotation of a farm needs to be assessed in order to identify the real external costs or benefits of a farming system.

Figure 14.2 shows the true cost result in €/hectare of an intensively managed vegetable farm which generates external costs of €702/hectare. Figure 14.3 illustrates the same farm after implementing some better practices such as intercropping and improved compost management, resulting in a reduction of the external costs to €106/hectare.

As the currently prevailing standard accounting and economic valuation systems do not consider these positive or negative externalities, there is no direct financial incentive for better practices, which leads to distorted markets and false accounting. Therefore, apart from the necessity of political interventions, it is required that the financial market institutions start considering these externalities by including them in credit ratings, insurance policies, annual accounts, and company valuations. In order to foster this process, Soil & More Impacts and TMG Thinktank for Sustainability started an initiative together

Figure 14.2 Calculated external baseline costs in €/hectare for an intensively managed vegetable farm in Germany.

Figure 14.3 Calculated external scenario costs in €/hectare for an intensively managed vegetable farm in Germany.

with EY and some market-leading companies to develop guidelines on how to include both positive and negative externalities in annual reports as a basis to generate financial incentives for better farming practices.

Case Study 2: True Cost Accounting at GLS Bank

Founded in 1974 in Bochum Germany, GLS Bank is the first social-environmental bank globally, with a specific focus on financing the basic needs of people in line with regenerative environmental practices. Taking these two focal points as the core of all business activities of GLS Bank, economic sustainability is the logical consequence instead of the key imperative of doing business. To date, GLS Bank has a staff of 700 employees and a balance sheet total of around €7 billion.

The need to drastically rethink the current patterns of economic systems along the lines of planetary boundaries, common goods, and social justice finally seems to be a common understanding by an increasing number of market participants, supervisory authorities, and citizens. In line with this, the European Union, Central Banks, and supervisors have been calling for a more proactive integration of sustainability-related risks and opportunities into business management and target setting. The predominant focus of these initiatives currently lies on climate-related issues, as the short-, medium-, and long-term impacts of this challenge are more tangible and have a (better) data basis. However, this is just the starting point for a wide-ranging revision of how sustainable business models need to be framed. The interplay between the buildup, use, and degradation of values, as well as their long-term relevance for business performance and socio-environmental sustainability needs to be put in focus.

With a view to understanding, translating, and managing sustainability-related risks and opportunities, economic actors in general and financial institutions in particular need to (re)define the parameters that (will) affect economic value.

As this viewpoint is accompanied by a great opportunity for greater consideration of sustainability aspects, GLS Bank has been engaging in a profound rethink of risk management and accounting. As the first German socio-environmental bank, its mission is to redefine capital as a means for positive societal change and using money to finance a variety of exclusively sustainable projects and businesses.

Accordingly, the bank defines the value of an economic activity or organization to lie far beyond financial capital as the core driver of short- to long-term value creation. Rather, value is created, sustained, and strengthened by mutual impacts on and across multiple capitals: human capital, social capital, natural capital, financial capital, intellectual capital, and production capital. These capitals and their interactions represent the true values that determine an organization's holistic value creation or degradation and therefore its future viability and competitiveness.

In this context, TCA represents a concrete methodology for a far more holistic view on value drivers by integrating quantified sustainability aspects into the well-known logic of financial accounting, following a similar understanding of the dependency of capitals: in times of globally scarce raw materials such as soil and water, it is of strategic importance not only for the agricultural

sector, but also for national economies as a whole, to take a close look at the availability and use of vital resources such as soil, water, and energy and, if necessary, to intervene with effective measures to secure these resources. Whether and at what price raw materials can be processed and traded in the future is determined based on the agricultural practices applied today. Those who take appropriate care of, for example, soil and water today will be able to offer agricultural products competitively and in line with planetary boundaries in the future. In turn, it can be argued that sustainable investments in multiple capitals lower economic risks.

GLS sees its mission to strive for a (more) sustainable future and to implement a more holistic view of sustainability-related risks and therefore engages in TCA. Considering the first aspect, the market-based approach of TCA monetizes harmful activity and financially rewards sustainable activity, thus making the conservation of resources financially attractive and leveraging sustainable behavior. Regarding the second aspect, the approach of TCA provides an opportunity to improve risk and opportunity management in the lending process. Former intangible or invisible risks and return potentials are given a monetary value and, as a result, can be considered when assessing the creditworthiness and credit default risk of a project or organization.

As a first pilot, GLS Bank and GLS Treuhand have applied the method of TCA together with Soil & More Impacts for three organic partner farms. The results show that the current agriculture practices generate high costs: while organic farms generate an average profit of around €720/hectare, the conventional comparable farms cause net costs averaging €3,670/hectare. These costs have so far been paid by society—either directly, for example through higher water treatment costs, or indirectly in terms of environmental damage. In the medium term at the latest, these costs will also return to the farmers and their land when assets like soil fertility are destroyed or political countermeasures are taken that will affect farmers. In the ongoing criticism of agriculture and the debate about the need for agricultural transformation, TCA reveals that organic agriculture provides valuable socio-environmental services and makes a beneficial contribution to society.

The application of TCA might not lead to a fundamental change in the granting of loans by GLS Bank. The bank instead aims to create a leverage effect that can be achieved when other banks without a normative view on sustainability act in the same way, realizing the financial risks of sustainability aspects and thus considering them when granting loans. In return, this can help to steer capital towards sustainable agriculture.

Although not all ecosystem services or capitals can nor should be (fully) monetized, the view of manifold impacts opens the playground for business decisions that are multidimensional with a high probability of identifying current and future risks and opportunities. Hence, TCA paves the way to understand and disclose social and ecosystem services that have tangible impacts on the viability of business models.

Case Study 3: The Research of Allianz in Assessing Natural Capital for Risk Management Solutions in the Insurance Sector

Allianz Global Corporate & Specialty (AGCS) is the Allianz Group's dedicated carrier for corporate and specialty insurance business. AGCS provides an insurance and risk consultancy across the whole spectrum of specialty, alternative risk transfer and corporate business. Their role as the leading corporate insurance company demands an in-depth awareness and understanding of the emerging sustainability-related trends that impact their clients and their operations. To do this, AGCS has built a dedicated team of experts in sustainability risks from an industrial insurance perspective.

AGCS supports its clients to identify and assess material risks along their value chain and identify and design risk management solutions in a collaborative manner. Environmental, social, and governance (ESG) factors are increasingly relevant in risk management, and the sustainable use of natural capital is one important element. By many scientific and macro-economic indicators, it is becoming increasingly evident that natural capital is being depleted at a far faster rate than the planet can replenish it, and with consequences that extend well beyond the direct effects on the environment. Consequently, businesses face new risks from the ongoing depletion of natural capital.

In 2018 AGCS published an exploratory report "Measuring And Managing Environmental Exposure: A Business Sector Analysis Of Natural Capital Risk" (Allianz, 2018b) outlining potential exposure to natural capital risks, based on an analysis of 2,500 companies across 12 industry sectors. The report compares and analyzes selected sectors and assigns each of them to one of three risk categories: danger zone (sectors where risks are generally greater than mitigation), middle zone (sectors where risks are roughly matched to mitigation), or safe haven (sectors that generally do not seem to face high risks and/or are reasonably well prepared for risk). According to the study, the following sectors have been assigned to the following risk categories:

- Danger zone: Oil and gas; mining; food and beverage; transportation
- Middle zone: Automotive, chemical, clothing, construction, manufacturing, pharmaceutical, and utilities
- Safe haven: Telecommunications

Natural capital risk assessment is expected to become increasingly important for corporates as numerous liability and business interruption cases have been revealed around the globe. These types of losses are expected to increase unless these risks are mitigated.

A significant number of companies have started to address natural capital risk in their enterprise risk management. Factoring natural capital costs into business decision-making can help companies to anticipate potential threats. For example, when opening a new plant, factors such as future water availability and the

emerging emissions regime should be considered. Natural capital risk exposure will become increasingly important, as it is expected that companies will have to actively disclose these risks to governmental agencies and investors as both risks and related management expectations evolve.

“With threats to the environment coming from many different areas, there will be no such thing as business as usual in future,” says Chris Bonnet, Head of ESG Business Services from Allianz and co-author of the report. “Companies need to understand, quantify and even monetize their dependence on natural capital and the impacts their operations have on it to ensure their organizations are resilient and future-proof.” More information about natural capital risk and the report insights can be found in Allianz (2018a).

Case Study 4: Natural Capital Inclusion for Sustainable Innovation and Risk Management: The Perspective of a Sustainable Industrial Design Engineer from EY Climate Change and Sustainability Services

Back in the 1930s the Hawthorne Works in Chicago had commissioned a study to look into worker productivity in the factory under varying conditions. Researchers saw that productivity increased with changes in light intensity. However, the workers fell back into lower productivity as soon as the study ended. The conclusion was drawn that the light intensity was not the cause for the increase in productivity, but rather the increased attention on individual workers and their performance.

Traditionally the attention of the financial sector with regards to the performance of companies has been on their financial/economic performance. In recent years, there has been a steady increase in attention to non-financial information, also in the financial sector. The realization that non-financial information is just as important, or perhaps even more important than financial information to evaluate the potential for long-term value creation of companies has spurred the disclosure of all kinds of different non-financial metrics and other performance indicators in sustainability reports, integrated annual reports, and sometimes even in financial statements.

According to the Global Investor survey conducted by EY in 2018, nearly all investors who responded to the survey (97%) say that they conduct an evaluation of non-financial disclosures; just 3% of respondents say they conduct little or no review. At the same time, investors' clients are increasingly asking about non-financial information and expecting it to be integrated into mandates. Furthermore, non-financial information plays an increasingly important role in the investment decision-making process, and nearly all respondents (96%) say that such information has played a pivotal role. In interviews, investors stressed the importance that sustainability disclosures play in determining appropriate market valuations. Therefore, companies should focus on ensuring that their non-financial information has the same level of scrutiny as financial information.

Figure 14.4 Survey results: How useful do you find the following sources of non-financial information when making an investment decision? (adapted from the Global Investor Survey, EY, 2018).

Investors are requesting broader and higher-quality non-financial information from companies, and seeking consistent, investment-grade information to support their decision-making. For investors, the most useful non-financial reports come from companies that understand material non-financial risks and opportunities which are most important to their industry and business model. Investors report that, governance aspects aside, the main non-financial factors in investment decision-making are related to supply chain, human rights, and climate change risks.

Respondents also say that non-financial information must be standardized to create a useful basis of comparison, to establish benchmarks and to mark trends. Investors say that national regulators are best suited (70%) to lead efforts to close the gap between investors' need for non-financial information. In

Figure 14.5 Survey results: How beneficial would each of the following reports or disclosures be to your investment decision-making? (adapted from the Global Investor Survey, EY, 2018).

addition, investors are looking for intelligent collaboration among themselves, regulators, and organizations such as trade groups and non-governmental organizations to establish appropriate and effective reporting standards.

In the agri-food sector, it is known that at least some material environmental (and social) impacts and dependencies (risks) occur at the farm level. Large national and multinational food and beverage companies rely on vast amounts of natural (and social) capital, such as agricultural land, biodiversity, healthy soils, etc. mainly through purchasing agricultural products from a large number of agricultural suppliers.

In order to identify, quantify, and eventually mitigate the associated impacts and risks associated with the environmental impacts and dependencies, large food and beverage product companies will need to obtain data on the non-financial performance of their supply chain in order to report reliably on their own non-financial performance. But most importantly, it is essential that this information is then also utilized to improve the non-financial performance, similar to what we are used to with financial performance information. Both for non-financial performance reporting as well as strategic decision-making, it is essential that the data that companies collect to use for these purposes is reliable. Obtaining assurance can provide the increased credibility and reliability of non-financial information, similar to financial information.

Business activities can lead to multiple different environmental impacts that can occur locally and/or globally and measuring these impacts is always complex. Scientific research and development have led to standardized methods for assessing impacts, but the way that they are applied often leaves room for “manipulation,” which can have a large effect on the identified non-financial risks and opportunities portrayed in the reporting of companies.

Given the previously discussed trends and developments, there is an emerging need for standardized TCA, which brings together the different environmental (and social) impacts into a single monetary unit, allowing for full integration with annual reports, integrated reports, as well as strategic decision-making for companies and investors to better balance their financial performance with their non-financial performance. Therefore the main need for the coming decade is to develop and align a sector-specific, highly automated, standardized method, approach and guidelines in order to eventually come to sector-specific reporting standards for non-financial information similar to the standards already available for financial reporting.

The real benefit of TCA is in “turning on the light” with regards to the required transition towards a sustainable society. The attention that the financial sector is giving to non-financial performance of assets spurs companies to think about their non-financial performance. The pilots that EY involved in the *True Cost: from Cost to Benefit* project confirmed that farms are open to supplying non-financial information to their clients if they are able to. By “turning on the light”, movement towards a more sustainable way of doing business is already visible. If we can manage to turn on the light on a larger scale, where standardization plays an essential role, we should be able to see a bigger movement towards more sustainable production and consumption.

Conclusion

These case studies showcase the versatility in application and use of TCA across different business players and emphasize the potential TCA has in becoming a relevant tool for assessing impacts and dependencies in the financial sector.

By using TCA for analyzing and evaluating the environmental impact of different agricultural management practices, agri-food companies can base their supply chain decisions on comparable and transparent results. Value-driven corporations like the GLS Bank can substantiate their mission and corresponding decisions with monetary figures of their impact. Insurance providers have realized that capital dependencies and impacts are highly interconnected, leading to immense natural capital risks that are barely considered in existing tools used by the financial and insurance industry. In addition, financial auditors like EY are increasingly acknowledging the need for a standardized way of assessing the long-term value and impact of companies to create a comprehensible basis for investors and other readers of annual reports. Even though TCA is a young field, it is built on existing scientific knowledge and can be further developed, standardized, and integrated into practical tools. With this, it can be a powerful lever for transformative change towards a new definition of value—based on capitals thinking—in the business world.

References

- Allianz. (2018a). Allianz report: Failure to manage natural resources brings increasing interruption and liability risks for businesses. Available at: www.agcs.allianz.com/news-and-insights/news/natural-capital-risks.html.
- Allianz. (2018b). Measuring and Managing Environmental Exposure: A Business Sector Analysis Of Natural Capital Risk. Allianz Global Corporate & Specialty SE. Available at: www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Natural-Capital-Risk-Report.pdf.
- Boston Consulting Group. (2019). Die Zukunft der deutschen Landwirtschaft nachhaltig sichern).
- Gassert, F., Luck, M., Landis, M., Reig, P., & Shiao, T. (2014). Aqueduct global maps 2.1: Constructing decision-relevant global water risk indicators. World Resources Institute.
- Heller, C. (2019). Presentation at the European Business & Nature Summit 2019 in Madrid. Value Balancing Alliance. Available at: https://naturalcapitalsummit.com/wp-content/uploads/2019/11/EBNS-PL3_Christian-Heller_BASF-and-value-balancing-alliance.pdf.
- Hillier, J., Walter, C., Malin, D., Garcia-Suarez, T., Mila-i-Canals, L., & Smith, P. (2011). A farm-focused calculator for emissions from crop and livestock production. *Environmental Modelling & Software*, 26(9), 1070–1078.
- Homedes, N. (1996). The disability-adjusted life year (DALY) definition, measurement and potential use. (*Human Capital Development papers*, No. 16128, p. 1). The World Bank.
- Muñoz, G. & Grieser, J. (2006). *Climwat 2.0 for CROPWAT*. Water Resources and Development and Management Service of Food and Agriculture Organization of the United Nations, pp. 1–5.

- Natural Capital Coalition. (2016). Natural capital protocol. Available at: <https://naturalcapitalcoalition.org/natural-capital-protocol>.
- Renard, K.G. (1997). *Predicting soil erosion by water: a guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE)*. US Department of Agriculture. United States Government Printing.
- Smith, M. (1992). *CROPWAT: A computer program for irrigation planning and management* (No. 46). Rome: Food and Agriculture Organization of the United Nations.
- van Maurik, J.H., Sonnen, M.J., & Damen, L. (2016). *Natural capital–Ecomatters implementation guide*. Ecomatters. Available at: www.ecomatters.nl/wp-content/uploads/2018/09/Ecomatters-Natural-Capital-Ecomatters-implementation-guide.pdf.