value
balancing
alliance

Methodology Impact Statement General Paper

Version 0.1

VBA METHODOLOGY V0.1

Impact statement

- General Paper -

CONSULTATION DRAFT

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Note on this document

This is the first version of our Impact Statement methodology for general, cross-cutting aspects. We have piloted this version in 2020 and the learnings will inform the further development in 2021. In addition, we have developed two specific documents for a) environmental indicators and b) for socio-economic indicators.

We are very aware that this is a work in progress. We are still discussing with third-party experts and our members important elements and we will be using a review panel and formal consultation and piloting process to test and improve the standardized approach.

Contacts

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About the Value Balancing Alliance

The Value Balancing Alliance e.V. (VBA) is a non-profit organization with the ambition to change the way how company performance is measured and valued. The alliance's objective is to create a global impact measurement and valuation (IMV) standard for monetizing and disclosing positive and negative impacts of corporate activity and to provide guidance on how these impacts can be integrated into business steering.

VBA was founded in June 2019 and represents several large international companies, including Anglo American, BASF, BMW, Bosch, Deutsche Bank, DPDHL, Kering, LafargeHolcim, Mitsubishi Chemical, Otto, Porsche, Novartis, SAP, Schaeffler, SK. The alliance is supported by the four largest professional services networks – Deloitte, EY, KPMG and PwC – as well as by the OECD and leading academic institutions, such as the University of Oxford and the Impact Weighted Accounts Initiative at Harvard Business School. Furthermore, in partnership with the Capitals Coalition, the alliance receives funding from the EU through its LIFE programme for the Environment and Climate Action[1] and is member of the EU Platform Sustainable Finance.

The global IMV standard is needed not only to foster long-term thinking and comparability of performance but also to consolidate the knowledge already available in this field. Therefore, the VBA is building on the work of leading universities and well-known organizations, such as the World Bank, the OECD, Capitals Coalition, the WBCSD, the Impact Management Project, the GRI, SASB and the IIRC. The envisioned transformation and system change require the cooperative power of all players in the business ecosystem. The alliance will make its work available to the public and welcomes more companies to join along the way.

[1] The EU has provided the VBA with financial support under grant agreement n° LIFE LIFE19 PRE DE 005 to develop a first set of accounting principles and guidelines regarding environmental impacts for business. Over the next three years, the VBA (in partnership with the Capitals Coalition and the World Business Council for Sustainable Development) will develop a standard for measuring and valuing environmental impacts of companies in monetary terms.

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1. INTRODUCTION

Efforts on reducing and managing environmental impacts of corporate activity are receiving increasing attention across the world: that the degradation of the climate and ecosystems is a real risk to the global economy is now a commonplace, as indicated e.g., by the recurring warnings from the World Economic Forum and increasingly from mainstream investors. In Europe, this has gained further prominence with the Green Deal and a comprehensive set of policy measures and regulations that the EU Commission has promised to put in place. The Platform on Sustainable Finance further developing the Taxonomy regulation and the revision of the Non-financial reporting Directive (NFRD) are two key examples for actions to support the transition towards a more sustainable economy. But corporate reporting and disclosures are only at the surface - the underlying challenge is to generate reliable information to better manage environmental and also social impacts. This is related to a wider challenge of making accounting and reporting fit for today's economy, where the impact of environmental and social topics is not fully integrated.

As a group of global companies aiming to integrate social and environmental aspects in decision-making, steering and performance evaluation, the VBA has developed a first version of a methodology for impact valuation. This first version has been piloted by the VBA member companies to check the feasibility and gain practical experience and learnings. The VBA methodology consists of three papers that cover general aspects as well as environmental and socio-economic indicators.

The purpose of this section is three-fold: to outline the fundamental thoughts underlying the approach for developing a standardized methodology; to shed light on how it relates to current developments in various standardization efforts; and to provide a basis for the methodologies to be presented in an upcoming paper series that eventually leads to a conceptual framework.

There are two major perspectives on value: Firstly, there is a stakeholder perspective that focuses on positive and negative impacts of corporate activities on the environment and by extension society – the value to society perspective. And secondly, a financial-driven view of how these impacts (and dependencies) affect the (longer term) financial performance of corporations – the value to business perspective. Both perspectives are inherently connected and have, thus, been widely acknowledged as "double materiality".[2]

This dual perspective is also picked up in the NFRD's definition of materiality.[3] Organizations assessing, for example, material environmental matters, are expected to cover materiality in terms of financial risks and opportunities to the business as well as impact on the environment and society. Yet, as outlined by the Climate Disclosure Standards Board (CDSB) only 8% out of 50 listed European companies applied double materiality in climate-related disclosure due to the absence of indicators linking financial and non-financial information amongst others.[4] This indicates an important opportunity to advance the understanding of calculation methods and to explore new opportunities

[2] On double materiality see for example: Accountancy Europe (2020): Interconnected Standard Setting for Corporate Reporting https://www.accountancyeurope.eu/wp-content/uploads/191220-Future-of-Corporate-Reporting.pdf; CDSB (2020): Falling short? https://www.cdsb.net/sites/default/files/falling_short_report_double_page_spread.pdf; EU Commission (2019): Guidelines on reporting climate-related information https://ec.europa.eu/finance/docs/policy/190618-climate-related-information-reporting-guidelines_en.pdf; Natural Capital Protocol (2016), p.15

[3] Article 19a (1) of Directive 2013/34/EU (introduced by Directive 2014/95/EU, the Non-financial Reporting Directive), EU Commission (2017). Non-Binding Guidelines on Non-Financial Reporting.

[4] CDSB (2020): Falling short? https://www.cdsb.net/sites/default/files/falling_short_report_double_page_spread.pdf

for the integration of both perspectives within the standardization of measuring and reporting on sustainability information within companies.

Considering the value to society perspective, a considerable amount of groundwork for capturing externalities was integrated into this methodology for impact valuation. Differing views persist on materiality assessment approaches or whether a set of agreed indicators should be applied, independent of the previous materiality assessment. Generally, a need was identified for further clarification to overcome the current conflation of measurement and valuation with disclosure, i.e., information needed for internal steering purposes (such as budgeting, evaluation & appraisal, risk management and strategic development) and what needs to be externally reported. They fundamentally differ in their key organizing principles. Disclosure has an external focus and must fulfil the requirement of comparability. Management accounting serves an internal function and information used for this purpose must fulfil the requirement of decision usefulness. The focus of this methodology will rest, firstly, on measuring and valuing in monetary terms corporate impacts on society and the environment – standardising calculation "rules" for information for (internal) decision makers that may then also be reported to an external audience.

The value to business perspective tends to be oriented towards mainstream investor information needs and is linked to efforts of understanding risks to businesses' financial returns arising from environmental and societal impacts and (subsequently) redirecting capital away from those impacts as part of a risk mitigation strategy. At the moment, climate change is the topic receiving most attention: The Task-Force on Climate-related Financial Disclosures (TCFD) recommendations are guided by this perspective and built on climate-related work of the Corporate Reporting Dialogue.[5] The TCFD recommendations aim at improving the availability of information on climate-related operational, strategic or financial impacts on the organization and the organization's resilience to different climate scenarios. Since 2020, the United Nations Principles for Responsible Investment (UNPRI) even mandate TCFD-based reporting for investor signatories.[6] Although limited to climate, the TCFD recommendations provide a further basis for connecting other types of sustainability information with financial metrics.

The VBA aims to embrace both methodological streams – one focusing on impacts, the other on dependencies – as both streams are fundamental for understanding a company's long-term value creation. This general Methodology paper introduces the calculation methodology for monetary impact valuation and is followed by deep-dive topic papers on Socio/economic and environment papers. It should be noted that these papers reflect topics that are already reasonably mature rather than a comprehensive set of impacts. Availability of reliable data is highly relevant for the full integration in decision-making and for the functioning of any disclosure regulation. Looking ahead, the VBA will further explore the integration of monetary impact valuation into decision-making, as well as developing general methodology guidance for determining value to business at later stages.

[5] The Corporate Reporting Dialogue aims at greater coherence and comparability between corporate reporting frameworks is made up of the Carbon Disclosure Project (CDP), the Climate Disclosure Standards Board (CDSB), the Financial Accounting Standards Board (FASB), the GRI, the International Accounting Standards Board (IASB), the International Integrated Reporting Council (IIRC), the International Organization for Standardization (ISO) and the SASB.
[6] UNPRI (2019): TCFD-based reporting to become mandatory for PRI signatories in 2020. https://www.unpri.org/tcfd-based-reporting-to-become-mandatory-for-pri-signatories-in-2020/4116.article

2. GENERAL METHODOLOGY

Background and concepts applicable across all topics

2.1. INTRODUCTION TO THIS SECTION

As outlined in the introduction, the aim of this document is to define a standardized methodology for a broader set of corporate impacts (beyond financials) in support of its broad uptake by businesses globally.

This section

- sets out the guiding objectives and outlines the process of the methodology development,
- explains the development process for this document, and
- summarises key concepts and general methodology choices that need to be made and that should be common for all impacts

Specific details per impact driver are addressed in the deep-dive topic specific papers.

2.2. GUIDING OBJECTIVES

In developing this methodology, we have defined the following four objectives: Decision relevance, standardisation, connectivity, scalability.

The Methodology should help users make better Decisions

What is meant by this: create a methodology that generates data to help decision makers at different levels of an organisation access and use data on impacts on society. Following today's economic reality where consumption is driven by (often complex) global supply chains, include full value chains ("from cradle to grave"). No netting is an important aspect of this: positive and negative impacts are to be considered separately in the analysis to ensure risks are properly identified and understood by decision makers.

Why it matters: many sustainability metrics do not meet the needs of investors or managers – much sustainability reporting has been called "unreliable, inconsistent, and largely covers factors that are immaterial both to the economic performance of the company and to the company's global impact"[7].

It should Standardise approaches as far as possible

What is meant by this: standardise definitions of topics, impact pathways, valuation approaches, data sources and further modelling rules to ensure comparability. Create transparency with respect to limitations, highlight areas that are not sufficiently mature for standardisation and provide guidance on how to approach these – and how to deal with them in a transparent manner.

[7] Kramer (2020): Larry Fink Isn't Going to Read Your Sustainability Report. Harvard Business Review. https://hbr.org/2020/01/larry-fink-isnt-going-to-read-your-sustainability-report#:~:text=The%20problem%20is%2C%20investors%20don't%20read%20sustainability%20reports.&text=This%20means%20that%20companies%20will,recommends%2C%20is%20a%20necessary%20step; Porter, Serafeim & Kramer (2019): Where ESG Fails. https://www.institutionalinvestor.com/article/b1hm5ghqtxj9s7/Where-ESG-Fails

Why it matters: linkages between impact drivers (such as GHG emissions) and topics are often complex, multivariate and interlaced – and almost by definition require the use of models. There are a number of different providers that have developed similar but subtly different models. From a business perspective it is often difficult to determine which is best suited to a particular decision and the risk appetite of those making the decision.

It should allow for Connectivity with existing frameworks

What is meant by this: Add to and seek compatibility with existing and emerging frameworks and where possible refer to existing frameworks/initiatives, rather than create own definitions. E.g. for principles relating to natural capital assessment see Natural Capital Protocol. For measurements of impact drivers, link to OEF/PEF. Crucially, seek to bridge sustainability and financial performance perspectives.

Why it matters: there is a proliferation of initiatives & frameworks – an "alphabet soup" which makes it hard for users to understand what to focus on. Even if the focus of this document is on a standardised methodology (with an emphasis on quantification, data and calculation) rather than disclosure (which many initiatives focus on), it will only add to the confusion if the links to established frameworks are not clear.

It should aim for Scalability and practical feasibility

What is meant by this: include a practitioner's perspective and test for feasibility. Provide guidance on how the methodology can be applied in different contexts and to different levels of rigour commensurate with risks relating to decisions. Provide guidance where there is more than one option, especially on company internal and external data sources. Not to overcomplicate things where not needed, particularly from a user perspective.

Why it matters: significant barriers to companies applying impact valuation are to do with

- a lack of expertise with respect to appropriate sources
- limited data availability and/or poor data quality (incl. lack of assurance on information)
- (actual or perceived) time and resources needed.

The science behind impact pathways may be complicated – but data requirements for a user need not be.

2.3. HOW THE METHODOLOGY IS DEVELOPED

The field of impact measurement and monetary valuation is continually evolving. This document is a draft that needs to be agile and adaptive to internal and external developments. Therefore, it is likely to evolve significantly in the future.

The development is planned in two stages: The first draft will undergo an expert review, with a group of experts from academia, business, policy makers, think tanks, standard setters, etc., before being opened to the public for a wider consultation. In parallel, corporate practitioners pilot the application of the methodology.

Feedback from the consultation phase and piloting will be processed into a second draft, which will undergo a similar process.

2.4. PERFORMING (MONETARY) IMPACT VALUATION

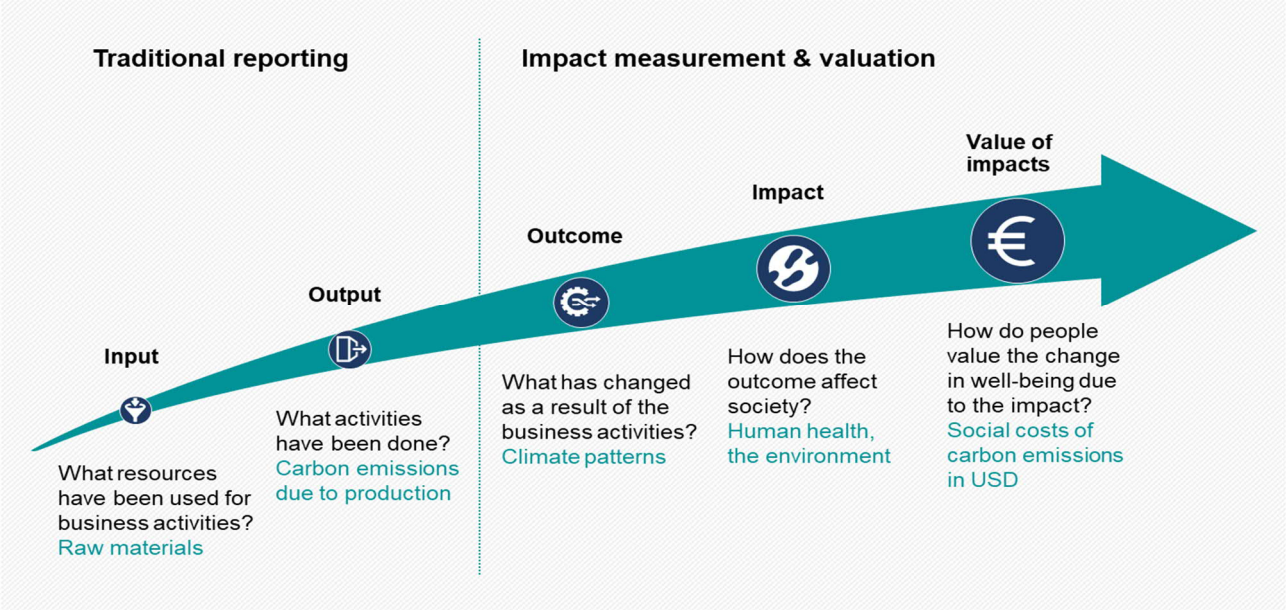

Figure 1: From inputs to (valued impacts)

Why express value to society in monetary terms

Monetary valuation of a company's impacts is valuable to users for the following reasons:

- Compatible with the language of business. Themes that used to be in the realm of subject-matter experts can become leadership topics for strategic and operational consideration.
- Comparable. Different sustainability topics are measured using different types of quantities: water usage is measured in m^3, GHG emissions are measured in tonnes of CO_2 equivalents, and so on. The use of a single monetary measure makes it easy to understand the relative weight of each impact factor and areas on which to focus.
- Simple to understand for contextualisation. Drawing on existing concepts of company value, impact valuation is a simple way of expressing performance that goes beyond established

financial statements. For instance, it becomes possible to express “total impact” instead of considering a plethora of disjoined ESG metrics.

This leads to several additional benefits:

- Helps in decision-making, as results can easily be integrated into existing business decision-making processes. Furthermore, the results can be linked to investment decisions. For many financial and investor audiences, the monetary valuation approach seeks to express the complex impact of different investments in financial terms that they can understand. As such, it can support decision-making. As the financial system has relied exclusively on financial-value considerations for decisions about capital allocation – with increasingly devastating social and environmental consequences – monetary valuation marks an opportunity for organizations to integrate impact value into their existing decision-making processes.
- Helps companies innovate and develop new products based on the societal value that they create, thereby providing insights into impacts beyond financial profits.
- Helps increase transparency towards external stakeholders, especially in relation to organizations’ performance. It can also assist in identifying and quantifying trade-offs that have previously been ignored or difficult to assess, thereby enabling more explicit and inclusive communication with stakeholders.

Possible applications for (monetary) impact valuation

Before starting an assessment of impacts, the goal should be clear.

The primary goals for establishing and using state of the art standardized natural capital management accounting include:

- **Risk assessment:** understanding the company’s impacts, dependencies, and accompanying risks relating to the society and environment; Risk assessments relate to the present and future; for the latter, impact valuation can include scenario analysis (combined with future financial cash-flow analysis)
- **Decision making:** in addition to helping to understand the social and environmental risks (and opportunities), impact valuation can support decision making at various corporate levels (e.g. capital investment, sourcing / procurement, R&D / product development, M&A activities, sales & marketing, …), it can furthermore help with monitoring and evaluating such managements decisions and adapting them if necessary
- **External communication and evaluation:** e.g. corporate reporting, other communication with investors

Depending on the application area, different choices regarding data / data sources may be appropriate. This should be considered and inform methodological choices throughout.

2.5. SCOPING

Classification of topics

Various organisations and initiatives have attempted to categorise topics, impacts and dependencies. In this context, it should be noted that "more sustainable" business decisions ought to look beyond more environmentally friendly decisions, with the following dimensions established in the sustainability field:

- Economic,
- Environmental,
- Human and social.

Some areas – such as impacts associated with GHG emissions and climate change – are well established. Other approaches, particularly those associated with biodiversity but also human and social topics, are much less advanced, and are subject to ongoing debate among a broad range of stakeholders involving standard setters, academia, business and others.[8] At the time of writing, this process is not complete.

Table 1: Scope of indicators for impact statement method, v0.1

Economic	Gross Value Added (GDP contribution): taxes, wages, profits, etc.
Human and social	Occupational health and safety
	Training
Environmental	GHG/climate change
	Air emissions
	Water consumption
	Water pollution
	Land use (biodiversity)
	Waste

There are two general starting points for approaching a further categorization of environmental topics: one is to start from the elements of the environment that are impacted – air, water, land, biodiversity, and the other is to start from impact drivers, i.e. measurable quantities of a natural

[8] See e.g. WEF IBC (2020): *Measuring Stakeholder Capitalism. Toward Common Metrics and Consistent Reporting of Sustainable Value Creation*, as well as CDP, CDSB, GRI, IIRC and SASB (2020), *Statement of Intent to Work Together Towards Comprehensive Corporate Reporting*. The Impact Management Project plays a key role in facilitating this exchange.
Regarding methodologies for monetary valuation of impacts, the Impact Weighted Accounts Initiative at Harvard Business School is working on specific environmental, product-related and employment-related approaches.

resource that are inputs or (non-product) outputs of business activities emissions – e.g. GHG emissions, water consumption, water pollution, waste, etc. Given the user group, this methodology presents topic specific details along impact drivers rather than environmental impact areas. The same is true of socio-economic impact drivers and impacts on humans.

The following rules should be followed by users of this methodology:

- All material topics from the above list should be included
- Further (additional) topics should also be included if they are identified as material. Where monetary valuation is not possible in further topics, qualitative assessments should be established
- "Comply or explain"

Note that this methodology does not seek to define materiality in the traditional sense – in a sustainability reporting context this is being explored and documented by others (e.g. GRI, SASB, NFRD).

Users may wish to include further social, human or economic impact areas. When using impact valuation for decision making, it is strongly recommended that social and human topics are covered at least in qualitative terms.

Organisational focus and Value chain boundaries

The influence of a company goes far beyond the boundaries over which it exercises financial or operational control. For example, decisions regarding materials and suppliers have indirect impacts on a company's supply chain. Similarly, the design of products and services affects how customers use and dispose of products, which leads to indirect impacts on society. Hence, a meaningful assessment of the relationships between companies and nature and companies and society needs to take such upstream and downstream effects into account. Therefore, users of this methodology should apply impact valuation to areas influenced by business activities even if the influence occurs outside the narrow boundaries of mainstream financial reporting.

This methodology aims to be applicable to the full value chain of an organisation. In line with the categories of the Natural Capital Protocol (and in common with OEF), the following value chain levels are defined (see also figure 2):

- Upstream (indirect): **cradle-to-gate**
  - Covers all activities, resources and products that the company has purchased from all suppliers.
- Own operations (direct): **gate-to-gate**
  - Covers all activities within own operations over which the business has direct control.
  - *(to ensure connectivity: use same scope as for a financial statement)*

- Downstream (indirect): **gate-to-grave**
  - Covers all activities linked to direct customers (further processing), product use by end consumers and product end-of-life.

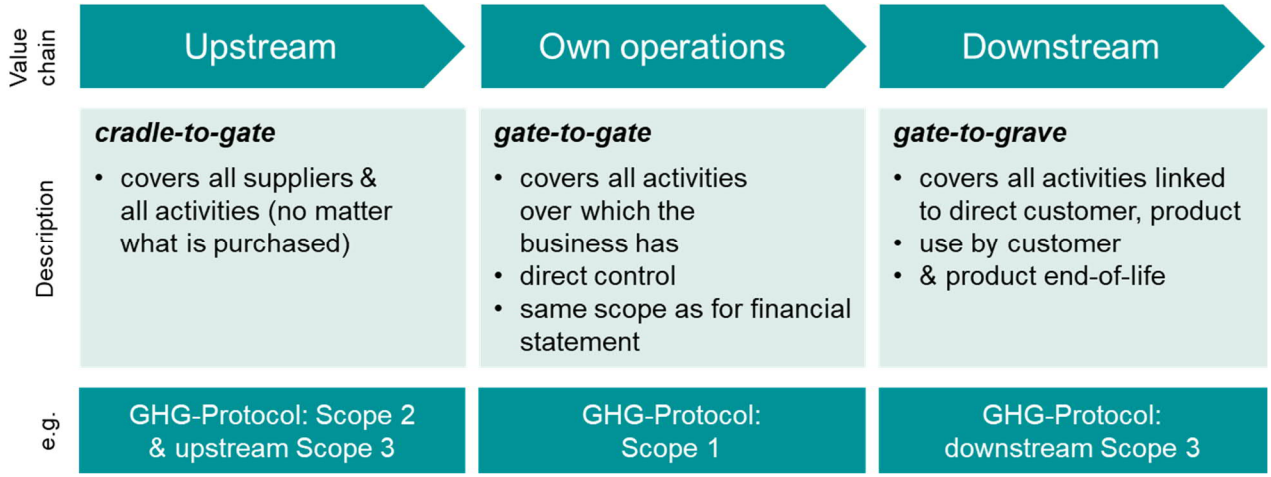

Figure 2: Scope of impact valuation along a simplified value chain

The general valuation techniques presented in this methodology may be applied to individual lines of business, individual countries and legal entities, or even individual product lines, projects or investments. It should be noted that, when making product-related claims to an external audience, there may be specific legally binding rules and provisions depending on the territory (cf. PEF / Green Claims in EU).

Depending on the specific question to be addressed, it may be necessary to adapt the kind of company-specific measurements to which the valuation is applied.

Users of this methodology should:

- Include all relevant value chain levels separately and accompanied with a due consideration of the strengths and weaknesses
- “Comply or explain”

They may

- Use further sub-divisions of value chain levels (e.g. different tiers of suppliers, treat transportation separately, distinguish between downstream processing, use and disposal of products)

2.6. MEASURING & VALUING IMPACTS

To be able to apply and interpret impact valuation, an understanding is needed of how activities and inputs relate to impacts on human well-being. This is reflected in an “impact pathway”.

From a practical perspective, there are three steps to estimating and valuing the scale of corporate impacts:

1. Quantify impact drivers – typically using input-, output- or outcome-based measurements (e.g. environmental emissions or resource use in physical units, such as kilograms, litres or hectares).
2. Understand how these impact cause changes in the natural environment and then on society in terms of human well-being.
3. Value the impacts on human well-being associated with these changes.

Existing approaches generally follow this logic but each approach makes slightly different assumptions. While many details relating to the three steps depend on the specific topic or impact area (e.g. GHG emissions, other air emissions, etc.), consistency requires some common rules to apply. These are addressed in the next three parts. More topic-specific details for each step are addressed in the topic specific papers.

Impact drivers

Definition - environmental: Measurable quantity of a natural resource that is used as an input to production (e.g. volume of sand and gravel used in construction) or a measurable non-product output of business activity (e.g. a kilogram of NOx emissions released into the atmosphere by a manufacturing facility). Environmental impact drivers are linked either to emission to air, land, or water; or the use of land or water resources, and they are expressed in units which can be measured at the corporate level.

Definition - social and human: Measurable social and human capital resource that is used as an input to production (e.g., number of skilled staff needed to run a facility) or a measurable non-product output of a business activity (e.g., the number of health and safety incidents in one year at a production facility); impact drivers are often analogous with the term outputs as used in the field of project evaluation.

The links between drivers and impact on society are topic specific. But there are classes of data sources for measuring impacts that can be used across all topics. The general classification is addressed here; more details are to be found in the topic-specific papers.

Types of data sources

Data sources for measurements can be classified as follows (see also Figure 2 and the Natural Capital Protocol for more detail):

- Primary data

- Secondary data and estimates
  - Bottom-up
    - Extrapolated from primary data
    - Process-based, life-cycle inventories or material flow analyses
  - Top-down
    - Productivity modelling or material flow analyses (e.g. based on industry reports or government statistics)
    - Macroeconomic approaches (e.g. extended input-output models)

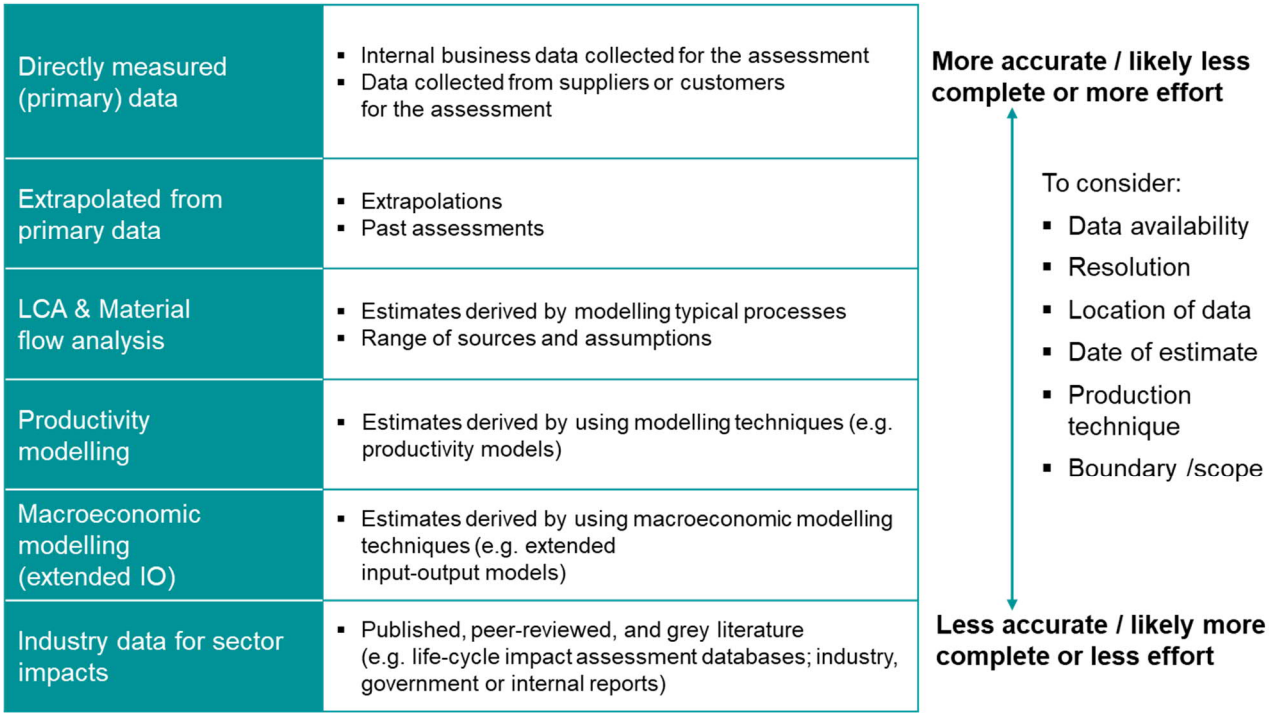

Figure 3: Data sources for measurement

In general, primary data is preferred. However, when primary data is not available, estimates should be used.

Users should be transparent about their data sources. Please see the guidance on this issue provided in the topic specific papers. The suitability of a specific estimation method depends on a number of factors, which should be taken into account when selecting a specific data source for measurements (see Table 2).

In practice, there are likely to be trade-offs between completeness, the accuracy of a data source or modelling technique, and the level of effort or resources required.

Given the range of use cases to be covered by the methodology, it is not possible or practical to define generally applicable definitions or data sources for impact drivers.

Note that in practice it may be useful to refer to definitions from other standards (e.g. GRI, SASB, GHG Protocol, OEF/PEF, SVI, etc.).

Table 2: Assessing the suitability of alternative estimation methods[9]

Factor of suitability	Life Cycle assessment inventories	Environmentally extended Input-Output models (EEIOs)	Productivity modelling
The scope and boundary include material impacts	*Medium to High* The boundary is set by the practitioner of that specific analysis, and some impacts are excluded for practicality reasons. LCA standards and peer review aim to ensure material impacts are covered.	*Medium to High* Within the geographies covered by the model, all impacts can be captured using appropriate model extensions. However, single region models will miss impacts arising outside the model region.	*Variable* The boundary is set by the practitioner, but can be limited by data availability
Coverage and availability of data	*Variable* Depends on what research has been done before.	*High* Typically covers the whole economy.	*Variable* Depends on published information, such as industry reports and government statistics.
Specificity of data to your business	*Medium to High* Data can be highly specific to certain products, materials and processes, which may not necessarily match the activity of interest to you. Data are usually for specific analysis and not for industry averages.	*Low to Medium* Data are often highly aggregated and represent industry averages.	*Medium to High* Bespoke research can be undertaken to match your business activities.
Ability of data to be applied at a specific location	*Low to Medium* Data reflect a specific location, which may or may not match yours.	*Medium to High* Multi-region EEIO models provide country-level data; sub-national estimates are available for some countries. Will also depend on the sectoral resolution (e.g. „cattle ranching“ vs.. „agriculture“).	*Medium to High* Bespoke research can be undertaken to match your location(s)
Data reflect relevant technologies, processes, and environmental regulations	*Variable* Depends on the data of underlying studies.	*Medium* Most EEIO models are updated every 3 to 5 years.	*Medium to High* Bespoke research can be undertaking using the latest available data.

[9] Source: Natural Capital Coalition (2016a, p. 64)

Users of this methodology should:

- Select appropriate data sources for the application (applying the principles of rigor, relevance, etc.), also taking into account the availability and quality of valuation data, risk appetite and accountability of decision makers
- Use estimates for material topics / value chain levels if primary data is not available
- Use consistent sources across different topics when considering the same value chain level (e.g. if using an EIO-model for their supply chain, the same EIO model should be used across different topics)
- When doing scenario analysis or comparing different options, use similar types of data for different options
- "Comply or explain"

They may find it useful to

- Approach the selection of data sources iteratively – initially work with rough estimate for all topics & value chain levels before setting up reporting structures (e.g. less accurate but lower effort sources for less material topics or value chain levels)
- Compare the results of an analysis using different sources or perform sensitivity analysis
- Draw on data and modelling approaches from other assessments (e.g. related to green claims, OEF/PEF), particularly regarding allocation methods for upstream and downstream impact drivers
- Work with external service providers to, for instance, access data (e.g. EIO or LCA databases) or to perform parts of the required modelling. In such cases, it may be worth checking if your organisation already has a licence or working relationship with a specific provider
- Set up internal controls analogous to those used in financial reporting to avoid the risk material misstatement
- Review and potentially adapt data sources after completing an assessment, taking into account the frequency of performing impact valuation and data-refresh rate, effort involved, data quality and availability, etc.

Changes in natural environment or society

Definition: These describe actual changes in the environment or society which result from the impact driver.

Again, they are highly topic specific and therefore addressed in more detail in the topic specific papers.

Users of this methodology should:

- Include all material outcomes
- "Comply or explain"

(Monetary) valuation of impacts

Traditional environmental and social reporting stops at the quantification of impacts discussed in the previous sections (e.g. tonnes of GHG emissions, or reported health and safety incidents). The assignment of a monetary value to these impacts allows for an understanding of the scale of the consequences of more traditional measurement and reporting. It also enables a direct comparison of different impact areas.

Economic theory suggests that when consumers and managers of organisations make consumption and production decisions based on their own preferences, there are external impacts both on themselves and third parties, which are known as "externalities". Externalities can be negative or positive. For example, an organisation that builds a factory to manufacture and sell products may not consider the impact of its wastewater, which can pollute local water sources, thereby leading to degradation of ecosystems and human health implications.[10] Our current accounting approaches and, therefore, market prices and the economy do not capture the value of business activities for wider society – hence, the term "externalities".

To estimate the value of these externalities, economists have defined a set of approaches that assess how the activities of companies, governments and consumers determine the overall well-being of society and how that well-being is distributed.

The objective of this section is to describe the overarching approach underlying impact valuation. These concern most of the impact drivers (e.g. GHG emissions, other air emissions, etc.) and should be equally applicable to further topics including social/human (e.g. health and safety or employment related topics). Setting out the overarching approach is needed because economics theory encompasses a combination of approaches that are heterogeneous in terms of boundaries, objectives and methodologies. They also represent different schools of thought. Therefore, it is necessary to document a set of principles that are homogenously applied in the valuation methodologies for each individual impact category.

Topic-specific methodology details are presented in the topic-specific papers that provide a detailed explanation of the approach taken to valuing the various environmental and social impacts included in this draft. Here, the aim is to set out the overarching rules that guide those detailed methodologies.

These economic approaches generally require a high level of rigour commensurate with both academic tests of proof and a history of using these approaches in context public sector investments with accountability to taxpayers and for supporting market interventions. These approaches have tended to focus on valuation of identified impacts rather than the identification of those impacts. As

[10] Note on link to social impacts: these are more often positive, e.g. when an organisation invests in a training programme to improve its employees' productivity, it does not necessarily explicitly account for the increased human capital of the individuals receiving the training (e.g. their increased earning potential and the benefits of the training for future employers).

above users should ensure that the level of rigour used is no more than required in the intended decisions.

Valuation approaches and the total economic value framework

As discussed above, when companies make decisions, their activities ultimately have an (external) impact on individuals' well-being.

Monetary valuation of impacts on society has a common end goal: to provide the data that helps increase human well-being. Well-being has many components, which are described in the OECD's individual well-being framework (see Figure 4). The impact pathways presented in the topic-specific papers therefore all show a connection to human well-being.

Many environmental and social drivers affect well-being via changes in health status – as air pollution can lead to respiratory diseases, reduced access to clean water can lead to water-borne diseases, and occupational health and safety issues can result in injuries and illnesses. When assessing a range of different topics, a consistent approach is needed to valuing the impact on well-being via changes in quality of life and material conditions.

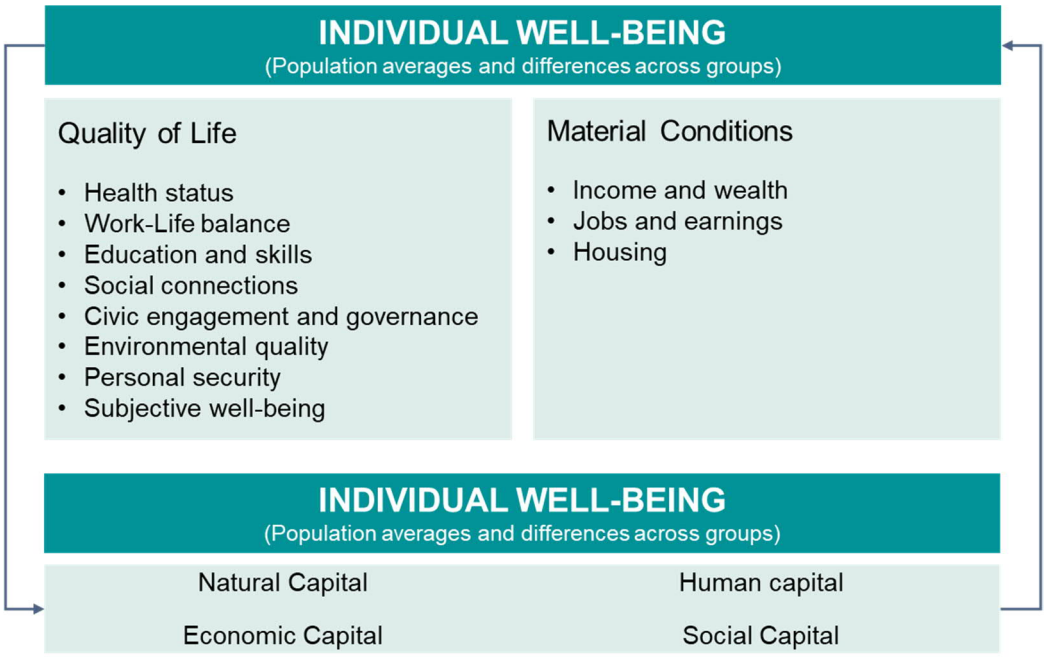

Figure 4: The OECD well-being conceptual framework[11]

Three groups of approaches can be applied to estimate the impact of externalities on society: stated preference, revealed preference and cost-based approaches.

[11] Source: OECD (2011): How's Life? Measuring Well-Being. OECD Publishing, Paris. https://www.oecd-ilibrary.org/economics/measuring-the-impact-of-businesses-on-people-s-well-being-and-sustainability_51837366-en;jsessionid=DJNAAPSDbLEnXPoyqAOYBfvy.ip-10-240-5-111

Stated preference approaches

Stated preference approaches use questionnaires to elicit estimates of the willingness to pay (WTP) for or willingness to accept (WTA) a defined outcome or set of outcomes. WTP is the maximum amount of money a person is willing to pay in order to receive a good or service. WTA is the minimum amount of money they would need to receive for foregoing a good, service or outcome. The two stated preference approaches are contingent valuation and choice experiments.

Contingent valuation (CV) surveys present the respondents with a detailed hypothetical scenario in which they are purchasing or foregoing a good or service. Questions are then posed to elicit each respondent's WTP or WTA for the hypothetical good or service. These questions can be presented in a variety of ways. CV questionnaires usually include questions about demographic and socio-economic characteristics, and the reasons for respondents' decisions.

Choice experiments focus on valuing specific attributes of a non-market good. In a choice experiment, the respondent is asked to make a series of choices between two hypothetical goods or services. Each good or service is described in detail, and certain characteristics of the good or service vary among the options, including the price to be paid or the amount of money offered. This enables a statistical analysis that can value each of the individual characteristics of the good or service.

Revealed preference approaches

Revealed preference methods estimate the value of environmental and social (non-market) goods by observing how people behave when making real-world choices. The premise of this approach is that non-market goods affect the price of market goods in well-functioning markets. When accounting for these non-market goods in observed real-world decisions, the price differentials in these markets can provide estimates of WTP and WTA. There are several revealed preference approaches.

The hedonic pricing method (HPM) typically uses data from housing or labour markets. In housing markets, the hypothesis is that a price differential between otherwise identical houses is driven by the house's associated, non-market positive and negative aspects, such as pollution, noise, crime or education facilities. This price differential reveals information regarding the individual's WTP to include or avoid such non-market positive or negative aspects. Labour-market HPM approaches follow a similar logic. For example, when a job has a higher risk of health and safety incidents, employees are expected to demand higher wages to compensate for the increased risk. To conduct an HPM valuation, a wage or price regression function is developed based on appropriate datasets in order to capture the effect of a non-market good on wages or prices.

The travel-cost approach is predominantly used to estimate the value of recreational and leisure sites (e.g. rivers, parks or forests). The approach looks at factors that affect the individual's cost of visiting a site (e.g. entrance costs, distance and method of travel). Typically, data is collected over an extended time period to account for seasonality effects, and socioeconomic data is collected to control for factors like age, gender, education and family status.

Cost-based approaches

An estimate of the lower boundary of value to society of avoiding negative societal impacts can also be observed through the actions that people or organisations take to avoid outcomes that reduce overall utility. For example, in response to high levels of air pollution, people may purchase air purifiers for their homes. Therefore, it is possible to use expenditures on market goods to estimate the value of non-market negative aspects.

Generalising value from these approaches – transfer functions

Transfer functions can be developed to transfer the values elicited in a study in a defined location and context to other locations and contexts. A transfer function aims to control for all relevant variables.

The total economic value (TEV) framework explains the different categories of value that humans receive from environmental goods and services.

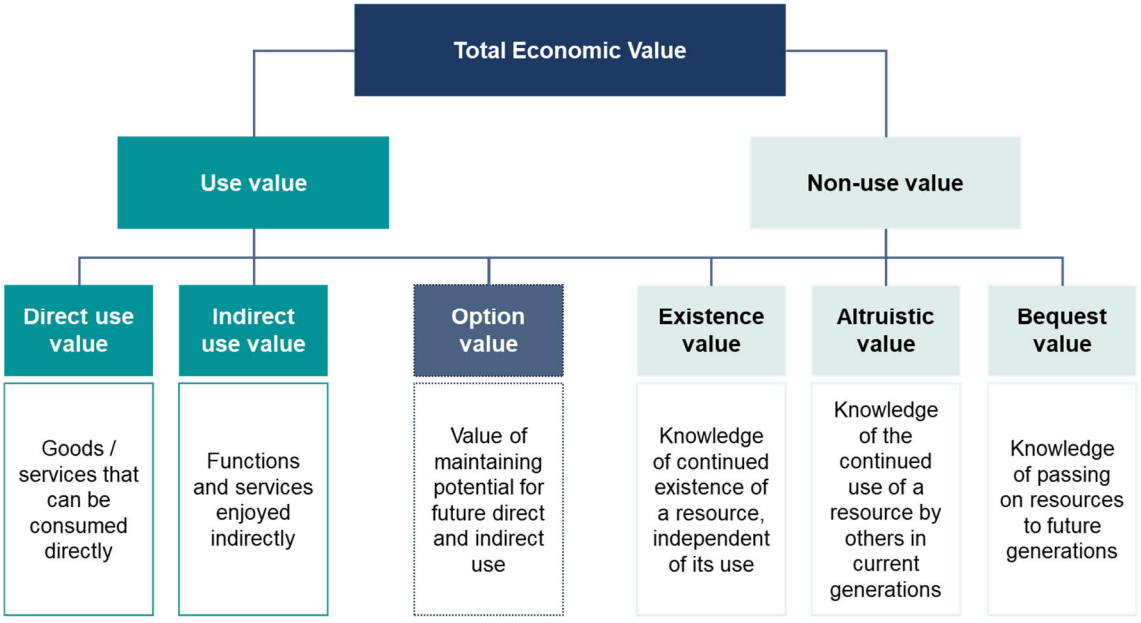

Figure 5: Total economic value framework[12]

To help explain this further, consider the total economic value components of a hypothetical forest.

Direct use value: The value of products taken from the forest (e.g. timber and paper from harvesting the trees, or medicines produced from the plants in the forest).

[12] Source: TEEB – The Economics of Ecosystems & Biodiversity (2010): Mainstreaming the economics of nature – a synthesis of the approach, conclusion and recommendations of TEEB.

Indirect use value: The value of the environment-regulating services provided by the forest (e.g. the reduction in the impact of climate change arising from a forest's absorption of CO_2 from the atmosphere, or the reduced risk of floods and associated damage because the forest reduces soil erosion).

Option value: The value to people who feel happier because they know that they have the option to visit the forest even though they may never do so.

Existence value: The value to people of the knowledge that the forest exists.

Altruistic value: The value that people take from the knowledge that others are able to visit and enjoy the forest.

Bequest value: The value that comes from the knowledge that future generations will be able to visit the forest.

Typically, market prices only represent the direct use value component of this framework. When developing an approach aimed at understanding the value of externalities for society, it is important to capture as much of the total economic value framework as possible.

Applying these approaches in the topic specific methodology

When selecting which approach to use, you should consider the theoretical breadth of TEV captured in the extant research on that topic, the quality of available data and the relative materiality of the impact. Therefore, it is not useful to define a hierarchy of approaches at this general level, but guidance on the appropriate approach for each topic is presented in the topic-specific details.

Valuing impacts on human health

Often, the external impacts of environmental damage and workplace incidents on individuals are negative physical and mental health consequences. Therefore, valuing health impacts is fundamental in most impact areas. However, it should be noted that health outcomes are also a social impact dimension in itself.

Valuing fatalities

The "value" of a life is a contentious topic. However, the value of a statistical life (VSL) has been used by policymakers around the world when deciding whether regulations to reduce the likelihood of fatalities are worth the costs of implementing them. This need to inform policy decisions led to a significant amount of research into an appropriate VSL. To quantify the impact of environmental topics on society therefore requires an application of this research to estimate the value to society of negative externalities that lead to fatalities or increase the likelihood of fatalities.

VSL estimates are typically based on a stated preference or the revealed preference approach. The revealed preference approach is a form of hedonic pricing in which the increased pay required to

compensate employees for accepting jobs with a higher risk of death is used to estimate the value someone places on their own life.

For example, a 2012 OCED meta-analysis[13] of VSL research estimated an OECD average VSL of USD 3 million in 2005 prices. This meta-analysis is based on stated preference approaches, which account for respondents' WTA or WTP to avoid the increased risk of death. Therefore, this measure implicitly includes a measure of the respondents' change in subjective well-being and personal income but not the wider costs to the economy or healthcare systems. Although this meta-analysis is a few years old, its breadth means it is still relevant today and no equivalent studies have been completed since. Therefore, it is recommended that this value be used in current prices (adjusted appropriately; see discussion on adjustments for inflation below).

Another approach to valuing health impacts is to translate the health benefits associated with a drug or an intervention into outcomes, such as productivity in terms of paid and unpaid work. In other words, a reduction in the burden of illness is associated with an avoided loss in terms of paid and unpaid activity. In this approach, labour productivity is defined as output per worker measured as gross value added (GVA). GVAs are common economic performance indicators that allow for the comparison of estimates across competing investments. The sum of the GVAs within an economy is the gross domestic product (GDP). Consequently, the approach allows for assessment of the socioeconomic impact of innovative medicines in GDP categories. Such analyses can be conducted and compared by different regions, industry sectors and fiscal authorities. As a result, the approach covers a wide area and addresses a diverse group of stakeholders including manufacturers, employers, the working and non-working population, governments, and other players.

Valuing illnesses and injuries

Although quantifying all health impacts in one common metric is an attractive approach, it is not always practical because of the ways in which data on incidents and illnesses is reported. Therefore, where possible a normalised metric should be used to measure health impacts. When such a metric is unavailable, the number of cases should be used.

Users of this methodology should consider how data collection, sample size, randomness etc. affect usefulness of the data for their application.

[13] OCED (2012): "Mortality Risk Valuation in Environment, Health and Transport Policies".

Table 3: Valuing impacts on human health

Approach	Preferred	Alternative
Quantification	Normalised on a common metric, such as disability-adjusted life years (DALYs), quality-adjusted life years (QALYs), health-adjusted life years (HALYs) and years of lost life (YOLL).	Number of cases of each illness or injury.
Valuation	The value of a DALY can be derived from the VSL based on the average age and expected age of death in the OCED meta-analysis of values, applying an age-weighted DALY coefficient.[14]	When data is only available on the number of cases of injury or illness, a WTP study to avoid those specific injuries and illnesses could be used. Alternatively, a valuation by case and severity based on payment of compensation following Safe Work Australia (2015)[15] can be used.

Transferring values to different contexts

When developing an approach to valuing an impact, a study on the value in a specific country, region, socioeconomic group or demographic group may be available. When this is the case, it may still be possible to use this data as a starting point, and to adjust the values reported in such studies to make them applicable in other contexts. When adjusting for geographical differences, national-level and, in some cases, subnational-level adjustments are possible. It is important to adjust for physical and environmental conditions in various locations (e.g. population density and meteorological conditions when valuing air pollution, or water scarcity when valuing the impact of corporate water consumption).

Adjusting the values of health impacts and fatalities for various locations is as much an ethical question as a technical question. To examine this further, consider the example of the VSL. The VSL typically is based on studies of the underlying willingness to pay. Therefore, the income of the respondents in the study places an implicit limit on the value. If a study is conducted in a relatively high-income country, it will elicit a higher VSL than if it is conducted in a relatively low-income country.

Theoretically, when adjusting the value to other countries, a control for the income level should be included. The OECD suggests that a transfer factor using PPP-adjusted GNI per capita with an

[14] Prüss-Üstün et al. (2003): Introduction and methods: assessing the environmental burden of disease at national and local levels. See pages 307-308 of this PwC Methodology for more detail: https://www.pwc.co.uk/sustainability-climate-change/assets/pdf/pwc-environmental-valuation-methodologies.pdf
[15] Safe Work Australia (2015): The cost of work-related injury and illness for Australian employers, workers, and the community, 2012–13. https://www.safeworkaustralia.gov.au/system/files/documents/1702/cost-of-work-related-injury-and-disease-2012-13.docx.pdf

income elasticity of health between 0.4 and 0.8 should be applied. One could also argue that an adjustment should be made to account for differing appetites in different countries and contexts. If making this adjustment, it should be based on a reliable dataset to control for this factor[16].

The ethical concern is whether it is appropriate to adjust the value of life or health by country, as such processes typically assign a lower value to the lives of those in lower-income countries than to the lives of those in higher-income countries. One approach to addressing this is the following:

Situation 1: When aggregating studies from different countries in order to build a health impact model, these values should be comparable and, therefore, expressed in "international" dollars (as suggested by the OECD).

Situation 2: When transferring a health impact value to different countries:

1. if the analysis is meant to cover various countries, values should still be comparable and, therefore, not adjusted.
2. if the analysis is meant to cover only one country, it should be adjusted in order to reflect local constraints.

Situation 3: When presenting results locally or internationally, create two sets of coefficients:

1. Global consolidation of results: use an international set of values where international dollars are used as the basis for the values.
2. Presenting in-country impacts to local stakeholders, use a local set with adjustments for local income.

Accounting for inflation and foreign exchange rates in valuations

The underlying studies used to build the valuation approaches will be in a variety of currencies and price years.

Users of this methodology should convert all underlying studies to an appropriate currency and base price year. This should match the timeframe of their analysis.

When applying exchange rates and inflation to external studies, users should draw on consistent sources.

Guidance / recommendations:

- To avoid currency conversion artefacts, it may be appropriate to use a five-year rolling average exchange rate from USD to the target reporting currency. A five-year rolling average is the average of the five years prior to the reporting year. For instance, the 2019 rolling average would be the average between 2015 and 2019 and the 2020 rolling average would be the average between 2016 and 2020.
- For datasets like PPP, adjusted GNI per capita, GDP deflators and exchange rates, the World Bank publishes regular data. It is recommended that this should be used as the

[16] The authors of this document have not identified any reliable dataset for this, making this more of a hypothetical choice.

primary source. When updating these datasets, a five-year rolling average may smooth out any significant year-on-year shifts that could lead to instability in the final valuation coefficients. It is important to be able to complete a pro-forma analysis in order to understand how an organisation's impacts have varied based on actual changes in the business while excluding the variation driven by exogenous changes.

Accounting for impacts that occur in the future

Economic theory suggests that money and utility available now are valued more than money and utility available in the future. A social discount rate is used to convert future damage costs to their present value.

A social discount rate (SDR) (known as the Ramsey rule) is defined as follows:

$$SDR = prtp + n*g,$$

where:

prtp = pure rate of time preference,

n= elasticity of marginal utility from consumption and

g = growth rate of per capita consumption.

The pure rate of time preference (PRTP) represents the desire to have income or well-being today rather than in the future. The elasticity of marginal utility from consumption represents the decrease in the utility received from additional consumption as it increases. Valuing the well-being of future generations as equal to our own can be considered ethically defensible and aligned with notions of inter-generational equity commonly found in the climate-change literature.

When considering the timeframe of the impacts, the discount rate implicitly sets a limit on how far into the future to capture impacts. For instance, at 3.5% discount rate, impacts more than 50 years into the future are valued at close to zero.

Users of this methodology should apply a consistent social discount rate and PRTP for different topics.

Guidance:

- A social discount rate of 3.5% with a PRTP = 0 is recommended[17]
- Sensitivity analysis may be useful to test assumptions

[17] Based on values chosen by governments like HM Treasury (2018): The Green Book – Central Government Guidance on Appraisal and Evaluation. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf

2.7. INTERPRETATION & PRESENTATION OF RESULTS

Use cases

As explained above, the application area of impact valuation should be clear before starting an assessment. This should be revisited when interpreting results.

Often there is a trade-off between accuracy and effort – recommend reviewing whether any methodological choices need to be adapted. Appropriate level of rigor depends on use case

Communicating results

In addition to the need to standardise calculation methodologies, one observation regarding current sustainability reporting practices is that companies present results in different ways, which makes comparisons difficult. Therefore, some standardisation and guidance regarding the presentation of results is desirable. Whilst it is outside the scope of the methodology to define a reporting standard, some rules can be defined.

Users of this methodology should:

- Present value-chain levels separately, acknowledging different levels of control and ability to influence.
- Provide details on their materiality assessment
- Provide details on both internal and external data sources, as well as an assessment of their quality.
- Explain key modelling assumptions and limitations.
- In order to avoid the risk of greenwashing, there should be no netting of results, especially when considering only a limited number of topics.
- Clearly state where they deviate from the recommendations of this methodology

They may find it useful to:

- Include notes similar to those included in financial statements. It may help stakeholders interpret data.

Guidelines regarding the presentation of results may be further developed in the future.

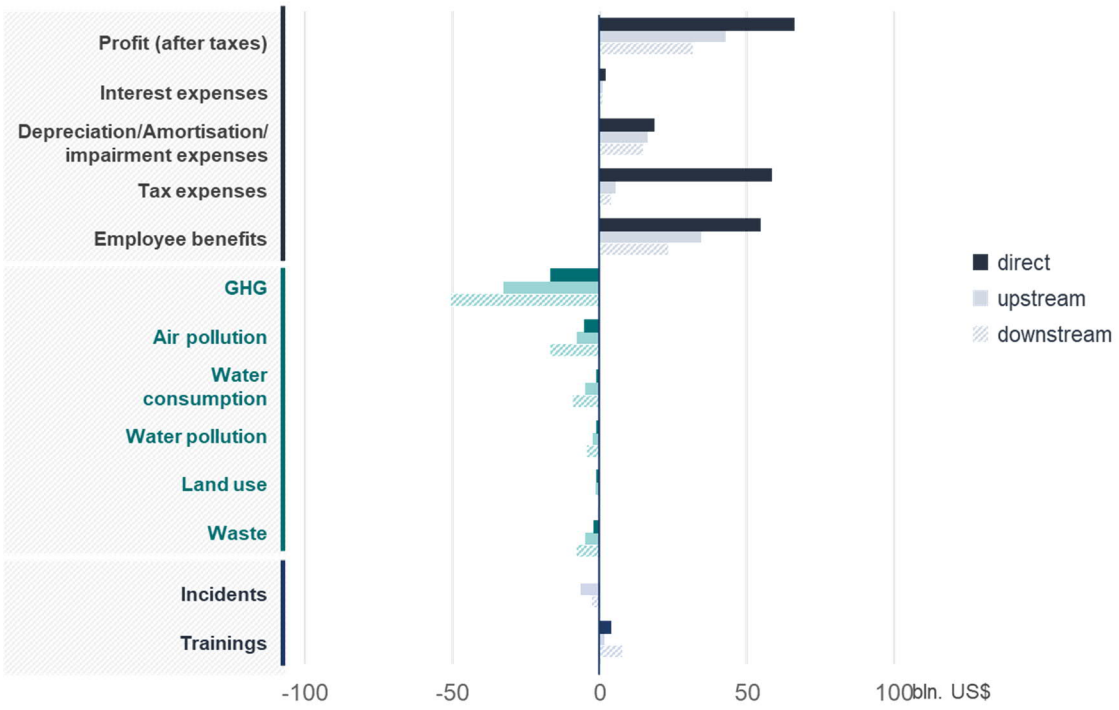

Figure 6: Exemplary results of an impact measurement

2.8. OUTLOOK

In the long run, a holistic approach covering all aspects of sustainability is needed. While not all impacts and dependencies are covered in this draft, the valuation gap requires us to keep broader application in mind.

Besides refining the methodology for the impact drivers included here, there are two further dimensions of methodological development that may be addressed in the next version:

(i) extend the list of covered topics and

(ii) explore how value to society translates to value to business.

3. APPENDICES

3.1. LIST OF FIGURES AND TABLES

Tables:

Figures:

3.2. LIST OF ACRONYMS

A4S	Accounting for Sustainability
CC	Capitals Coalition
CDSB	Climate Disclosure Standard Board
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CH4	Methane
CV	Contingent valuation
DALYs	Disability-adjusted life years
DPSIR	Drivers, Pressures, States, Impacts, responses
ESG	Environmental, social and governance
GHG	Greenhouse gas
GRI	Global Reporting Initiative
GVA	Gross value added
GWP	Global warming potential
HALYs	Health-adjusted life years
HFCs	Hydrofluorocarbons
HPM	Hedonic pricing method
IASB	International Accounting Standards Board
IIRC	International Integrated Reporting Framework (<IR>)
IMP	Impact-management project
IO	Input output
ISO	International Organization for Standardization
IVR	Impact Valuation Roundtable
IWAI	Impact-weighted Accounts Initiative
NCP	Natural Capital Protocol
NF_3	Nitrogen trifluoride
NFRD	Non-financial Reporting Directive
N_2O	Nitrous oxide/laughing gas
OECD	Organisation for Economic Co-operation and Development
OEF	Organisation Environmental Footprint

PCFs	Perfluorocarbons
PEF	Product Environmental Footprint
QALYs	Quality-adjusted life years
SASB	Sustainability Accounting Standards Board
SCC	Social Cost of Carbon
SDR	Social discount rate
SF_6	Sulfur hexafluoride
TCFD	Task Force on Climate-related Financial Disclosures
TEV	Total Economic Value
UNPRI	United Nations Principles for Responsible Investments
VBA	Value Balancing Alliance
VSL	Value of a statistical life
WBCSD	World Business Council for Sustainable Development
WTA	Willingness to accept
WTP	Willingness to pay
YLL	Years of lost life

3.3. GLOSSARY

Term	Definition	Source
Activity	Actions taken or work performed through which inputs, such as funds, technical assistance and other types of resources, are mobilized to produce specific outputs.	DAC/OECD (2010)
Altruistic value	The value an individual places on knowing that a good exists, so that others alive today are able to enjoy it.	ISO 14008 (2018)
Amortisation	Accounting definition for intangible assets according to IAS 38.8. Amortisation is the systematic allocation of the depreciable amount of an intangible asset over its useful life.	IFRS Foundation (2010)
Asset	Definition according to the IFRS Conceptual Framework (rev. 2018), Par. 4.3: An asset is a present economic resource controlled by the entity as a result of past events (an economic resource is a right that has the potential to produce economic benefits).	IFRS Foundation (2010)
Bequest value	The value an individual places on knowing that a good will continue to exist so that individuals born in the future will be able to enjoy it.	ISO 14008 (2019)
Capital	Stocks of value on which all organizations depend for their success that serve as inputs to their business models, and which are increased, decreased or transformed through the organization's business activities and outputs. The capitals are categorized in this Framework as financial, manufactured, intellectual, human, social and relationship, and natural.	IIRC (2013)
Carbon Cycle	The term used to describe the flow of carbon (in various forms, e.g., as carbon dioxide (CO2)) through the atmosphere, ocean, terrestrial and marine biosphere and lithosphere. In this report, the reference unit for the global carbon cycle is GtCO2 or GtC (Gigatonne of carbon = 1 GtC = 1015 grams of carbon. This corresponds to 3.667 GtCO2).	IPCC (2014)
CO_2e	The universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.	GHG Protocol (2015)

Contingent valuation	In contingent valuation, the good to be valued is presented in its entirety as a bundle of its attributes. The respondents are asked for their WTP to avoid a deterioration in quality or quantity of the good, or to ensure an improvement. Alternatively, respondents are asked for their WTA to tolerate a deterioration or to forgo an improvement.	ISO 14008 (2019)
Cradle-to-gate	See “upstream”.	ISO 14044 (2006)
Cradle-to-gate	life cycle stages from the extraction or acquisition of raw materials to the point at which the product leaves the organization undertaking the assessment	PAS (2011)
Cradle-to-gate inventory	A partial life cycle of an intermediate product, from material acquisition through to when the product leaves the reporting company’s gate (e.g., immediately following the product’s production).	GHG Protocol (2011)
Cradle-to-grave	LCA addresses the environmental aspects and potential environmental impacts (e.g. use of resources and environmental consequences of releases) throughout a product’s life cycle from raw-material acquisition through production, use, end-of-life treatment, recycling and final disposal (i.e. cradle-to-grave).	ISO 14044 (2006)
cradle-to-grave	life cycle stages from the extraction or acquisition of raw materials to recycling and disposal of waste	PAS (2011)
cradle-to-grave inventory	Removals and emissions of a studied product from material acquisition through to end-of-life.	GHG Protocol (2011)
Depreciation	Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.	IFRS Foundation (2010) - IAS 16.6
Direct GHG emissions	Emissions from sources that are owned or controlled by the reporting company.	GHG Protocol (2004)
Direct use value	Value arising from the use of a good, which might or might not have a market price.	ISO 14008 (2019)
Disability-adjusted life years	A burden-of-disease measure based on the number of years lost due to premature death, disease or disability. The loss of one healthy year of life due to death or illness is equal to one DALY. DALYs were developed by the World Bank and World Health Organization in 1993 to quantify disease and disability burdens globally, and to determine intervention priorities. Instead of a scale of health (like QALYs), DALYs are related to a degree of disability for a specific disease or disability, and range from none (0) to death (1).	Gold et al. (2002)
Discounting	Process of calculating the present value of future monetary values.	ISO 14008 (2019)

Discount rate	Definition that must be used for calculating the amount of provisions: pre-tax rate (or rates) that reflect(s) current market assessments of the time value of money and the risks specific to the liability. The discount rate(s) shall not reflect risks for which future cash-flow estimates have been adjusted.	IFRS Foundation (2010) – IAS 37.47
Downstream	GHG emissions or removals associated with processes that occur in the life cycle of a product subsequent to the processes owned or controlled by the reporting company	GHG Protocol (2011)
Driver (direct and indirect)	Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem.	TEEB (2010)
Effects	Intended or unintended change directly or indirectly due to an intervention.	DAC/OECD (2010)
Environmentally extended input-output (EEIO) models	Traditional input-output (IO) tables summarize the exchanges between major sectors of an economy (Miller and Blair 2009). For example, output from the footwear manufacturing sector results in economic activity in associated sectors from cattle ranching to accounting services. Environmentally extended input-output models integrate information on the environmental impacts of each sector within IO tables (Kitzes 2013; Leontief 1970; Tukker et al. 2006).	Natural Capital Coalition (2016)
Existence value	The value an individual places on knowing that a good will continue to exist regardless of the individual's use of that good now or in the future. This includes biodiversity, and many cultural, aesthetic and spiritual aspects of human life (e.g. the deep seas, which might never be experienced by humans).	ISO 14008 (2019)
Externality	Consequence of an activity that affects interested parties other than the organisation undertaking the activity, for which the organization is neither compensated nor penalized through markets or regulatory mechanisms.	ISO 14007 (2019)
Gate-to-gate	Product's life cycle starting with production.	ISO 14007 (2019)
Gate-to-grave	Product's life cycle including use, end-of-life treatment, recycling and final disposal.	ISO 14007 (2019)
Greenhouse gases (GHG)	For the purposes of this standard, GHGs are the seven gases covered by the UNFCCC: carbon dioxide (CO2); methane (CH4); nitrous oxide (N2O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); sulphur hexafluoride (SF6), and nitrogen triflouride (NF3).	GHG Protocol (2015)
Global Warming Potential (GWP)	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO2.	GHG Protocol (2004)
Gross value added (GVA)	Output (at basic prices) minus intermediate consumption (at purchaser prices). This is the balancing item of the national accounts' production account. GVA can be broken down by industry and institutional sector. The sum of GVA across all industries or sectors plus taxes on products minus subsidies on products gives gross domestic product. By subtracting the	Eurostat (2020)

	consumption of fixed capital from GVA, the corresponding net value added (NVA) is obtained. The concepts of "GVA at market prices", "GVA at producer prices" and "GVA at basic prices" are not used in ESA 2010.	
Health-adjusted life years	A summary of population health measurements that combines death and morbidity impacts.	Gold et al. (2002)
Hedonic pricing method (HPM)	Uses statistical methods to isolate the implicit "price" of each of these characteristics. Hedonic pricing can be applied to the labour market, as wages also reflect how occupational risks to human health (morbidity and mortality) affect the monetary value of labour. Hedonic pricing can be used to explain variations in wages across occupations after taking the different risks into account and, thereby, to estimate the risk premium paid. This information can be used to estimate the monetary value of changes in mortality risks (also referred to as the value of a statistical life).	ISO 14008 (2019)
Human capital	The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.	Social & Human Capital Coalition (2019)
Human well-being	Concept prominently used in the Millennium Ecosystem Assessment. It describes elements largely agreed to constitute a “good life”, including basic material goods, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience.	TEEB (2010)
Impact	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.	DAC/OECD (2010)
Impact management	No clear, authoritative definition currently exists.	IMP (2020)
Impact measurement	Measurement and management of the process of creating social and environmental impacts in order to maximize and optimize them.	IMP (2020)
Impact pathway	Describes how, as a result of a specific business activity, a particular impact driver results in changes in natural capital and how these changes affect different stakeholders.	Natural Capital Coalition (2016a)
Impact value chain	A logic model used for impact investing first described in 2004 in the Double Bottom Line Project Report: Assessing Social Impact in Double Bottom Line Ventures. Also referred to in the 2014 report: Measuring Impact: Subject paper of the Impact Measurement Working Group of the G8 Social Investment Impact Taskforce.	IMP (2020)

Indirect use value	The benefits that humans derive from ecosystems' services without direct intervention (e.g. the erosion or flood-risk protection of a forest).	ISO 14008 (2019)
Input	The financial, human and material resources used for a development intervention.	DAC/OECD (2010)
Internalisation	Act of taking externalities into account in decision-making.	ISO 14007 (2019)
Life-cycle assessment	Also known as life-cycle analysis. A technique used to assess the environmental impacts of a product or service through all stages of its life cycle, from material extraction to end-of-life (disposal, recycling or reuse). The International Organization for Standardization (ISO) has standardized the LCA approach under ISO 14040 (UNEP 2015). Several life-cycle impact assessment (LCIA) databases provide a useful library of published estimates for different products and processes.	Natural Capital Coalition (2016a)
Logical framework	Management tool used to improve the design of interventions, most often at the project level. It involves identifying strategic elements (inputs, outputs, outcomes, impacts) and their causal relationships, indicators, and the assumptions or risks that may influence success and failure. It thus facilitates the planning, execution and evaluation of a development intervention.	DAC/OECD (2010)
Materiality	A matter is material if it can substantively affect the organization's ability to create value in the short, medium or long term. --- In the Protocol, an impact or dependency on natural capital is material if consideration of its value, as part of the set of information used for decision-making, has the potential to alter that decision (adapted from OECD 2015 and IIRC 2013). --- In the conceptual framework for IFRS (rev. 2018), Par. 2.11, the definition is as follows: Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial reports (see paragraph 1.5) make on the basis of those reports, which provide financial information about a specific reporting entity. In other words, materiality is an entity-specific aspect of relevance based on the nature or magnitude (or both) of the items to which the information relates in the context of an individual entity's financial report. Consequently, the Board cannot specify a uniform quantitative threshold for materiality or predetermine what could be material in a particular situation.	IIRC (2013) --- Natural Capital Coalition (2016a) --- IFRS Foundation (2010)

Measurement	In the Protocol, the process of determining the amounts, extent and condition of natural capital and associated ecosystem and/or abiotic services in physical terms.	Natural Capital Coalition (2016a)
Monetary valuation	Procedure for determining monetary value.	ISO 14008 (2019)
Monetary value	Amount of money representing willingness to pay (WTP) or willingness to accept compensation (WTA).	ISO 14008 (2019)
Natural capital	An economic metaphor for the limited stocks of physical and biological resources found on earth, and for the limited capacity of ecosystems to provide ecosystem services.	TEEB (2010)
Outcome	The likely or achieved short-term and medium-term effects of an intervention's outputs.	DAC/OECD (2010)
Output	The products, capital goods and services that result from a development intervention. May also include changes resulting from the intervention that are relevant for the achievement of outcomes.	DAC/OECD (2010)
Own operation	Gate-to-gate: environmental aspects and potential environmental impacts throughout a product's life cycle starting with production (LCA addresses the environmental aspects and potential environmental impacts throughout a product's life cycle from raw-material acquisition through production, use, end-of-life treatment, recycling and final disposal (i.e. cradle-to-grave; e.g. use of resources and environmental consequences of releases)).	ISO 14044 (2006)
Quality-adjusted life years	A health measure that incorporates quality of life and life expectancy based on average samples of health ratings from groups of people and/or professionals. One year in full or perfect health is equal to one QALY. Health-related quality of life (HRQL) is plotted on a scale of 0 (death) to 1 (full health). The QALY was developed in the late 1960s primarily for cost-effective analyses (CEA) to determine the effectiveness of different medical treatments, technologies and interventions.	Gold et al. (2002)
Revealed preference	Monetary value placed by an individual on a market good from which the individual`s valuation of a non-market good is inferred.	ISO 14008 (2019)

Social capital	The networks of relationships among people who live and work in a particular society, enabling that society to effectively function.	Social & Human Capital Coalition (2019)
Social cost of carbon	A measure of the economic harm from emitting one additional ton of carbon into the atmosphere (see also method paper on GHG).	RFF (2019b)
Stated preference	Monetary value expressed by an individual through survey-based responses for a good in a constructed or hypothetical market.	ISO 14008 (2019)
Total economic value (TEV)	A framework for considering various constituents of value, including direct use value, indirect use value, option value, quasi-option value and existence value.	TEEB (2010)
Upstream	Cradle-to-gate: environmental aspects and potential environmental impacts throughout a product's life cycle from raw material acquisition (LCA addresses the environmental aspects and potential environmental impacts (e.g. use of resources and environmental consequences of releases) throughout a product's life cycle from raw-material acquisition through production, use, end-of-life treatment, recycling and final disposal (i.e. cradle-to-grave)).	ISO 14044 (2006)
upstream	GHG emissions associated with processes that occur in the life cycle of a product prior to the processes owned, operated or controlled by the organization implementing this PAS	PAS (2011)
upstream	GHG emissions or removals associated with processes that occur in the life cycle of a product prior to the processes owned or controlled by the reporting company.	GHG Protocol (2011)
Valuation	The process of estimating a value for a particular good or service in a certain context in monetary terms.	TEEB (2010)
Value of a statistical life	Represents the value a given population places ex ante on avoiding the death of an unidentified individual.	OECD (2012)
Value to business	The costs and benefits to the business, also referred to as internal, private, financial or shareholder value.	Natural Capital Coalition (2016a)
Value to society	The costs and benefits to wider society, also referred to as external, public or stakeholder value (or externalities).	Natural Capital Coalition (2016a)

Willingness to accept compensation	Minimum amount of money an individual is prepared to accept as compensation to forgo an environmental improvement or to tolerate an environmental loss.	ISO 14008 (2019)
Willingness to pay	Maximum amount of money an individual is prepared to pay to secure an environmental improvement or to avoid an environmental loss.	ISO 14008 (2019)
Years of life lost (YLL)	Years of life lost (YLL) take into account the age at which deaths occur by assigning a greater weight to deaths at a younger age and a lower weight to deaths at an older age. The years of life lost (percentage of total) indicator measures the YLL due to a cause as a proportion of the total YLL lost in the population due to premature mortality. YLLs are calculated from the number of deaths multiplied by the standard life expectancy at the age at which death occurs. The standard life expectancy used for YLL at each age is the same for deaths in all regions of the world and is the same as that used for the calculation of disability-adjusted life years (DALY). In addition, 3% time discounting and non-uniform age weights, which give less weight to years lived at young and older ages, are used (as with the DALY). With non-uniform age weights and 3% discounting, a death in infancy corresponds to 33 YLL, while deaths at ages 5 to 20 correspond to around 36 YLL.	WHO (2020)

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