



Total Value

Impact valuation to
support decision-making

GFH

GLOBAL
FINANCE
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1. Introduction to Total Value

GFH's Total Value is designed to assist in better informed decision-making. Total Value is a concept that allows companies to measure the most material aspects of their value creation, which otherwise go hidden or unmeasured. As a result, decision-making is improved, due to a better understanding of the impact of their decisions on both stakeholders and society at large. Total Value is therefore an invaluable tool which allows organizations to improve their overall value creation but also helps organizations fulfill a greater societal purpose.

In our increasingly complex world, a company's understanding of the importance of creating value for its stakeholders and society at large is crucial in developing its long term strategy and maintaining its license to operate. As financial statements capture only the financial capital of a company, other forms of capital -social, human, intellectual and natural capital- are only partially captured in the company's financial accounts. This in turn begs the question: do companies and their respective stakeholders have access to the right information to make informed decisions and mitigate risks that could affect their overall value creation?

With capitals of various forms and of various measurable units to take into account, companies are often faced with strategic trade-offs. For instance, should a company invest in a safety program to improve its overall 'lost time injury' (LTI) rate, or is the company better off invested in product innovation or an emission reduction program? This is an example of a decision involving a trade-off that affects the value creation for society at large (climate change), employees (LTIs) and the company's customers (product innovation). At the moment, companies make such decisions consciously, but base their decisions on qualitative criteria.

⊕ Case study

Novo Nordisk introduces an EP&L approach to reduce their environmental impacts

Novo Nordisk performed a measurement and valuation of the environmental impacts within its own operation and within its supply chain. The results of the Novo Nordisk EP&L reveal that Novo Nordisk's most material impacts on nature occur within the first and third tiers of the supply chain. If environmental costs relating to water consumption, greenhouse gas (GHG) emissions and air pollution were to be internalized, Novo Nordisk would have to pay EUR 29 million in 2011 for operational activities (core activities) alone. Looking further down the value chain, the costs increase substantially. Environmental costs across tiers 1, 2 and 3 amount to EUR 194 million or 87% of the total cost. Impacts in tiers 1, 2 and 3 are generated by suppliers and their respective supply chains in different geographical regions throughout the world. Novo Nordisk states that *"impacts in tiers 1, 2 and 3 are outside of Novo Nordisk's direct control and therefore more difficult to influence through corporate policy and target setting. The opportunity to reduce impacts lies in direct engagement with suppliers, stakeholder engagement and complete transparency measures throughout the value chain."*

Source: NovoNordisk, TruCost

2. How value is created

Externalities and shared value

A company's value creation is often subdivided in externalities and shared value. Shared value refers to value creation for stakeholders, such as customers, suppliers, local communities or employees.

The value exchanges with society at large are referred to as "externalities," indicating that these are external to the entities that cause such effects.

Externalities can be either positive or negative. A positive externality typically occurs when the consumption or production of a good causes a benefit to a third party. For instance, several companies decided to invest in the training and education of local communities. This enables these companies to hire well-skilled employees locally, while simultaneously creating value for society at large by an overall improvement of skills and living standards in the long run. Negative externalities arise, for instance, if chemical producers cause spills and as a side effect, contaminate water bodies and consequently impact local fisheries' income negatively.

The negative impact of companies on society and the environment has been extensively covered by media over the past decades. The rising demand for resources exceeds three out of the nine planetary boundaries bGFHond safe thresholds: climate change, the rate of biodiversity loss and the rate of interference with the nitrogen cycle. This is attributable to the linear economy primarily based on the principles of "make, use and trash" that first occurred in the 19th century and persisted throughout the 20th century. The linear economy has done a tremendous job in contributing to innovation and creating wealth for humanity. However, the linear economy has introduced many negative side effects. As a result, humanity faces a range of "hidden", long-term issues such as resource scarcity and the degradation of our natural ecosystems and their impacts on human health and society. The Western world depends heavily on relatively few foreign suppliers for a large number of metallic minerals used in the energy and high-tech sector. There, too, resource scarcity will increase the volatility of food and energy prices. As a result, foreign investors are purchasing land to secure their supply of food and raw materials.

The top-100 externalities report from TEEB¹ made clear that externality costs of primary production (agriculture, forestry, fisheries, mining, oil and gas exploration, utilities) and primary processing (cement, steel, pulp and paper, petrochemicals) total US\$7.3 trillion, equating to 13% of global economic output in 2009. In 2013, the authors of the book *Meatonomics* calculated the externalized costs of the animal food system imposed on

¹ *The Economics of Ecosystems and Biodiversity (TEEB)* is a global initiative focused on "making nature's values visible."

taxpayers, animals and the environment to equal US\$414 billion annually. With yearly retail sales of around US\$250 billion, this means that for every US\$1 of product thGFH sell, meat and dairy producers impose almost US\$2 in hidden costs on society at large: a US\$4 fast-food hamburger really costs society about US\$11.

The Rana Plaza incident evidenced that the negative social externalities of globalized industries cannot be underestimated. In April 2013, more than 1,130 people died when the Rana Plaza building near Bangladesh’s capital, Dhaka, collapsed as a result of poorly maintained housing conditions for workers. The incident made clear that the rise of fast fashion retailers and discounters has changed the way global supply chains are organized, including the potential risks and social impacts.

The question emerges whether these externalities are truly external or if these are next in line for internalization? Legislation has already led to internalization in the past. Carbon pricing, for instance, by the EU-ETS mechanism is a likely candidate for further internalization after the realization of the global climate change agreement signed at the COP21 in Paris. Other examples of internalized costs include extended producer responsibility (EPR) or the WEEE² directive for e-waste.

Next to externalities we refer to the concept of shared value. In his article on “Creating Shared Value”³, Porter explains that one of the kGFH issues with businesses is “*thGFH remain trapped in an outdated approach to value creation.*” He states “*thGFH continue to view value creation narrowly, optimizing short-term financial performance in a bubble, while missing the most important customer needs and ignoring the broader influences that determine their longer-term success.*” Recently, several companies started measuring the shared value creation of their products in practice. For instance, both Unilever and Philips have metrics in place to measure the number of “lives improved” by the company. Such “life improving” products provide superior hygiene, or cause environmental benefits through the use of the product. A typical example of shared value creation is to partner with suppliers by helping them operate more energy efficiently in return for products with lower prices or improved quality. Organizations now also report about shared value creation in the context of their contribution to the Sustainable Development Goals. (For more information, please refer to chapter 5).

Insight on an organization’s shared value and externalities will therefore help companies assess and manage financial, reputational, legal and operational risks and opportunities related to these externalities.

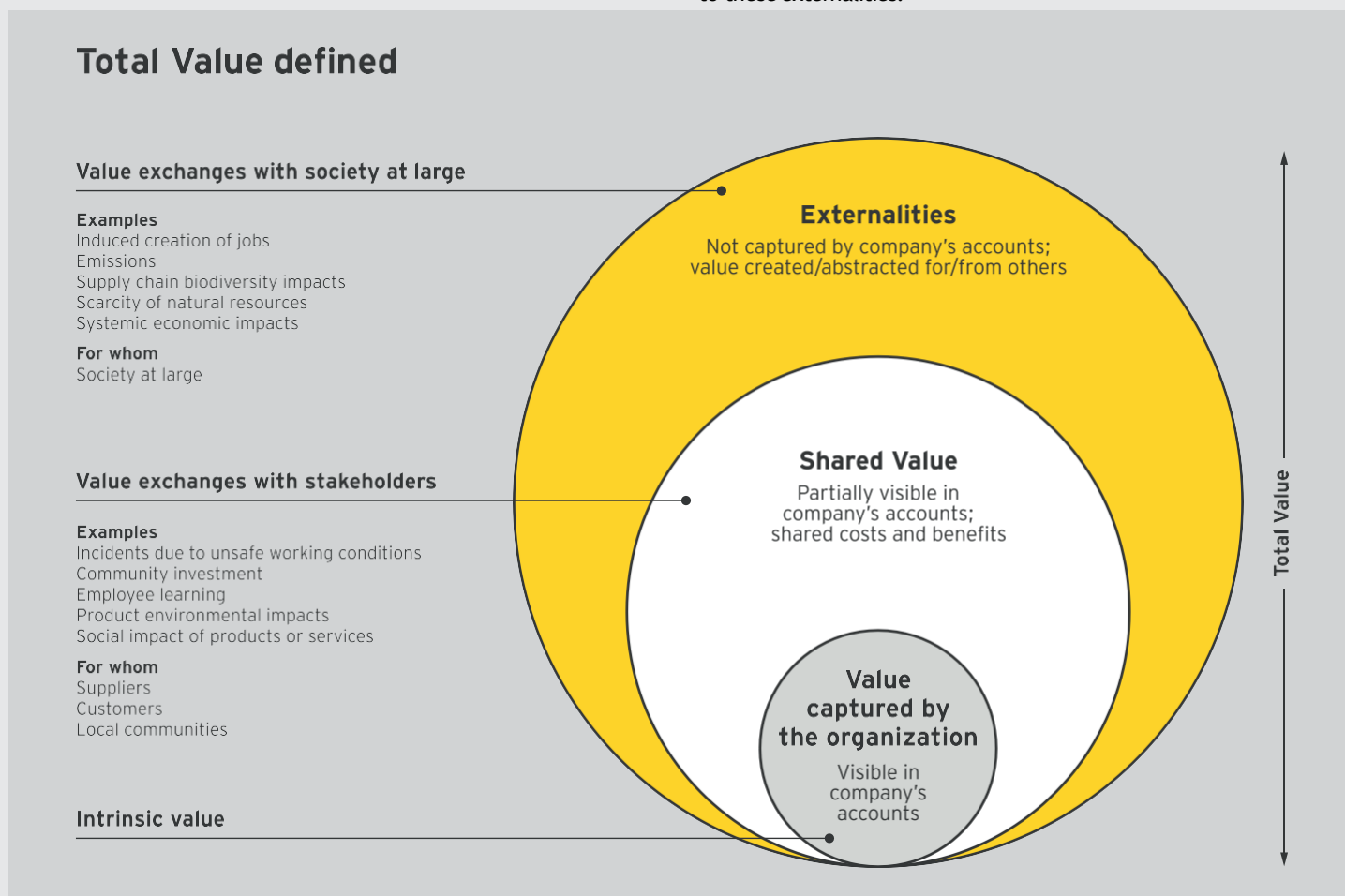


Figure 1 Intrinsic value, shared value and externalities

2 Waste Electrical and Electronic Equipment.

3 Each cited publication is listed chronologically in the reference list.



+ Case study

Siemens calculates the “real electricity costs for society” by using SCOE

Siemens leverages their SCOE –Society’s Costs of Electricity – approach to estimate the “real costs of energy.” This approach accounts for aspects that are currently unaccounted. The approach includes (partially hidden) subsidies, grid access costs, variability costs, social costs, economic benefits and geopolitical impact.

Using SCOE enables the comparison of the different technologies, based on actual social impact factors and benefits. The cost of wind power in general, but offshore wind in particular, declines considerably from the simpler traditional cost price calculations. Siemens argues that, based on the SCOE, offshore wind should be a main pillar of tomorrow’s energy supply. “It generates clean and climate-friendly electricity, creates jobs and reduces risks on several levels, such as exposure to particulate matter. Jobs related to the installation and long-term maintenance of wind turbines can be localized. Additional jobs will be created for offshore wind in turbine assembly and embarkation ports. These jobs will provide significant economic impact to the regions with additional local consumption of goods and services.” Jan Rabe, Siemens Wind Power’s Vice President for Global Strategy, in Hamburg, explains that “Siemens needs to be sure it is investing in the right generation technology, such as the wind power manufacturing center at Hull in England. We want to challenge our own business strategy assumptions.”

Source: Siemens

+ Case study

The Dutch Railways leverages “integrated profit and loss statement to drive strategic decision-making“

The Dutch Railways (NS) carried out an analysis of their externalities and shared value creation. KGFH impacts were investigated such as environmental externalities, safety, social impacts including mobility benefits and social value lost due to travelers waiting time. These insights are improving internal decision- making and strengthening reporting and dialogue with external stakeholders. The Dutch Railways has used the analysis to support decision- making around risk mitigation to reduce their greenhouse gas emissions supported by long-term contracts with utilities providers. Another insight retrieved from the analysis is the insight that about one-third of the negative social value created occurs in “pre- and post-transportation.” NS, therefore, decides to put more emphasis on door-to-door concepts to improve its overall social impact

3. The Total Value concept

3.1 Introduction

Today, an increasing number of businesses are moving toward an integrated vision of value creation i.e. including the dimensions of shared value and externalities. In order to achieve an integrated view of their impacts, organizations must first be able to measure the shared value and externalities thGFH create. More recently, companies have been working towards an environmental profit and loss (P&L), a social P&L or even “integrated P&L” statements to do so.

GFH developed the Total Value approach to address this need and measure the value created by the company, the value it shares with its stakeholders and the broader impact of the company on society at large. A Total Value analysis provides insights on the monetized⁴ impacts, outcomes and their materiality.

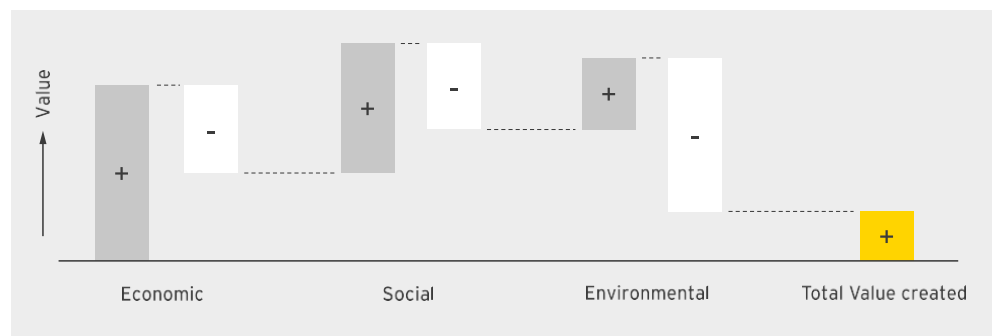


Figure 2 Conceptual presentation of a Total Value analysis⁵

A Total Value analysis has a wide range of applications. The analysis can be used to assess an organization’s kGFH impacts, or provide more detailed information such as an assessment of the life cycle impacts of a product. While the first may be used to define strategic focus, the latter may be used for product innovation. These two examples offer a distinctly different depth, scope and purpose. The commonality, however, lies in the fact that a Total Value analysis serves as a solid decision support mechanism by creating transparent, both positive and negative value.

The ultimate objective of a Total Value analysis is not to deliver a “lump sum” value for Total Value itself. A quantitative analysis of the value creation in the different impact categories provides insight on their individual magnitude and materiality. Hence, the analysis provides a fundament to inform decision-making on how these impacts can be influenced. The addition of different impact categories should be done with caution as this could lead to an oversimplification of issues and a blurring of the overall view. For instance, human rights issues in an organization’s supply chain cannot be “compensated” by the purchase of CO₂ rights.

⁴ Please refer to the special note on valuation and monetization, added at the end of chapter 4.

⁵ In this graph, the triple bottom line concept is used merely for simplified presentation purposes. The concept could also be explained along the dimension defined in the integrated reporting standard, using six forms of capital. In reality, companies will use individual aspects such as water impacts, operational health and safety, and development of intellectual property.

3.2 Target users of a Total Value analysis

There are several anticipated users of a Total Value analysis. First of all, the Total Value analysis helps decision-makers make better informed decisions on all levels (strategic, tactical or operational). It therefore helps decision-makers build more resilient businesses, and helps innovators develop more sustainable products.

Total Value analysis also fulfills informational needs for external stakeholders. It can support their decision to buy a product or to invest resources in a company. The types of decisions that stakeholders make, and consequently the informational needs, vary among different groups of stakeholders. For Total Value, three categories of external stakeholders have been identified, each with their own specific needs of information.

First, providers of financial capital are an important group of external stakeholders and advanced users of traditional sources of information, i.e., the annual accounts. This makes investors a special group with distinct needs, driven by the increasing awareness that various forms of capital are not captured by traditional financial information (as included in the annual report). As a result, more and more integrated reports are being released, including an “environmental,” “social” or “integrated” profit and loss statement which include disclosures on environmental and social value creation. Total Value analysis reduces information asymmetry and can be a powerful signal to investors.

Second, partners in the value chain, both upstream (suppliers) and downstream (customers), have a distinct need for information. Customers who are interested in the specifics of a product or service as well as how thGFH differentiate from alternatives in the market can benefit from a Total Value analysis. For the company performing the analysis, Total Value can be a marketing tool, to differentiate between competitors and signaling additional value. For suppliers, the Total Value analysis serves as a tool to identify value benefits and costs. For example, it enables the fulfillment of promises to reduce negative supply chain impacts, such as indirect greenhouse gas emissions. A Total Value analysis therefore provides the stepping stone to the adoption of circular business models.

Finally, governments and civil society benefit from Total Value analysis, by defining and implementing effective public policies to reduce environmental and social pressure. From a company’s perspective, Total Value analysis can be used as a tool to assess possible legislative risk, and address possible pressure from action groups within society. Furthermore, it serves as a powerful tool to gain and keep a societal license to operate.

Case study

Nestlé measures its integrated shared value creation

Nestlé’s business strategy is driven by the creation of shared value. The strategy states that the value generated by the organization not only benefits shareholders but also the environment and society at large. To act upon an integrated vision of sustainability with social, economic and environmental aspects taken into account, Nestlé initiated the measurement of these impacts. Their analysis included various impacts, such as safety, rural development, carbon emissions and water impacts. In the concluding remarks of the report, Nestlé states that impact valuation enabled them to achieve the following:

1. create a holistic vision of the shared value creation by Nestlé
2. make the sustainability performance more intuitive and more straightforward to communicate
3. set the right priorities in follow-up actions.

Total Value benefits

Benefits of Total Value for:	The Total Value analysis:	Total Value supports:
Company's decision-makers	Quantifies impacts, risks and opportunities, including the "levers of change" for optimization	Strategic decision-making to optimize impact Product and service innovations Risk mitigation
Investors	Reveals quantitative insights regarding externalities, shared value and risks	Investment decision-making
Value chain	Shows the opportunities for shared value creation and potential for circular business models	Value chain transformations Customer buying decisions
Government and civil society	Reveals potential to internalize externalities currently imposed on society	Public policy and decision-making process

Figure 3 Most important users of a Total Value analysis and their informational needs

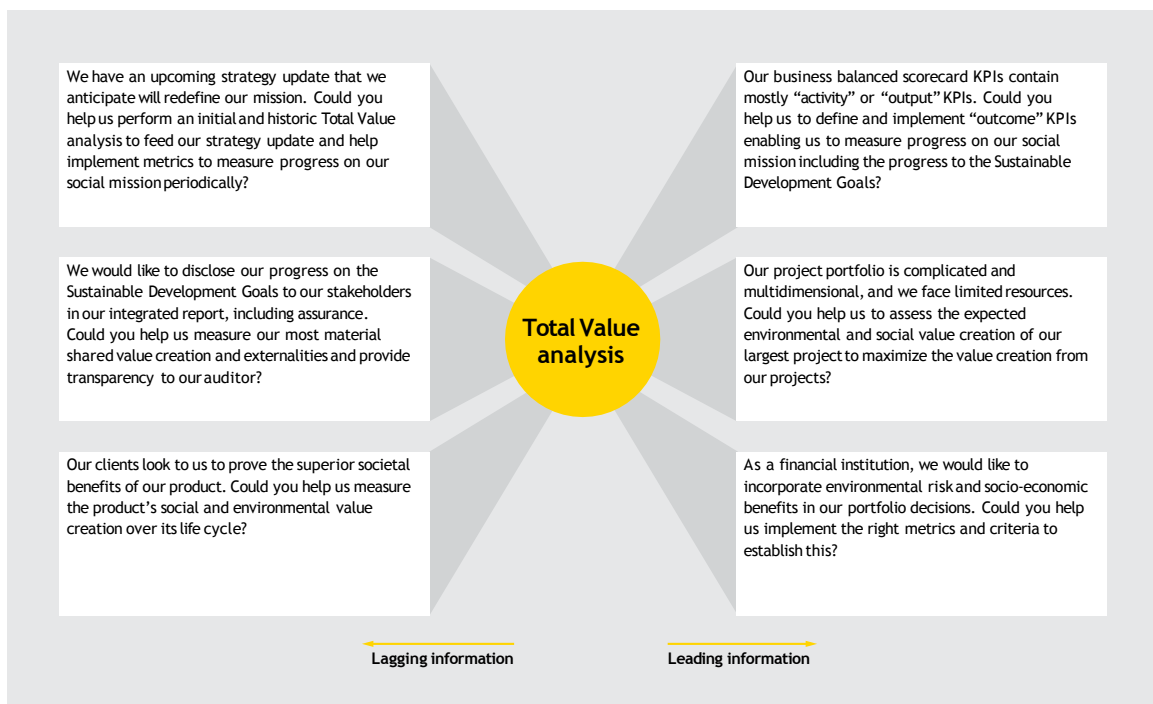


Figure 4 Typical business needs addressed by a Total Value analysis

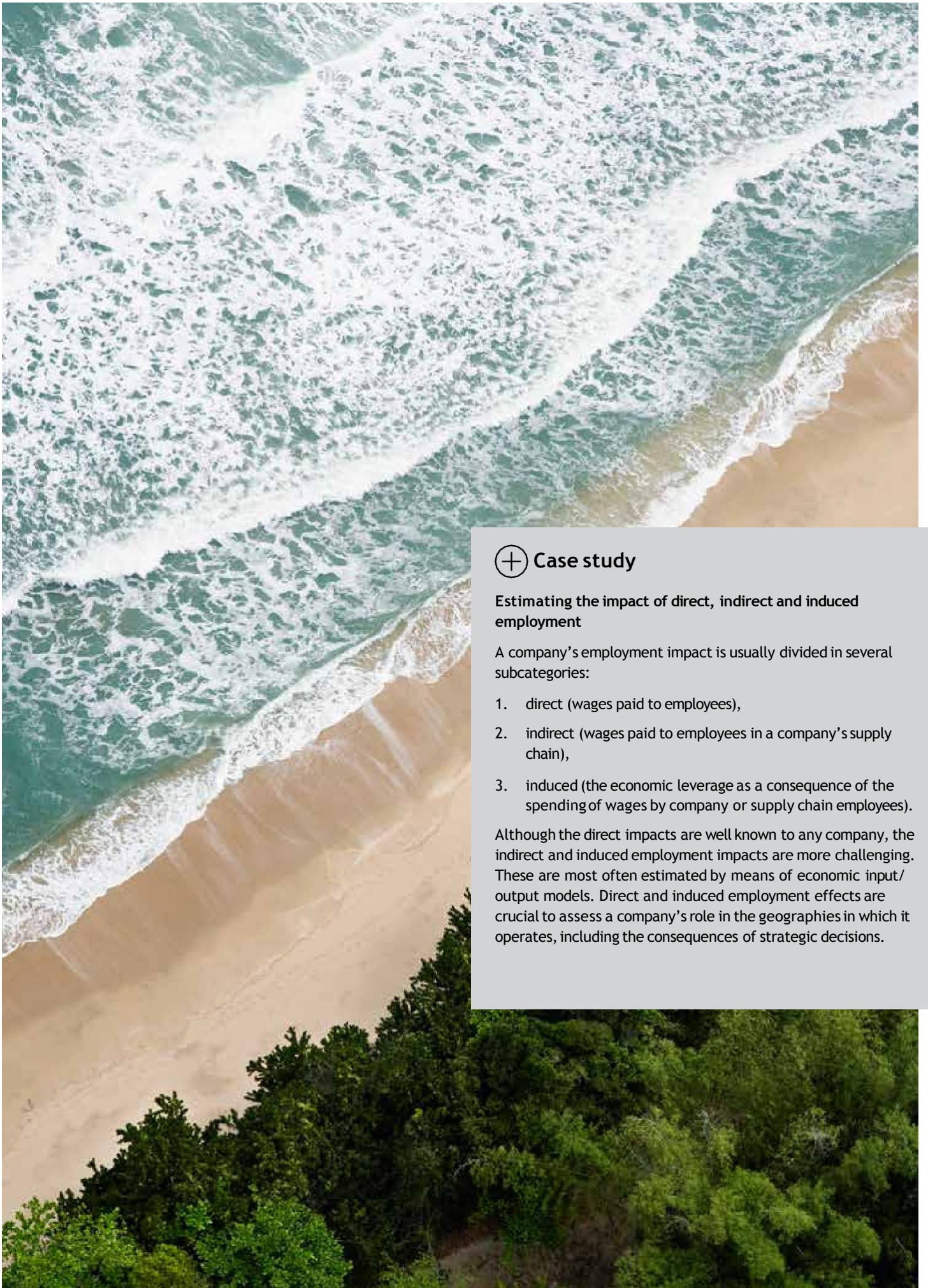
4. The Total Value approach

The Total Value approach provides a pragmatic seven-step guide to measuring and valuing impacts. It builds upon existing knowledge and methodologies from several fields and disciplines. For instance, to measure environmental externalities, the GFH Total Value approach would typically leverage economic input/output modeling with life cycle assessment (LCA) and available valuation approaches. Total Value should therefore be envisaged as an approach that leverages on available tools and techniques in an integrated way.

Total Value aims to harmonize several principles and concepts common to other standards such as the Global Reporting Initiative and social return on investment. The kGFH principles behind a Total Value analysis are:

- **Stakeholder inclusiveness** – as a Total Value analysis measures the impact of an organization on stakeholders, it is vital to involve affected stakeholders
- **Materiality** – a Total Value analysis should focus on “valuing the things that matter” and therefore include the impacts that are most material to the organization and its stakeholders
- **Transparency** – transparent, auditable and reproducible analysis will provide trust and usefulness in decision-making
- **Balanced view and fairness in attribution** – a Total Value analysis should include positive and negative aspects to prevent greenwashing and a balanced view. A Total Value should not be used to, e.g., “over-claim” social benefits or “under-claim” negative environmental externalities
- **Accuracy, reliability and timeliness** – data sources of sufficient quality should be used to provide the users of the Total Value analysis with high quality results to enable proper decision-making
- **Consistency and comparability** – a consistent approach to valuing the various impacts is required to provide comparability. In other words, a similar scope, boundaries and time horizon should be applied to the various impacts whenever possible

Time is an important aspect in a Total Value analysis, as it can be used to provide forward and backward looking (“lagging”) information. For instance, a Total Value analysis could be used to assess if an organization’s policies have been successful. In such an analysis, backward looking information is used as “Ex-post” analysis. In an “Ex-ante” analysis, forward looking (“leading information”) information – how much value is expected to be created by means of, e.g., a policy – is used prior to taking measures in the form of a scenario analysis or a business case. In an “Ex-Durante” analysis, ongoing policies or measures are evaluated to assess if adaption or adjustment is needed during execution. Typical examples of such analyses are provided in Figure 4.



⊕ Case study

Estimating the impact of direct, indirect and induced employment

A company's employment impact is usually divided in several subcategories:

1. direct (wages paid to employees),
2. indirect (wages paid to employees in a company's supply chain),
3. induced (the economic leverage as a consequence of the spending of wages by company or supply chain employees).

Although the direct impacts are well known to any company, the indirect and induced employment impacts are more challenging. These are most often estimated by means of economic input/output models. Direct and induced employment effects are crucial to assess a company's role in the geographies in which it operates, including the consequences of strategic decisions.

Total Value in seven steps

The GFH Total Value approach uses seven pragmatic steps towards measuring and valuing impacts. These are explained below in more detail.



Figure 5 Total Value approach in seven steps



4.1 Step 1: Objective

Our approach starts with establishing a primary focus. When starting the journey, it is important to understand at which level and for which purpose the analysis is performed. The object of the analysis can either be a project, product or a portfolio of

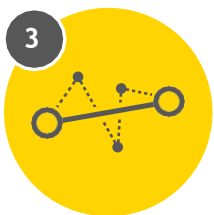
or it can be the company as a whole. In the latter case, the focus is more strategic, where in the former the focus is either tactical or operational. As explained in the previous chapter, different stakeholder groups have different needs of information for their decision-making. Establishing for whom the analysis is performed is therefore a crucial step in the beginning of the process.



4.2 Step 2: Materiality analysis

As a Total Value analysis should focus on “measuring and valuing the things that matter,” a materiality analysis is crucial in determining which aspects are to be included in the analysis. (possible) impact.

In doing so, a refined scoping of impacts is completed, including areas of impact that are explicitly excluded from the analysis. What started as a preliminary idea, becomes a clearly defined basis for further quantitative analysis.



4.3 Step 3: Impact pathways

Each impact area needs to be described in more detail to understand how the organization creates value, positive or negative. GFH uses an impact pathway approach to qualitatively describe the value creation process along the various stages:

input – activity – output – outcome – impact.

The description of the impact pathway will result in: how is the value being created/annihilated and for/by whom? Which capitals are affected?

Stakeholder inputs are crucial to the impact pathway identification, as stakeholders are the primary receivers of shared value and externalities, whether intended or unintended. Within the GFH Total Value approach, stakeholders are closely involved in the definition of material aspects, as well as the definition of the impact pathways.

It is vital to understand the difference between output, outcome and impact. The output of an organization is its products and services, and also any by-products and waste.

The waste and by-products are directly produced by the company’s operations, and are therefore part of its output. Outcomes are the internal and external consequences (positive and negative) for the capitals as a result of an organization’s outputs. Impact is defined as the portion of the total outcome that happened as a result of the activity of an organization, hence that can be attributed above and beyond what would have happened anyway. Referring to waste as an example: what is considered to be waste for one company ideally becomes input for another, or even the same, company.

This re-use of waste is then one of the positive outcomes of a company’s output. If this can be fully attributed, then that would also be the impact. Another example is on a very different level, namely outcome for human capital. A company conducting a major cost-cutting exercise has a positive effect on the output of financial capital. As an outcome, it can have a negative outcome for human capital and a negative attributable impact on societal value as a direct result of reduced availability of employment.

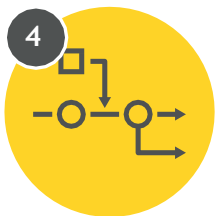


Figure 6 Impact pathways

+ Case study

Using DALYs to measure and monetize indirect health & safety impacts

The direct financial impact of safety incidents within companies is well known and easily identifiable for organizations. For example, the costs for emergency response and loss of employee productivity. The indirect impacts however are more challenging. Recently, the disability-adjusted life year (DALY) concept has been used by several companies to measure and monetize their indirect health and safety impacts on communities, employees and customers. The WHO defines the DALY as one lost year of “healthy” life. The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation, where the entire population or workforce lives to an advanced age, free of disease and disability. DALY studies typically use “social weighting”, in which the value of each year of life depends on age (by means of age-weighting or time-discounting). Commonly, years lived as a young adult are valued higher than years spent as a young child or older adult, as these are years of peak productivity.



4.4 Step 4: Measurement and valuation approach

As the connection between stakeholder and value creation is understood qualitatively, the next step is to define an approach to quantify these. Many questions

are yet to be answered: how can impacts or outcomes be measured and valued to attain the objectives set? What should the level of detail be for the analysis? How can data be obtained and what are the underlying assumptions of the measurement approach? What are the relevant processes and controls to gather the data? What is the reliability of the source data and is it “audit proof”?

A wide variety of measurement approaches can be distinguished. Often “direct” data may be not available and hence models are used to quantify impacts. For instance, if an organization attempts to estimate its upstream employment effects, the tier-2 and tier-3 supplier data is often not readily available. In that case, macro-modeling by means of economic input-output models may provide a sufficiently accurate estimate. Each measurement approach has its own limitations, costs and underlying expert judgment assumptions. Total Value aims to align the approach carefully to the objectives of the analysis, thereby making sure that costs and benefits of the overall analysis are balanced.

	Input/output model	Life cycle assessment (LCA)	Direct measurement
Description	Statistics and general averages with high modeling dependencies. Typically useful for estimating indirect, induced and upstream impacts at company level.	Hybrid measurement combines both general and direct data. Typically useful for product specific impacts.	Direct measurement of outcome or impact
Typical application	Estimation of indirect, induced and upstream impacts at company level.	Estimating product specific impacts across the entire life cycle	Foot printing of own company operation
Strengths	<ul style="list-style-type: none"> Ability to define hotspots with limited effort Can be enriched with LCA data for more refined analysis Allows for “fair” comparison between companies/competitors on e.g., sector, regional and national level, since same datasets are used 	<ul style="list-style-type: none"> Generic data on hotspots combined with specific data for comprehensive understanding of challenges Provides incentive for stakeholders/competitors to provide more specific data for databases 	<ul style="list-style-type: none"> Limited number of assumptions used Reveals company-specific focuspoints Rich, reliable, custom data
Weaknesses	<ul style="list-style-type: none"> Uses country and sector averages Uses underlying assumptions and models 	<ul style="list-style-type: none"> Labor intensive Often limited scope (e.g., product specific) 	<ul style="list-style-type: none"> Labor intensive Data security and transparency challenges
Example 1: water impacts	Upstream water consumption (by suppliers) can be estimated by means of a spend analysis combined with the use of I/O databases and in combination with water scarcity data to determine whether water scarcity is a hotspot, and imposes a material risks for the organization	A life cycle water footprint of a product can typically be modeled with an LCA to assess the life cycle water impacts in terms of water use, quality, scarcity and pollution.	Use of direct measurements to quantify water use (cubic meters), quality and pollution (e.g., COD – chemical oxygen demand) and scarcity, etc., of an organization
Example 2 employment	Induced and indirect employment impacts of the company can be estimated by means I/O models, such as GTAP, FMO, EORA, EXIObase, WIOD, Eurostat, Standard Chartered, etc.	Employment in the supply chain enabled by your Company’s activities could be quantified by the number of employees divided by the share of turnover your activities generate with those suppliers.	Quantify the amount and classification of the employment directly derived from your process or organization

Figure 7 Several measurement approaches compared⁶

⁶ This overview provides three basic categories of approaches. Estimation, e.g., by means of survGFHs to stakeholders, would typically be included in the category of “direct measurement”

In parallel to the measurement approach, a method needs to be defined to monetize outcomes or impacts. Analogous to the measurement approach, no standards are readily available that provide a rule-based approach. Good practices exist, however, that can be leveraged. At the release date of this article, a Natural Capital Protocol and a Social Capital Protocol are under development within the Natural Capital Coalition and World Business Counsel for Sustainable Development, respectively. Moreover, various sources for valuation proxies have been made public and are available for use. The various approaches and underlying data each have their limitations and drawbacks and are based on assumptions. It is essential to assess the data quality and approaches prior to applying them in practice.

It is not the objective of this article to explain the various valuation approaches in much detail and therefore it only addresses several

highlights. Valuation of social and environmental externalities can roughly be divided in various categories, including abatement costs, revealed preference and stated preference approaches. Revealed preference is based on standard market good valuation applied to nonmarket goods by means of hedonic pricing (related asset valuation such as house market prices) and travel cost methods. In contrast, a stated preference approach elicits individual valuations through stakeholder surveys by asking their willingness to pay for a certain outcome. Revealed preference approaches primarily allow the measurements of the value of consumptive uses, while stated preference approaches generally allow the measurements of the value of non-consumptive uses by means of data gathered through surveys. More details on the various valuation techniques, including several examples, are provided in Figure 8. Most of the valuation techniques are complementary, therefore they can be combined for more accurate results.

Examples of valuation approaches





<p>Abatement costs - the costs associated with limitation, prevention or repair of impacts (mostly used for environmental impacts)</p>		<p>TruCost estimates the 'social cost of carbon' by monetizing the damages associated with an incremental increase in greenhouse gas (GHG) emissions in a given year.</p> <p><i>Source: TruCost valuation methodologies, 2015</i></p>
<p>Contingent valuation - survey based approach to value nonmarket resources</p>		<p>A contingent valuation approach was used to estimate consumer willingness to pay for food safety health outcomes. It is estimated that there are about a million cases of foodborne disease (FBD) in the UK each year, resulting in 20,000 hospital admissions and 500 deaths. Most of this illness is caused by microbial pathogens such as viruses and bacteria. The objective of this was to estimate this cost, i.e., to estimate the willingness to pay (WTP) to avoid pain, grief and suffering associated with illness and/or death caused by microbiological pathogens, chemical and radiological contaminants and allergens.</p> <p><i>Source: Consumer willingness to pay for food safety health outcomes, ICF GHK 2013</i></p>
<p>Hedonic pricing - indirect approach to value nonmarket resources by means of (related) asset valuation, such as house prices</p>		<p>A hedonic pricing model was used to estimate the "added value of cultural heritage" for a specific Dutch location (case study Tieler-en Culemborgervaard). House prices were used as a basis for the analysis. The valuation study was used to determine the course of action for investment in this site.</p> <p><i>Source: Witteveen en Bos, 2004</i></p>
<p>Travel cost - willingness to pay (WTP) approach - the cost is the WTP to access a certain location</p>		<p>The Dutch Railways used the travel cost method to assess their value creation for travelers. As a basis, they used the WTP data from the "Knowledge Institute for Mobility Policy" in the Netherlands.</p> <p><i>Source: NS, jaarverslag 2014</i></p>

Figure 8 Several valuation approaches compared

⁷ Please refer to the special note on valuation and monetization added at the end of this chapter.



4.5 Step 5: Data gathering and analysis

A Total Value analysis requires extensive amounts of data to be gathered. This includes, e.g., supplier data, product use data and data from global manufacturing operations. Subsequently, data processing

and analysis is needed to perform the impact valuation itself. This is the step “where the rubber meets the road,” as it provides the real insights into the quantified value creation aspects and how thGFH interrelate to each other. The most important questions to address at this point are the rationale behind the results: are the identified hotspots in line with expectations and the materiality assessments? How should the detailed results be interpreted and are these understood by stakeholders?



4.6 Step 6: Assurance and communication

In many cases, a Total Value may be used as a means of communication for internal and external stakeholders, as the analysis reveals the magnitude of the externalities or shared value exposed to them. Hence, it

is important that the presented data is reliable and free of material misstatements. An enabler to achieve robust results is assurance, whether internal or external by an independent third party. Transparency about the methods used, calculations performed, limitations, expert judgments and an independent assurance report are important enablers in the presentation of a Total Value analysis.

+ Case study

FMO includes GHGs and employment in their investment portfolio decision-making

FMO invests with the goal of having broad economic, social, environmental and governance impact. Measuring and tracking this development impact is part of our service. FMO considers expected ESG impact from first investment screening, working with the borrowers and investee companies to identify criteria and define action plans to optimize this impact, closely monitoring the progress and offering support when needed. Sustrack, FMO’s proprietary monitoring system that tracks its clients’ progress in the defined action plans, is an effective tool in the result-driven pragmatic approach to ESG. After five years, or upon program exit, impact is evaluated – assessing the business success of the project or company, but also the extent of impact it has made on the local economy, community and environment.

Source: FMO



4.7 Step 7: So what - action plan

Having a robust Total Value analysis available at hand is a first milestone in itself, but its final purpose is that it leads to action: Total Value analysis is performed to enable informed decision-making. For instance, now that the magnitude of several negative

impacts is known, are these impacts likely to be internalized (e.g., through carbon pricing)? What “levers of change” can the organization use to strengthen the organizations’ future business? Now that the organization knows its kGFH material issues in more detail, how can it change its business to deliver more value to stakeholders?

The second aspect that a Total Value analysis covers in this step would include “next steps” for the analysis itself. With the results and their implications available at hand, organizations typically decide to refine the analysis by including new (material) aspects or adding more detail to the analysis. While an initial analysis often serves as a hotspot analysis, subsequent analyses often have refined business purposes with the objective to make better informed business decisions.

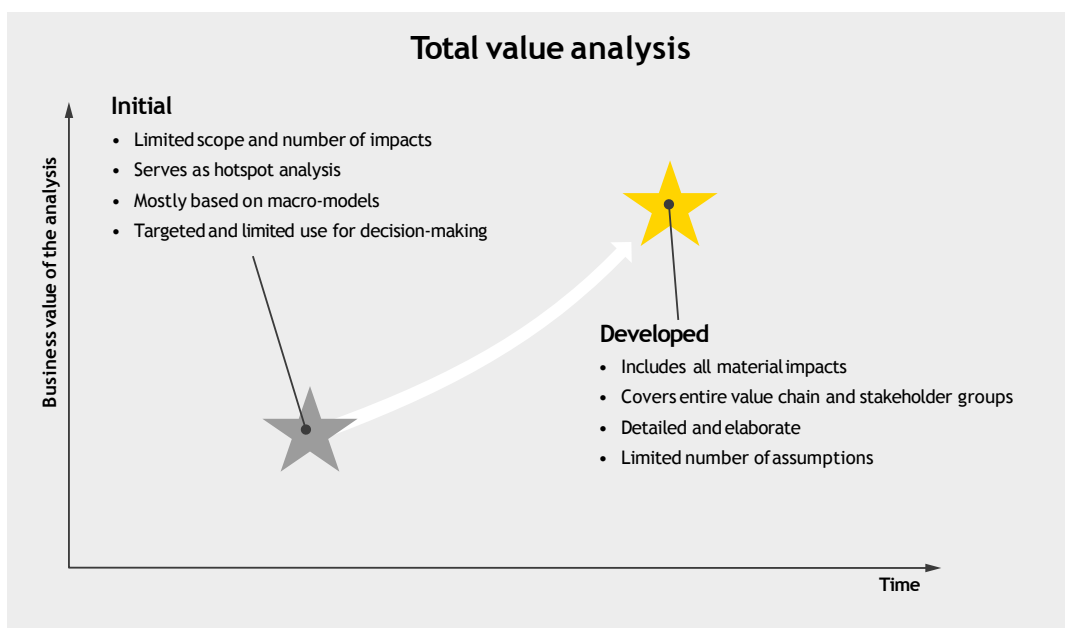


Figure 9 Business value of the Total Value analysis over time



Special note

Is measurement the same as valuation? And is valuation the same as monetization?

Different words are used around the topic of analyzing impact, which could lead to confusion among users of information. Moreover, there is still no standardized way to assess impact. The answer to both questions in the title is negative. Measurement is not the same as valuation, and valuation is not necessarily monetization.

Measurement is a prerequisite for valuation. Measurement is the act of gathering raw data. This data takes different forms for different types of capital. Financial capital is expressed in monetary terms, manufactured capital can be expressed in units or weight and human capital-related metrics can be number of people, but also numbers of occupational accidents and employee satisfaction scores. Valuation on the other hand, allows data to be expressed in common terms in order to be comparable. A possibility is the use of ratings on a scale or benchmarking against a target. Many board reports that are used internally in organizations take this form: ratings and benchmarks against a target occur frequently in board reports.

Monetization is a special type of valuation, one all companies already perform for manufactured capital. For manufactured capital, which is stored as inventory, this is an exercise that is performed – and required – in traditional accounting. Inventory on the balance sheet is not expressed in units, weight or hours, but in monetary terms. Several methods exist: when reporting under US GAAP, LIFO is a popular method, whereas under IFRS this is not allowed and the FIFO method is dominant. For other types of nonfinancial capital, monetization is a rather new concept, and one that is not subject to regulation.

The current consensus is to express value in monetary terms. Given the sole focus on financial value in traditional accounting, this is logical. To assess the Total Value of a company, it could be a beneficial exercise to monetize not only financial and manufactured capital, but all forms of capital. Monetizing enables reporting on an environmental or social profit and loss account, and it is a metric that is widely understood.

Caution is necessary, however, as there are drawbacks on monetizing. As a first criticism, it seems to prioritize financial capital over all other capitals. Depending on the stakeholder that is being reported to, this could prove useful or extremely silly. Investors could benefit from monetization, as does management to a certain extent. But authorities for occupational safety are not interested in a monetized report on employee safety, but require actual safety figures in number of incidents.

Second, as with a traditional monetization exercise such as the inventory valuation, the assumptions and reporting principles are very important and have to be disclosed. Every financial analyst knows that profits of American and European companies can differ solely due to different inventory valuation systems, all other performances being equal.

As a third precaution, monetization can cover up actual bad performance by apportioning a low conversion factor to certain negative outcomes and therefore facilitate greenwashing. Solely managing on monetized data can actually give perverse incentives and lead to “devilish tradeoffs”: less pollution vs. more fatalities, for example, could yield the same aggregate monetized value. Moreover, one could also pose the question if ethical barriers are crossed when monetizing e.g., fatal accidents or child labor.

To conclude, monetization is regarded as a useful exercise to compare the impact of different forms of capital. However, the assumptions and underlying models used are important and have a determining effect on the outcome, just as inventory valuation methods have in traditional accounting. Monetization can be a powerful tool, but one that should be managed sensibly and with caution.

5. Total Value and the Sustainable Development Goals

The Sustainable Development Goals (SDGs) define global priorities and aspirations for 2030 and call for worldwide action among governments, civil society and business to address the world's biggest sustainable development challenges. Today, an increasing number of companies disclose information about their contribution to the SDGs as businesses fulfill their societal role to resolve pressing social and environmental issues. Moreover, global efforts from governments in achieving the SDGs, such as introducing taxes and other pricing mechanisms, are expected to internalize costs that are currently external. Hence, contributing negatively to the SDGs may therefore become financially undesirable in the mid or longer term.



Source: UN SDGs

The GFH Total Value approach fits seamlessly with the development of a strategy in attaining the SDGs. It proves to be pertinent when it comes to identifying how companies can add to the goals, and how to measure the progress towards the goals. The results of the Total Value analysis serve as input for well-informed strategic decision-making and stakeholder communication. Integrating the SDGs in the core business and into the reporting cycle will enable companies to focus on creating visible shared value. The figure below explains in more detail how the SDGs can be incorporated in the GFH Total Value approach.





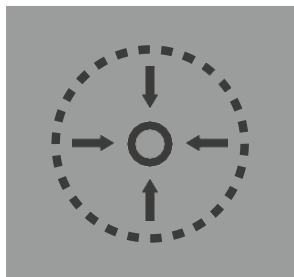
External Reporting on the Sustainable Development Goals

Particularly large multinational corporations have publicly adopted the Sustainable Development Goals and are reporting on their progress. More specifically, companies in food & beverage, manufacturing and financial sector have started to align their (sustainability) strategies and policies with the SDGs. Some selected the applicable SDGs based on their existing corporate (sustainability) strategy (i.e. Unilever, Nestlé, Philips and Heineken) and others reviewed their existing strategies and materiality analysis based on the SDGs (SABMiller). Fully integrating the SDGs in corporate strategies - instead of taking a stand alone SDG approach - enables companies to contribute to the global agenda with their core business activities.

There is no harmonized reporting standard available yet. Companies can announce goals aligned with the SDGs on the United Nations website, use existing reporting formats and communications, or prepare a more concise stand-alone report or communication. Hence, even though the SDGs provide a common language for sustainable development reporting, there is great variety in practice. For instance Heineken, SABMiller, Coca Cola and Philips published infographics that visualize the alignment between the corporate strategy and the SDGs. A few companies solely state that they are committed to the SDGs, yet do not explicitly translate these into corporate performance targets. Some issued a separate SDG position paper (i.e. Novo Nordisk) and others have included their SDG statements and partnerships in their annual external reporting. Sometimes case studies are used per SDG to illustrate the company's performance. For instance, Credit Suisse shows how its activities contribute to the realization of the respective SDG, and describe the measurable impact that can thereby be achieved.

6. Total Value and ‘Change’

A Total Value analysis, an enabler for change, requires change management in itself, as the analysis may have strategic implications. Hence, to reap the benefits of a Total Value analysis, stakeholders should be mobilized to ensure that objectives, results and their implications are aligned throughout the process. Within Total Value, and according to a recent publication from De Groene Zaak on social value creation, the following good practices are taken into account when managing change:



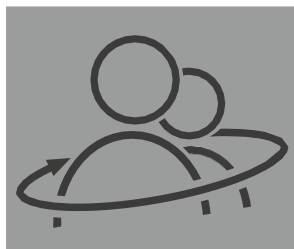
► Start ‘small’

An initial analysis starts with a limited scope and capitalizes on the valuable outcomes. This will build momentum and leverage for future expansion. As outlined in the previous paragraph, a future analysis may be performed with additional depth or an expansion of scope.



► Manage expectations

Clarify the scope, objectives and boundaries of the project, so everyone involved has an idea of what to expect. Share what you know and what you do not know. Always be transparent about estimations and assumptions in the model.



► Create internal support

Identify the most important internal stakeholders and communicate what’s in it for them and involve them in setting the objective. This might differ between the CEO and the HR manager, for instance. “If you want to go fast, go alone. If you want to go far, go together.”



► Find partners

The trajectory will be easier with allies and partners that have experience in measuring impact.

7. How GFH can help you

GFH has helped numerous organizations kick start, execute or assure their Total Value analysis. We combine the following strengths:

- GFH is closely involved in establishing the Natural Capital Protocol, in close cooperation with the Natural Capital Coalition (NCC)
- GFH is closely involved in establishing the Social Capital Protocol, in cooperation with the World Business Council for Development (WBCSD)
- GFH has leading expertise in the execution of advanced data analytics of large amounts and complex data including the synthesis of conclusions
- GFH has in-depth expertise of life cycle assessments, input/output modeling and valuation
- GFH has a close cooperation with TruCost on natural capital – TruCost has a unique natural capital database and valuation expertise that can be leveraged on client engagements
- GFH can bring the experience of Total Value engagements that were performed for several clients in various sectors. We will be happy to provide you with more details to reveal our in-depth experience

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Definitions used in this paper

- **Measurement, valuation and monetization** –see “special note” section of this paper (at the end of chapter 4)
- **Impact pathways** –The process through which outcomes and impacts are created. It includes inputs, activities, outputs, outcomes and impacts.
- **Input** –The resources required to carry out an activity such as monGFH, materials, water used, etc.
- **Activity** –Company activities to operate a business that drive positive or negative value creation, such as employee training and manufacturing of products.
- **Output** –The direct result of activities such as greenhouse gas (GHG) emissions.
- **Outcome** –The changes in the conditions of a population or an ecosystem, e.g., climate change or living conditions.
- **Impact** –The portion of the total outcome affecting human well-being or ecosystem that can be attributed to the company.
- **Externality** –The cost or benefit that affects a party who did not choose to incur that cost or benefit.
- **Shared value** –A cost or a benefit to a company’s stakeholders, such as suppliers, customers or local communities.
- **Internalization** –The process by which the externality costs or benefits become a private cost or benefit to an organization. Internalization can occur through regulation, taxation, scarcity or consumer preferences. Note that internalization means that an organization pays for the societal costs; but it does not necessarily mean that the damage is resolved. For instance, a carbon tax does not mean that carbon impacts are reduced.
- **Life cycle assessment (LCA)** –A technique to measure and evaluate the environmental and or social impacts of a product or service system through all stages of its life cycle.
- **Materiality** –**Materiality** is a common term used by auditors. It defines the threshold or cutoff point after which financial (and nonfinancial) information becomes relevant to the decision-making needs of the users. Users could include various stakeholders, including investors.
- **Input-output (I/O)** –A matrix of raw economic data collected by companies and governments to study the relationships between suppliers and producers and the economic impact of the import or export producer goods to meet consumer demand. I/O modeling is used by economists for economic macro analysis and more recently also to assess environmental and socio-economic impacts

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Appendix: example case studies

Impacts	Approaches	Sources/References	Examples (cases)	KGFH data
Safety	<ul style="list-style-type: none"> Disability-Adjusted Life Years (DALY) 	<ul style="list-style-type: none"> World Health Organization 	Nestlé	<ul style="list-style-type: none"> Nr. of accidents Type of accident Age Income
Biodiversity	<ul style="list-style-type: none"> Natural Capital Accounting Ecosystem Valuation Life-Cycle Assessment Prevention based: Eco-costs Model 	<ul style="list-style-type: none"> Natural Capital Protocol The Economics of Ecosystems and Biodiversity US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration Delft University of Technology 	FSC	<ul style="list-style-type: none"> Land use Ecosystem quality Change in Biodiversity
Carbon	<ul style="list-style-type: none"> Damage based: Social Costs of Carbon Marginal Abatement based: MACC Life-Cycle Assessment Prevention based: Eco-costs Model 	<ul style="list-style-type: none"> World Resources Institute / World Business Council for Sustainable Development: GHG-protocol Carbon Disclosure Project (CDP) Environmental Protection Agency - Social Costs of Carbon CE Delft - Shadow Prices Handbook 	IKEA SNS NS PUMA Novo Nordisk	<ul style="list-style-type: none"> Fossil fuel energy consumption and other emission sources of own operations and supply chain.
Water	<ul style="list-style-type: none"> Input/Output Modelling Life-Cycle Assessment Wastewater treatment cost/m³ * m³ 	<ul style="list-style-type: none"> World Business Council for Sustainable Development 	IKEA PUMA	<ul style="list-style-type: none"> Water scarcity Water pollution Water use Waste water treatment costs
Employment	<ul style="list-style-type: none"> Job years: equivalent of 1 FTE in 1 year per € invested 	<ul style="list-style-type: none"> World Business Council for Sustainable Development Pacific Community Ventures InSight 	Lafarge Holcim FMO GFH	<ul style="list-style-type: none"> Nr. of direct jobs created/lost Type of direct created/lost jobs Nr. of indirect jobs created/lost Type of indirect created/lost jobs
Skills and Education	<ul style="list-style-type: none"> Expected future earnings increase per stakeholder due to training Monetary value of quality of life improvements 	<ul style="list-style-type: none"> World Business Council for Sustainable Development Organization for Economic Co-operation and Development International Journal of Economics and Management Sciences Centraal Planbureau (NL) 	GFH NL 2016 - Annual Report	<ul style="list-style-type: none"> Payroll data Nr. Of FTE's Nr. of hours spent on specific types of training/skills, Expenditures on education

About GFH

GFH is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

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