



A GUIDE TO IMPACT ACCOUNTING

June 2024

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About the Impact-Weighted Accounts Framework

The Impact-Weighted Accounts Framework (IWAF) represents an innovative approach designed to redefine value in organisations, from a focus on maximizing financial value to optimizing societal impact. IWAF provides the key concepts, requirements, and guidance for organisations to quantitatively assess their impact: how they create or detract value for all stakeholders.

IWAF values the impact of an enterprise across six distinct capitals—financial, manufactured, intellectual, human, social, and natural—throughout the entire value chain. By measuring and evaluating these impacts in monetary terms, IWAF provides a harmonised, standardised impact language, thereby facilitating trade-offs as well as the integration of impact information at the core of strategic decision-making. The focus of IWAF extends beyond mere assessment and reporting; it actively facilitates effective impact management. This framework thereby ensures that all key stakeholders can comprehend and steer on the full spectrum of a company’s impacts.

Therefore, adopting IWAF is a critical step for any organisation aiming to evolve into an impact enterprise. This guidance steers enterprises towards a future where every decision is impact-driven, crucial for cultivating an Impact Economy in which work, innovation and entrepreneurship is used as effectively as possible towards resolving our societal issues and creating well-being for all.

Developing the Impact-Weighted Accounts Framework

IWAF is incubated by the Impact Economy Foundation (IEF) together with thought leaders and leading practitioners in an inclusive and scientific manner. The IWAF is being developed in partnership with the Impact-Weighted Accounts Project from Harvard Business School, Singapore Management University, Rotterdam School of Management and Impact Institute.



**Harvard
Business
School**



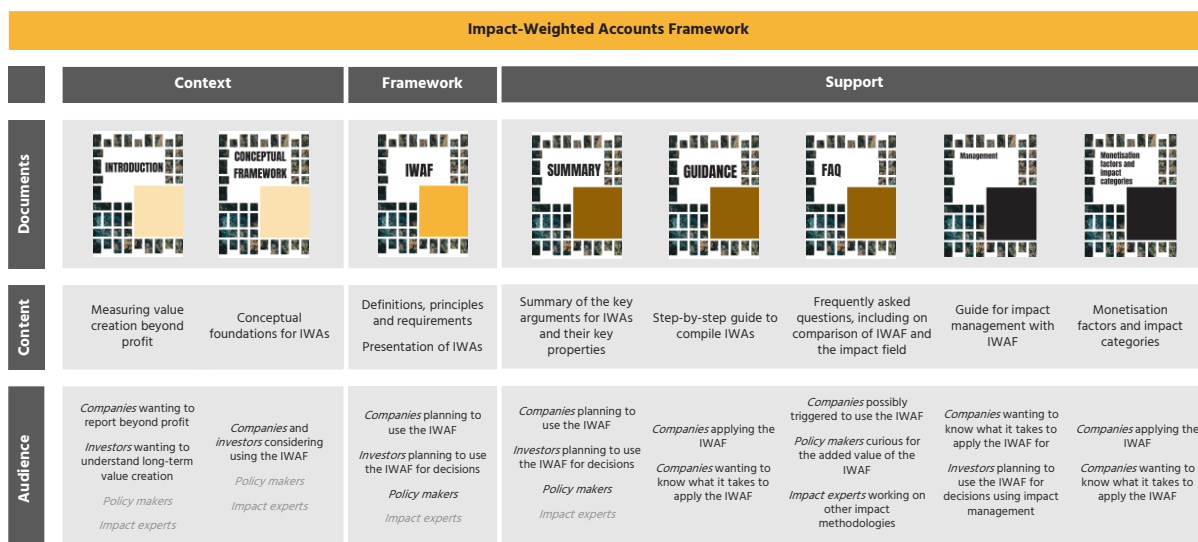


Figure 1: An overview of the different documents within the Impact-Weighted Accounts Framework. This document is the Guidance on the steps for compiling Impact-Weighted Accounts.

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A Guide to **Impact Accounting**

Introduction

Impact-Weighted Accounts and this guidance document

IWAs are a set of comprehensive quantitative and valued accounts containing impact information about an organisation. The organisation and its stakeholders can use these accounts to make informed impact decisions – decisions that help steer the organisation towards creating value for all its stakeholders.

The IWAF helps organisations to compile IWAs, and to use them to improve their impact over time.

This document provides step-by-step guidance on compiling IWAs. It is written for everyone who would like to start working with IWAs for their organisation. While offering the guidance for the visionary end-state where every company reports on IWAs, it also entails many smaller steps to get started with (parts of) IWAF. In the ideal scenario, both taking the smaller steps and building towards the visionary end-state of impact accounting is done in-house. This creates a sense of ownership similar to financial accounting.

Assessing impact is not an easy task

The IWAF aims for to assist organisations to measure and value impacts in a structured and consistent way.

This document provides step-by-step guidance to for doing so.

While this document provides practical guidance when compiling IWAs, it is also necessary to understand the formal definitions, principles and requirements underlying IWAs. We therefore recommend that you also read the Conceptual Framework and the IWAF itself to familiarise yourself with the general concepts.

The document also describes the process an organisation might follow to compile full IWAs. Obviously, an organisation needs not reach this state in the first year(s) it measures and values its impacts. Furthermore, an organisation's long-term purpose and goals determine the level of detail on which impacts should be assessed and reported. Therefore, the information in this document is intended to be indicative rather than prescriptive: An organisation is always encouraged to make its own impact journey. You are invited to follow the advice but are free to follow a different path.

Reading Guide

This document is structured according to the four stages and ten steps of compiling IWAs (Figure 2), as described in the [Impact-Weighted Accounts Framework, Part 3](#) [1]. The four stages are used to divide the document in four sections: Frame, Scope, Measure and Value, and Apply.

Each stage section consists of one or more steps. Each step is covered by a chapter, which guides you through the activities required to perform the relevant step. The process can be more iterative than the steps in this document suggest. At times, you will be required to return to a previous step after you have gained new insights in a later step. This specifically holds for Step 8: Interpret and test the results, when you are required to reflect on the work so far.

The appendices provide additional information and are specifically referred to in the document when useful. Ultimately, the process outlined in this document will support you to successfully compile IWAs for your organisation.

We acknowledge that impact measurement is like the mechanics of a car: it is almost impossible to write a guide that one can pick up and instantly master the field. In addition to this guide, you will need lots of time, and it will help if you can learn from those more experienced than you.

Relation to CSRD

The EU Corporate Sustainability Reporting Directive (CSRD) has brought forward a new era of mandatory, standardized sustainability reporting. With these new regulatory requirements, questions arise how IWAF relates to complying with such legal frameworks and CSRD in particular.

If companies fall within the scope of CSRD and are already complying, the process of making IWAs can be pursued quicker, as many principles align and crucial processes like data collection might already be in place. This does not only save time for the step of collecting relevant insights but can also accelerate the process of formalizing your understanding of the created value of your organization. With IWAF, companies can make the compiled data under CSRD actionable, moving from transparency to transformation.

Throughout this document, there is a reference to CSRD in boxes like this one, where relevant to support the journey for CSRD complying companies. Per chapter, they describe how IWAF and CSRD relate, thereby supporting the journey of complying with IWAF for all companies within the scope of CSRD. Companies for which CSRD does not apply can skip these boxes. In addition, there is a high-level overview given in [From Transparency to Transformation: Unlocking the Full Potential of CSRD with Impact Accounting](#).



Illustrative example: Gluticious



The illustrative example shows how each step can be applied and is returned to throughout the document. The example is a hypothetical gluten-free bread manufacturer called Gluticious. We intentionally simplified certain actions in the example to ensure it serves an exemplary purpose. You can recognise the example by the yellow text box.

Further reading



The further reading section provides you with references to relevant reading material and resources. The list is not exhaustive but will include the most important sources of inspiration for the IWAF. You can recognise the further reading section by the grey text box.

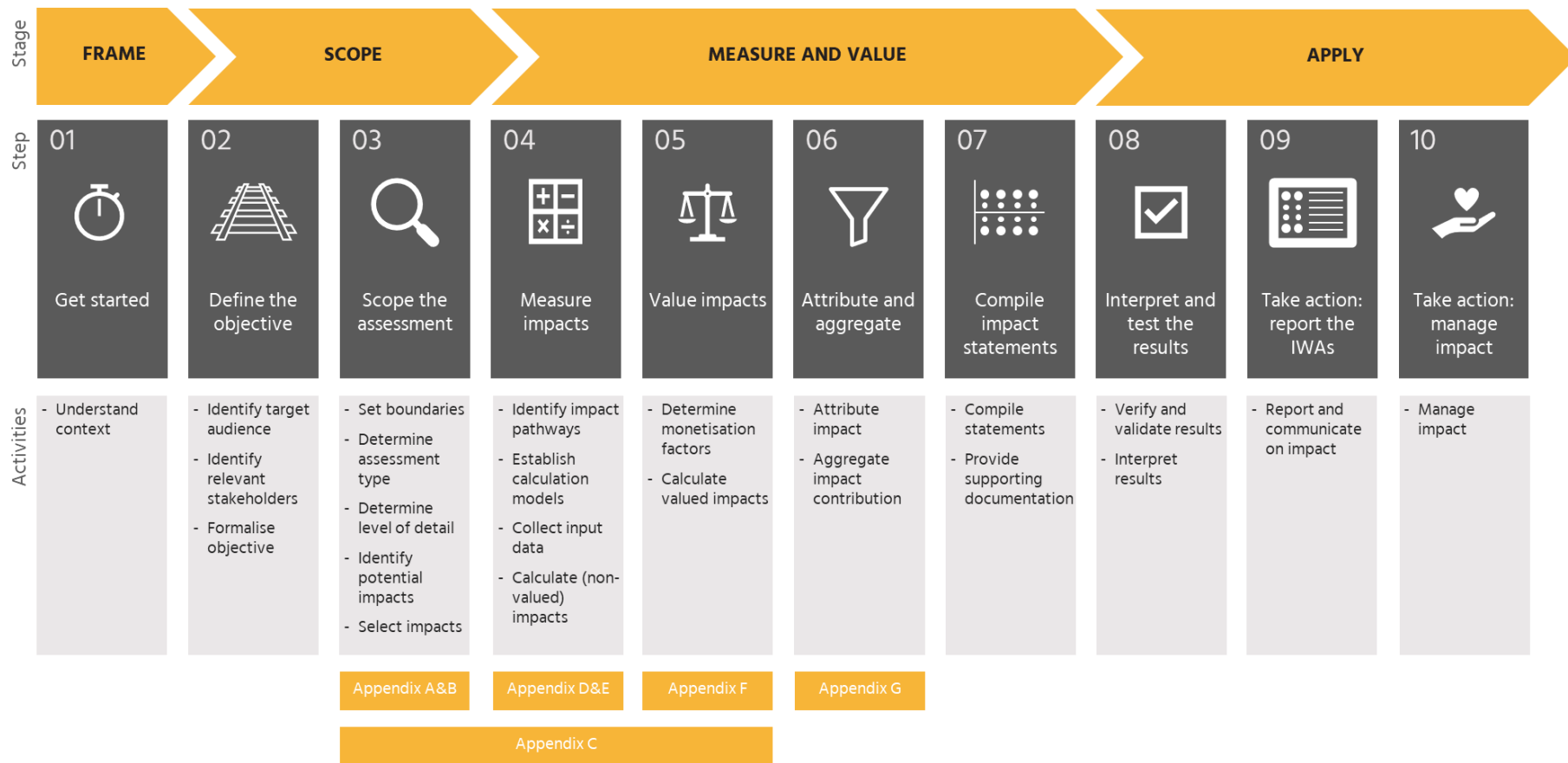


Figure 2: The stages and steps for compiling and reporting IWAs with the associated activities and appendices in this document. Adapted from Natural Capital Protocol [2].



Frame

Step 1: Get started



Activities

1.1 Understand the context – how does your organisation have an effect?

In this step, you will gain an understanding of the context of impact measurement related to the general concepts, as well as the context for your organisation specifically. You need this understanding to determine how your organisation currently creates or reduces value. This step helps you to scope the assessment in the next stage.

Relation to CSRD

As outlined throughout this document, companies complying with CSRD will find many parallels of their efforts when also taking up IWAF. As both are materiality- and stakeholder-based and build on the collection of empirical data, compliance with one of them can create synergies for the other.

Distinctively, IWAF uses a consistent methodology across topics and a valuation approach, thereby filling gaps for impact decision-making that CSRD cannot fill.

Against this background, the stages Frame and Scope have substantial overlaps with work done in CSRD compliance, the stage 'Measure' due to another methodology only partial and 'Value' none. Within the Apply Phase, the complementary character of CSRD and IWAF shows, serving different needs and feeding into each other. More references to CSRD will be done in the following chapters.

1.1 Understand the context

When starting with IWAs, the first activity is to understand the context of your organisation's activities. Understanding the context consists of three parts that together help you understand how your organisation has an impact:

- Understand the general concepts—what is impact measurement?
- Gather relevant organisational information—what is your organisation's vision and mission?
- Formalise current understanding—how does your organisation create and/or reduce value? Who are your stakeholders?

1.1.1 Understand the general concepts

Given that you have started compiling IWAs, this shows that you have a general understanding of the relevance of impact assessments and their application. Nonetheless, it is worth making sure you have a basic understanding of the general concepts underlying impact measurement and integrated thinking. The [Redefining Value: An Introduction to the Impact-Weighted Accounts Framework](#) [3] and the [Conceptual Framework for Impact Accounting](#) [4] provide a good starting point to improve your understanding of these concepts. These documents are part of the IWAF, but the framework does not stand on its own. See the further reading section below for suggestions on some crucial literature on the topic.

1.1.2 Gather relevant organisational information

At the start of an impact journey, it is important to understand where your organisation currently stands. Potentially, a lot of useful information is readily available within your organisation. Therefore, you should gather relevant sources of information and make sure you have a general understanding of their content.

Your organisation's vision, mission and values can show you what drives your organisation to create value. Furthermore, annual reports, sustainability strategies, key performance indicator (KPI) reports, reports on stakeholder engagement, value creation models, (qualitative) value assessments and other related sources of information can help you better understand the context of your organisation.

1.1.3 Formalise current understanding

Once you have gathered the relevant information, you should formalise your current understanding of how your organisation creates and/or reduces value (see [Conceptual Framework for Impact Accounting](#)).

You can reflect on the following points to help you frame your understanding of value creation and reduction (considering your organisation's current strategy):

- What value has your organisation created or reduced (for society) so far?
- Who does your organisation aim to create value for?
- Who is potentially negatively affected by your organisation's activities?

- Does your organisation fully understand how it creates and/or reduces value? And does your organisation know how it wants to continue creating value in the future?
- How does the value your organisation creates or reduces differ from that of its competitors?
- What decisions/innovations have enabled your organisation to improve its value creation in the past few years?
- What are your organisation's current goals for creating value in the coming years?
- How does your organisation's current vision and mission help to achieve its value creation goals?

While formalising your current understanding of the value created or reduced by your organisation, it is likely that you have identified gaps—for example, no established methods to measure value, a lack of (quantified) information or missing data. The identification of these gaps can help you to identify potential improvements and goals for your impact assessment. In the next step, you will define the objective to report IWAs.



Further reading



Many of the concepts within the IWAF build on, or find their origin in, the extensive body of literature on integrated thinking and the capitals approach. It is useful to have an understanding of the general concepts that form the field of impact measurement. The list below is not intended to be exhaustive (and more specific references are made throughout the document), but it does provide a start to your orientation and journey into the body of literature and resources that are available.

- International <IR> Framework [5]
- GRI 1: Foundation 2021 [6]
- Natural Capital Protocol [2]
- Social & Human Capital Protocol [7]
- IRIS+ System [8]
- Impact Management Norms [9]
- Impact-Weighted Accounts Project [10]
- Accounting for Organizational Employment Impact [11]
- Impact-Weighted Financial Accounts: The Missing Piece for an Impact Economy [12]
- A Framework for Product Impact-Weighted Accounts [13]
- Framework for Impact Statements – Beta version [14]
- Integrated Profit & Loss Assessment Methodology (IAM) [15]
- Anticipated Impact Measurement and Monitoring (AIMM) system [16]
- Corporate Natural Capital Accounting [17]



Illustrative example: Gluticious—Step 1: Get started

The case study focusses on Gluticious, a hypothetical gluten-free bread manufacturer. The mission of Gluticious is to make tasty, healthy, and sustainable bread available to all people with a gluten allergy or intolerance.

Gluticious supplies gluten-free bread to supermarkets and other local stores. Their products are mostly sold pre-packaged. Some retailers—that have a strictly gluten-free oven—also sell freshly-baked Gluticious bread. In addition to being gluten-free, most Gluticious products are free of the most common other allergens (e.g., lactose, egg, and soy). Gluticious is located in Northern-Europe and its bread is sold in multiple countries in the region in over one thousand supermarkets and other stores.

Glutilicious's main activity is making bread and other products (e.g., pastries) to be distributed to the stores. It has a central production location where it makes its products under strictly controlled allergen-free conditions. The main ingredients of its breads are gluten-free grains, including corn, millet, and rice. Ingredients are sourced locally, as well as internationally from over twenty countries around the globe.

In addition to its main activity, Glutilicious also has a side activity. It opens small bakeries/lunchrooms for the target audience and that also provide other supplied products such as coffee and tea.

Over the last few of years, Glutilicious has implemented several innovations. This includes using green energy to generate electricity and re-using the heat from the oven. In addition, Glutilicious aims to minimise transport (and the associated environmental costs) by using local ingredients where possible. Most of its millet and corn comes from farmers within a 100 km radius. For rice, this obviously is not possible.

Glutilicious aims to create value for its end customers through its high-quality, allergen-free breads. It also wants to be a leading bread manufacturer with regards to sustainability in this sector. The recent innovations regarding Natural Capital impacts are testament to this.

However, Glutilicious currently does not have any quantitative information about its value creation, and sees impact measurement as a way to change this. In the next step, it zooms in deeper into the exact objectives of its measurement project.

Summary

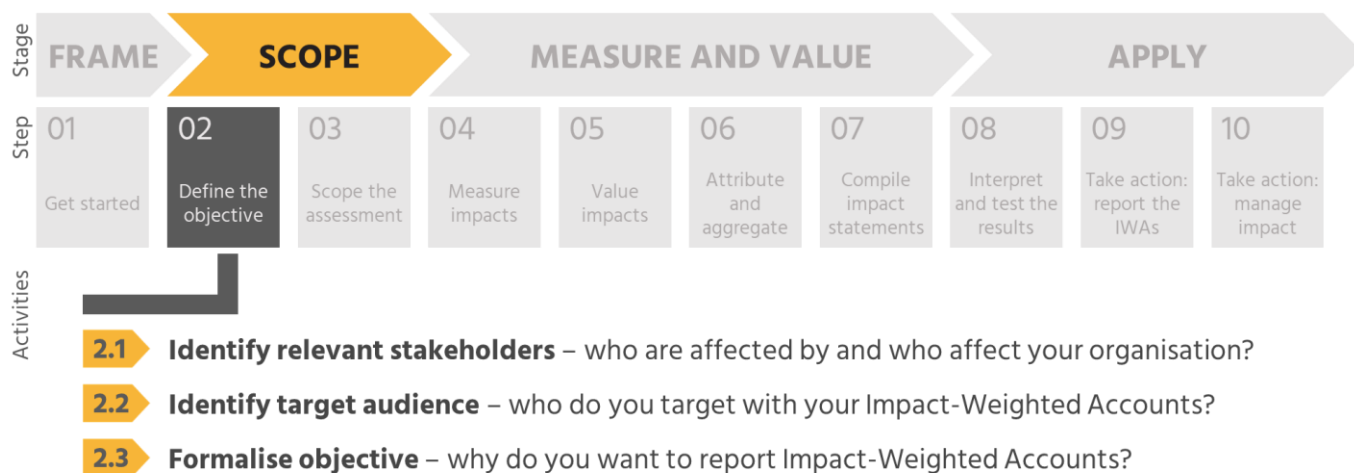
- Glutilicious is a producer of gluten-free bread (and some pastries), mostly sold through external retailers.
- Glutilicious is conscious about the environment and implemented several innovations recently.
- Glutilicious lacks a (quantitative) understanding of its impact and is looking forward to learning more about this.



Scope

Step 2: Define the objective

In this step, you will formalise the rationale behind and the objective of the impact assessment. Formalising the goals requires that you understand who are affected by your organisation, who affects your organisation and who is the target audience of the assessment. A clearly specified objective helps you scope the assessment in the next step.



2.1 Identify relevant stakeholders

Your organisation’s stakeholders include those who are affected by the activities of your organisation and those who have an effect on your organisation’s activities. It is important to have a complete picture of those affected, as understanding who your stakeholders are will be essential when defining the objective of your organisation’s IWAs.

Impacts occur both within and outside your organisation. Therefore, it might not be straightforward to identify all relevant stakeholders. To identify who your stakeholders are, you can start by examining the existing resources that you have gathered previously. It can also be useful to consult value chain experts within or outside your organisation to further identify potential stakeholders.

Next, you can talk to stakeholder representatives (such as employee representatives and representatives of local communities). They can confirm whether they indeed feel affected by your organisation’s activities, which would make them relevant stakeholders, and they can potentially point you to stakeholders you did not consider before.

After this activity, you should be able to answer the following questions:

- Who are affected by your organisation’s activities?
- Who affects your organisation’s activities?

- How do your organisation's activities affect its stakeholders?

Relation to CSRD

Within CSRD engagement with stakeholders is also crucial. The stakeholders identified by CSRD-compliant companies in order to comply are most likely similar stakeholders relevant under IWAF. Under CSRD, groups of stakeholders are e.g., own employees, affected communities, consumers, nature, and workers in the value chain.

2.2 Identify target audience

Before formalising the objective of the IWAs, you should identify who the intended audience is. Also, you should keep in mind what might drive the audience to use the IWAs: what decisions are your IWAs intended to inform?

An impact assessment can be aimed at an internal audience, such as senior management or other decision makers. They can use IWAs to reflect on the impact of the organisation and use the information to manage impact. Note that for this use, the IWAs need not (necessarily) be published externally.

When IWAs are published in an external report, they are probably directed at an external audience, such as investors, value chain partners or local communities. All of these may like to be informed of the impact of the company, both on themselves as well as on wider society. They can in turn (partially) base their (investment, purchase, etc.) decisions on this information.

It is also possible that the IWAs will be aimed at both internal and external audiences.

When identifying the target audience, it is also important to keep slightly less obvious aspects in mind: who funds or authorises the assessment? How does the choice of audience affect the required level of granularity and precision of the calculations? And how will choosing an external audience affect the verification and validation process?

If you are not in a senior management position within your organisation, you should discuss and agree on the intended audience and objective (see next activity) of the IWAs with senior management.

2.3 Formalise objective

When determining the objective of your impact assessment, it is important to specify why you want to measure and value the impact your organisation makes and how IWAs can help your organisation to achieve its goals.

The context that you have specified in the previous step, should help you to identify the objective. The following questions might help you to frame the focus of your IWAs, considering your organisation's strategy:

- What does your organisation want to achieve in the long-term using IWAs?
- How does understanding its impact help your organisation to achieve its goals?
- How can IWAs help your organisation to achieve and/or update its current value creation goals?
- How can IWAs help your organisation to set new value creation goals?
- How can IWAs provide the required transparency to an external audience?

Make sure to also consider the four key organisational goals (as specified in the [Conceptual Framework for Impact Accounting](#)) and their relation to your organisation's vision and mission.

Potential objectives of an impact assessment could be to better understand the value creation potential of business activities, to identify risks and opportunities, to manage impact with the goal to maximise its value creation potential, to report on impact to open a dialogue with relevant stakeholders and/or to demonstrate transparency towards its stakeholders. The objective that you set will directly influence the scope of the assessment (*Step 3: Scope the assessment*). For example, the extent of the objective will determine the required completeness of the scope, but also the level of detail with which the impacts are assessed.

2.3.1 Impact journey

Please note (again) that measuring and managing impact is a resource-intensive process. It will most likely take a phased process to be able to assess your organisation's impact in a manner that fits its long-term purpose and goals. This process is referred to as an impact journey and can take several years. An impact journey typically starts with small-scale internal reporting. It is hoped that every year it will evolve towards a state of integrated thinking that is central to the organisation. Therefore, you should align the objective for each year with the long-term vision of your organisation.



Further reading



- Natural Capital Protocol, Step 2 [2]
- Social & Human Capital Protocol, Step 2 [7]
- Standard on applying Principle 1: Involve Stakeholders [18]

Organisational responsibility

- OECD Guidelines for Multinational Enterprises [19]
- Ten Principles of the UN Global Compact [20]

Sustainability targets

- Sustainable Development Goals [21]
- Science-Based Targets for Nature – Initial Guidance for Business [22]

Identifying areas of need related to sustainability topics

- OECD Statistics [23]
- World Bank Open Data [24]

Illustrative example: Glutilicious—Step 2: Define the objective



Identify relevant stakeholders

The first activity to define the objective is to identify Glutilicious' stakeholder classifications.

There are six stakeholder groups that are important for Glutilicious:



1 Organisation and investor: Glutilicious and its investors (it is a non-listed company)



2 Employees: the employees of Glutilicious itself (employees of other affected companies are affected separately, see below)



3 (End-)Consumers: the customers who buy bread from Glutilicious (through retailers). These are mostly people with a gluten allergy or intolerance. Many of these report that when they learned about their allergy or intolerance, they had to stop eating bread. Thanks to Glutilicious, they are now again able to.



4 Value chain partners, both upstream (e.g., the farmers that provide the grains) and downstream (e.g., the retailers that sell their products), including employees at these organisations



5 Governments, local communities, and others: all governments, communities or other groups affected by Glutilicious and/or its value chain



- 6 Nature and its beneficiaries: Nature itself, to the degree that this has inherent value. In addition, all persons, communities and organisations that use or enjoy natural resources. This is obviously important, as it is impossible to grow grains and bake breads without affecting the environment.

Identify target audience

The second activity is to identify the target audience of the impact measurement study. The primary audience is the management of Glutilicious itself. As discussed in Step 1, Glutilicious implemented a few innovations to improve their impact on Natural Capital. At the same time, it realised it does not have any quantitative information about its value creation. The impact measurement project aims to rectify that and, in particular, point to potential further innovations.

A potential secondary audience are Glutilicious' customers. Research has shown that a relatively large share of its customers are very sustainability-minded. Glutilicious aims to inform its customers about the impact of its bread and why its breads are a sustainable choice for the consumer.

Formalise objective

Lastly, Glutilicious formalises the objective. This starts with the observation in the previous section that a quantitative understanding of its value creation is lacking. It has limited information on how its activities affect stakeholders such as grain farmers (their suppliers), local communities and their workforce. It believes that it outperforms other producers of similar products, but it has not been able to substantiate such a claim.

Glutilicious would like to understand its impact better: it wants to get a better understanding of the impacts it creates and to identify improvements to create more value for its various stakeholders. Therefore, Glutilicious would like to take its first step towards impact measurement. If all goes well, it is also looking forward to publishing the results and sharing its story with the stakeholders. However, it is aware that this might not be something for the first year of its impact journey, maybe rather in a subsequent year.

Summary

- Six stakeholders identified



Organisation and investor

(Primary target audience)



Employees



Consumers

(Secondary target audience)



Value chain partners



Gov., local comm, other



Nature and its beneficiaries

- The main objective is to better understand impacts, and to learn how to improve these



FRAME

SCOPE

MEASURE AND VALUE

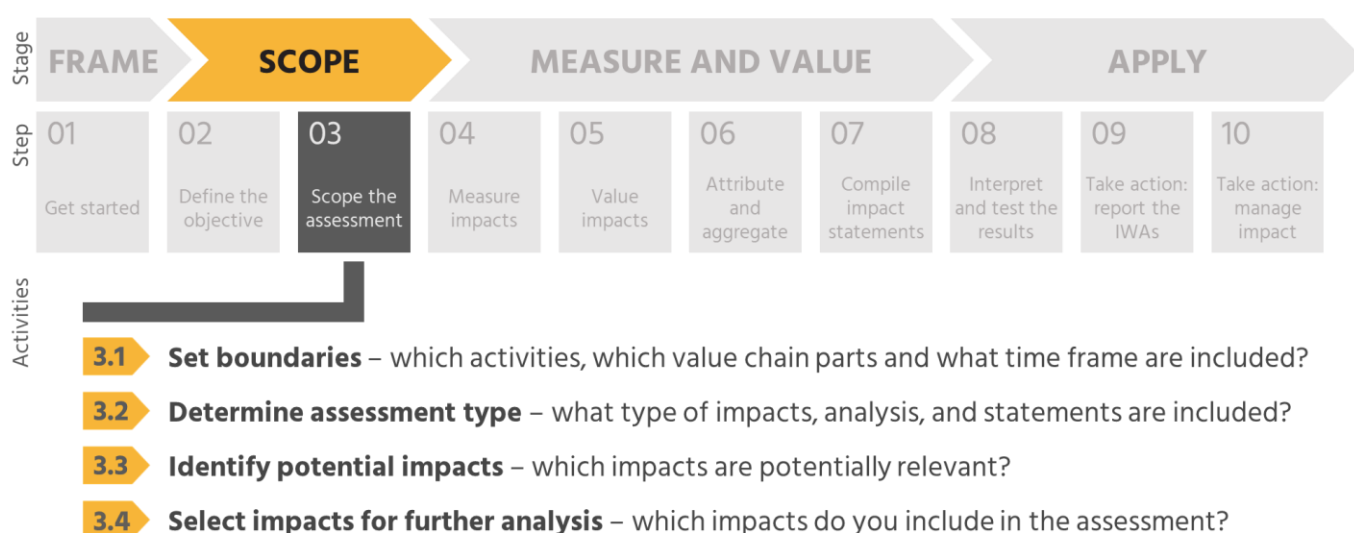
APPLY

- The ambition is to publish the results, although it is not certain whether it will be able to so in Year 1

Step 3: Scope the assessment

In this step, you will define the scope of the impact assessment. In financial reporting, all revenue and costs of any activity should be included. Similarly, a complete impact assessment includes all business activities, and all impacts these activities have. However, in practice, completeness of IWAs is often not feasible (and unlike in financial statements not required). Therefore, you must scope pragmatically, such that with a reasonable amount of time and/or resources, the most important impacts are analysed. As a guiding principle, you can follow the 80/20 Rule: roughly 80% of the consequences result from 20% of the causes.¹

When scoping an impact assessment, you will determine the boundaries of the business activities, the value chain and the timeframe to be considered in the assessment. Also, you will formulate the general concepts of the assessment and you will determine which impacts to include in the assessment².



3.1 Set boundaries

The first activity of *Step 3: Scope the assessment* is to set the organisational boundaries of the assessment. This activity consists of three parts:

- Identify business activities—for which activities will you assess your organisation’s impact?
- Map the value chain—what are the input and output of your product and who is involved?
- Select the timeframe—for what time interval will you assess your organisation’s impact?

3.1.1 Identify business activities

¹ The 80/20 Rule is also called the [Pareto principle](#) and has many applications.

² [Specific guidance for the banking sector](#) is provided by the Banking for Impact working group.

A clear specification of your organisation's activities will help you to set a focus for the impact assessment. Different business lines and/or products and services will be centred around several core business activities. Firstly, you should obtain a complete overview of your organisation's core business activities. (An understanding of the organisational structure can help you to identify what these activities are.) Secondly, you should assess the relative importance of the activities to the organisation. The following parameters might help you determine an activity's importance:

- Size—in terms of volume, what are the number of resources involved and/or revenue generated?
- Strategic importance—which activities does your organisation prioritise in its strategy?
- Representativeness—does the activity represent the organisation's identity?
- Relevance—from which activities do you expect important impacts to occur? Did (consulted) stakeholders indicate the relevance of impacts to specific activities?

Lastly, you should choose which activities to focus the assessment on.

In principle at least, the direct impact of all business lines and products, and therewith of all core activities, should be assessed. However, it is not uncommon in financial projections to narrow the scope by excluding business lines or products that contribute little to the overall revenue or profit. A similar approach can be taken when selecting business activities to include. In case of an impact assessment, it is important that a business line or product is only excluded if it contributes a small amount to the total revenue *and* if it is unlikely to generate a large impact (either in an absolute or marginal sense, and on any of the capitals and stakeholders). The 80/20 rule can serve as a useful rule of thumb in initial impact assessments. It can be valuable to consult product owners or line managers within your organisation to help you identify business activities, but also to map the value chain of those activities.

For more information on the concepts of direct and indirect impact and of the absolute and marginal reference scenarios, see [Conceptual Framework for Impact Accounting, Section 3.5](#).

3.1.2 Map the value chain

Many activities of an organisation influence the activities of other members of the value chain. The scope of your assessment should therefore also include the relevant activities of others (see Principle of value chain responsibility in [Conceptual Framework for Impact Accounting, Section 4.5](#)). For example, the activities of other organisations to produce all required input materials and the activities of others to use and dispose the output of your organisation, contribute to the indirect impact of your organisation.

As such, it is necessary to understand the value chain to be able to understand the impact of your organisation. The value chain consists of three components: "upstream" (suppliers), "own operations" and "downstream" (both business-to-consumer and business-to-business customers). An impact assessment should include all three components unless none of the activities in a component contributes substantially to any external costs or benefits.

In addition, some activities of your organisation may affect the activities of actors in the wider system, beyond its own value chain. For example, an organisation's activities might influence the decisions and actions of sector or industry partners or competitors through advocacy or lobbying activities.

To determine which parts of the value chain should be in scope, you should:

- Map the activities and actors involved in the value chain(s) of your organisation's product(s) or service(s)
- Map the system to identify what effects your organisation potentially has beyond its value chain

When mapping your organisation's value chain, consider all types of capital and each stakeholder group that might be affected in any part or step of your organisation's value chain. For example, workers who provide the labour to produce your organisation's raw materials might be underpaid. It is unlikely that your organisation has chosen to underpay these workers, but this part of your organisation's supply chain should be considered regardless.

The choice to include certain activities in the scope of your assessment depends on the objective you defined in the previous step. Ultimately, your scope should include all value chain elements that contribute to material impacts. As a first step, you can keep the scope of your value chain broad. When at a later stage value chain elements do not contribute to any material impacts, you can still decide to leave the elements out of scope.

3.1.3 Select the timeframe

When reporting on impact, you should choose a timeframe for which you measure impacts. Typically, the reporting will be done in an annual cycle and the timeframe of an impact assessment will be set to match the timeframe of the organisation's financial reporting. Alignment with the already existing financial reporting cycle allows for the organisation's impact information to be fully integrated into the decision-making process. Furthermore, data on financial performance is used to measure and forecast certain impacts on (financial capital of) stakeholders. However, a different timeframe for the assessment may be required when, for example, the most material impacts of the organisation occur in a broader timeframe.

3.2 Determine assessment type

When you have determined the boundaries of your impact assessment, the next activity is to determine the type of assessment you will perform. In this activity you will specify the general scope and assumptions of your impact assessment by answering the following questions:

- What types of impact will you consider?
- Will you assess impacts qualitatively or quantitatively?
- Which impact statements are you aiming to compile?



- What are the possibilities and potential limitations in terms of time, resources, capacity and data availability?
- Will the assessment be audited and if so, what are the requirements?

3.2.1 Consider impact types

In this activity, the choice to include or exclude impacts should be based on the objective you formalised in the previous step. If you choose to leave a specific type of impact out of scope, you should be transparent and report on your scoping choices.

Note that in addition to impacts being out of scope for reasons related to the objective, you will also exclude impacts based on low materiality. This will happen at the end of Step 3 (or even throughout Step 4 if the initial data proves it to be immaterial).

In the early phases of reporting IWAs, you can choose to start with a narrow scope that includes only specific types of impact. We suggest that you gradually aim to increase the scope of the assessment to include all relevant impact types in due time.

Capitals

At this stage, you can narrow the scope to include only impacts related to a specific capital, such as social or natural capital. For example, you can decide to exclude natural capital impacts when the objective of the assessment is to assess the social impacts of your organisation and its value chain.

Direct and indirect impacts

You might consider excluding the impact of underpayment because your organisation's employees are all paid a living wage. However, your suppliers' employees might not earn a living wage and therefore underpayment would be relevant. Often, the indirect impact of an organisation is larger than its direct impact. A complete impact assessment should include both direct and indirect impacts.

Absolute and marginal impact

Impact can be absolute or marginal, depending on the reference used. A full impact analysis includes both. Organisations can choose to focus on one of the two if that type is more relevant for strategic considerations.

3.2.2 Consider analysis type

The value that your organisation creates and/or reduces can be analysed quantitatively or qualitatively. You should determine what type of analysis you will (aim to) perform.

A quantitative analysis of impacts, following an impact-pathway based approach (see [Conceptual Framework for Impact Accounting, Section 5.2](#)), allows for (monetary) valuation of impacts to make impacts comparable to each other. Therefore, the IWAF recommends that impacts be quantified for them to be

included in the IWAs. However, we acknowledge that some impacts cannot be measured quantitatively, while a qualitative analysis can provide valuable information on material impacts.³ The further guidance in this document assumes that you will perform a quantitative analysis.

3.2.3 Consider types of impact statements

Complete IWAs include two types of statements: the Integrated Profit & Loss (IP&L) and the Integrated Balance Sheet (IBaS)⁴ (see [Conceptual Framework for Impact Accounting, Section 8.2](#)). An IP&L statement considers the activities and impacts for a single year, while the IBaS aggregates impacts over multiple years. Both statements require substantial analysis to measure and value impacts. In addition, the IBaS statement requires you to include, and thus collect, impact information from previous years (and potentially from future years when forecasting impact). You are free to choose, based on the objective of the assessment, to include only one or both the statements.

3.2.4 Identify practical issues

In the previous steps and activities, you have gained a better understanding of the general scope and assumptions of your impact assessment. It is important to identify any potential practical issues that might require you to reconsider the objective, and hence scope, of the assessment. Potential constraints to the assessment include the required timescale, the available resources and capacity, the availability and accessibility of data, and the stakeholder relationships (see [Natural Capital Protocol, Section 3.2.7 \[2\]](#)). Practical issues can be identified upfront, but you can also encounter them throughout the assessment. You will, for example, repeat this activity on a more detailed level when you are selecting the impacts in scope (see *Activity 3.4 Select impacts*).

3.2.5 Specify audit requirements

Depending on how your organisation will (externally) report its IWAs, there might be specific audit requirements to comply with. Ideally, the IWAs will be integrated in your organisation's annual report. This will most likely require your organisation to specify the impact assessment methodology and its main methodological principles, the data sources, the main characteristics of the reference scenarios and the general assumptions. A clear understanding of the audit requirements before continuing with the following activities might prevent you from having to revise the impact assessment at *Step 8: Interpret and test the results*.

³ The Glutificious case provides an example in one of the health-related impacts.

⁴ Currently, the concept of the IBaS is under development and no guidance is provided in this document. Therefore, inclusion of the IBaS is, at this moment, not seen as a requirement for IWAs. When the concept has matured, recommendations on how to compile IBaS will be added.



3.3 Identify potential impacts

Before you can start measuring and valuing impacts, you should translate the general scope of the assessment to specific impacts. The information on the context, objective, boundaries and assessment type from the previous steps and activities should allow you to identify potential impacts to consider.

Keep in mind that the IWAF embraces a double materiality view (see [Conceptual Framework for Impact Accounting, Section 4.3.3](#)). This means that impacts are relevant when the impact affects the future earning potential of the organisation, but equally so when valuables of a stakeholder are affected. It could be useful for this activity to sort your organisation's stakeholders into a limited set of stakeholder groups, based on their relation to your organisation. You can find a description of the stakeholder groups we propose in the [Conceptual Framework for Impact Accounting, Section B.1](#), but you are free to choose your own classification of stakeholder groups.

3.3.1 Compile a "longlist" of potential impacts

The goal of this part of the activity is to compile a longlist of as many impacts that could potentially be relevant within the scope of the assessment. In the next activity, a further selection of impacts from this list will be made. As the impacts of an organisation are dependent on the activities of an organisation, any longlist of impacts is specific to an organisation. There are two general approaches to identify potential impacts you should consider for the assessment: a "top-down" and a "bottom-up" approach.

Top-down

In the top-down approach, you start from existing sources of information on potentially relevant impacts. For each of the impacts mentioned in these sources, you should determine whether the impact is or could potentially be relevant for any of your organisation's activities or activities in your organisation's value chain.

[Appendix A](#) of this document provides a standardised list of impact categories. This list can be used as a source for impacts that apply to businesses in multiple industries as these impacts are commonly observed across many geographical locations and sectors.⁵ [Appendix C](#) provides detailed guidance on impacts related to a specific capital type. For specific sectors, you might find lists of standardised impacts in other sources. The further reading section provides some examples. It is our hope that in due time more and more sectors create lists of standardized impacts (also with standardized approaches to measurement and valuation).

⁵ [Appendix B](#) maps the standard impact categories of the IWAF to other indicators used in the Impact-Weighted Accounts Project of Harvard Business School.

Bottom-up

You might want to expand upon the impacts provided from the top-down approach with impacts that are specific to your organisation.⁶ If so, you can start to identify potentially relevant impacts from the bottom up. Use the organisation-specific information from previous steps and map this information to specific impacts. Consider the following aspects when you define impacts from the bottom up:

- The definition of an impact (see [Conceptual Framework for Impact Accounting, Section 3.5.1](#)): an impact is about what affects the valuables of a stakeholder. Impact assessment is about effects (that can be measured), not intentions.
- Impacts are defined according to impact pathways (see [Conceptual Framework for Impact Accounting, Section 5.2](#)): an activity requires input and results in output. Input and output, in their turn, result in outcomes, or effects on stakeholders' valuables. When identifying potentially relevant impacts, you should consider the input, output and outcomes of the activities in scope. Often, the activities of your organisation lead to value transformation or value transfer. If this is the case, impacts from both sides of the coin should be covered. Examples from the list of standard impacts include employees giving up their time (an input-related impact) to be paid a salary and receive other benefits (output-related impacts). If you include one, you should also include the other.
- An impact assessment should reflect the effect on all types of capital and on all relevant stakeholders. Make sure that the set of impacts you identify covers this range.

Important sources of information could be stakeholder engagement, value chain experts within the company or external experts.

Most likely, it will be most efficient to combine both approaches when compiling the longlist of impacts. You can complement standard lists of impacts with organisation-specific impacts that you have defined from the bottom up.

3.4 Select impacts for further analysis

In the previous activity, you compiled a longlist of potentially relevant impacts. The next step is to select the impacts that you will include in the assessment. It is not often feasible in terms of time and resources to include all possible impacts. The 80/20 rule can help you limit the scope to the most relevant impacts. A properly scoped assessment should lead to a good estimate of your organisation's impact, resulting from a reasonable amount of work. Both a materiality and a feasibility assessment will help you selecting impacts.

⁶ If you select impacts that are uncommon or have not regularly been assessed, keep in mind that these might require additional research to develop a method for their measurement and/or (monetary) valuation.



3.4.1 Assess materiality

A materiality assessment is an evaluation of the materiality, or relative importance, of each impact. The goal is to determine which impacts are material according to the principle of “double materiality” (see [Conceptual Framework for Impact Accounting, Section 4.3](#)).

An impact can be identified as material based on:

- **Existing evidence:** the impact is known to occur based on previous experience (for example, previous impact assessments), or likely to occur in similar situations based on (reported) evidence or experience (for example, scientific research)
- **Stakeholder perception:** at least one of the stakeholders, as identified in Activity 2.1, considers the impact to be relevant.

The following actions can help you performing an impact materiality assessment:

1. Consult the literature and previous impact assessments to establish what impacts are most relevant in the context. This can be based on which impacts are mentioned most often or are regarded as being more significant than others. In addition, there are global databases that provide information on which impacts are typically associated with various activities in specific countries and economic sectors. In cases where data specific to a context is scarce, data from a similar geographical or systemic context can be used for a preliminary indication. For example, if a chocolate company sources from the Ivory Coast but Ivorian data is scarce, it might use data from Ghana as an initial measure of impact size.
2. Identify key data points relating to the organisation to determine the order of magnitude of the impacts and estimate an impact's size. This process is facilitated by the monetary valuation of impacts through IWAF.
3. Assign a relative materiality score (e.g., from 1–4, lowest to highest) to each impact based on the expected order of magnitude of the impact using information from the first two steps. This helps in prioritising actions and focusing on the most significant impacts.

4. Consult with experts and relevant stakeholders to generate consensus on the assigned scores.

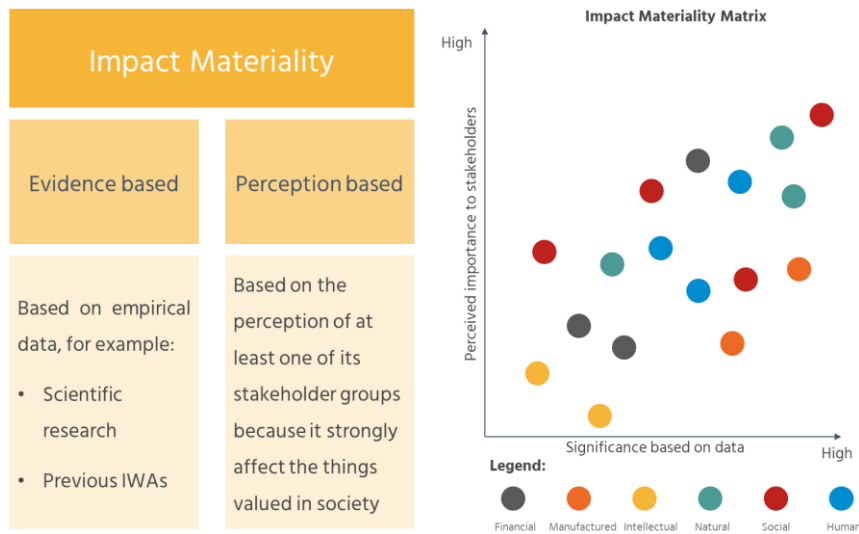


Figure 3: Impact materiality. The materiality of an impact is determined based on evidence and perception (left). A materiality matrix can help you visualise the relative materiality of impacts (right). The colours indicate the relevant capital of the impact.

Two additional rules apply when assessing materiality. Materiality of an impact can be assessed differently based on the association with rights (see [Appendix A](#)). Two main rules apply:

1. Impacts that are associated with rights (violations) are always considered material and should in all occasions be estimated. The relatively larger impacts require a more detailed analysis proportional to the size of the impact. In this case, you could zoom in on the value chain to understand the size of the impact and its drivers better.
2. Impacts that are not associated with rights are subject to the classic materiality assessment described above.

3.4.2 Assess feasibility

You might have to exclude certain impacts from the assessment based on feasibility. Whether it is feasible to include an impact in the assessment depends, among others, on existing knowledge on the subject, time constraints and data availability.

The following actions can help you in assessing impact feasibility:

1. Perform a preliminary search for available data to calculate the impact.



2. Estimate the time and resources needed to calculate the impacts and compare this to how much time, data and resources that are available.
3. Assign a feasibility score (from 1–4, lowest to highest) to each impact based on whether it is feasible for the impact to be calculated to a reasonable degree of accuracy.

3.4.3 Define final list of impacts in scope

Next, you will use the results of the materiality and feasibility assessments to define a final list of impacts in scope. The impacts on this list are the impacts that will be measured and valued in the next stage and will eventually be included in the IWAs.

The following actions can help you in defining the list of impacts in scope (and the degree of detail that impacts in scope are assessed at):

1. Rank the impacts based on their materiality and feasibility scores.
2. Select impacts that have the highest overall scores. Available time and resources will constrain the total number of impacts you can include.
3. Aim for objectivity: highly material negative impacts should be included even if they score lower on feasibility.
4. Report transparently on the impacts that are excluded. It is important not only to specify which impacts are left excluded, but also the reason for not including them in the current assessment.

Keep in mind that feasibility in itself does not constitute a valid reason to leave material impacts out of scope. However, it is unlikely that you will have the resources (such as time, capacity and data) available to include all material impacts in your first impact assessment. Therefore, the aim should be to gradually increase the number of material impacts in the IWAs with each reporting cycle.

Some impacts are dependent on other impacts – see the above discussion on value transformation and value transfer. When you observe this, include both or neither of the impact, otherwise the IWAs will present a biased picture of your organisation’s impact.

Relation to CSRD



If you are complying with CSRD, the work that you have already done for that can also be very helpful for the scoping phase. For example, identifying relevant impacts based on the CSRD materiality assessment outcome. While you can draw from insights gathered as part of the CSRD compliant reporting, you should still go through the different steps of the scoping phase for IWAF.

For some sustainability matters, CSRD asks to disclose the extent of the sustainability matter impact only in own operations. IWAF explicitly takes the stance to always have a full value chain scope. Often impacts are the most significant in the value chain and insight into that allows companies to better manage their impact and assess dependencies.

Further reading



These sources provide general guidance on determining which material topics to include

- Materiality in <IR> - Guidance for the preparation of integrated reports [25]
- GRI 3: Material Topics 2021 [26]
- Natural Capital Protocol, Step 3 and 4 [2]
- Standard on applying Principle 4: Only include what is material [27]

These sources provide information on material topics for specific sectors

- SASB Materiality Map [28]
- GRI Sector Standards [29]
- World Benchmarking Alliance [30]

Financial sector

- Portfolio Impact Analysis Tool for Banks [31]
- Impact Measurement Supplement 1 [32]

Impact investors

- IRIS Catalog of metrics [8]

Food sector

- Valuing the impact of food by FoodSIVI [33]



Illustrative example: Gluticious—Step 3: Scope the assessment



Set boundaries

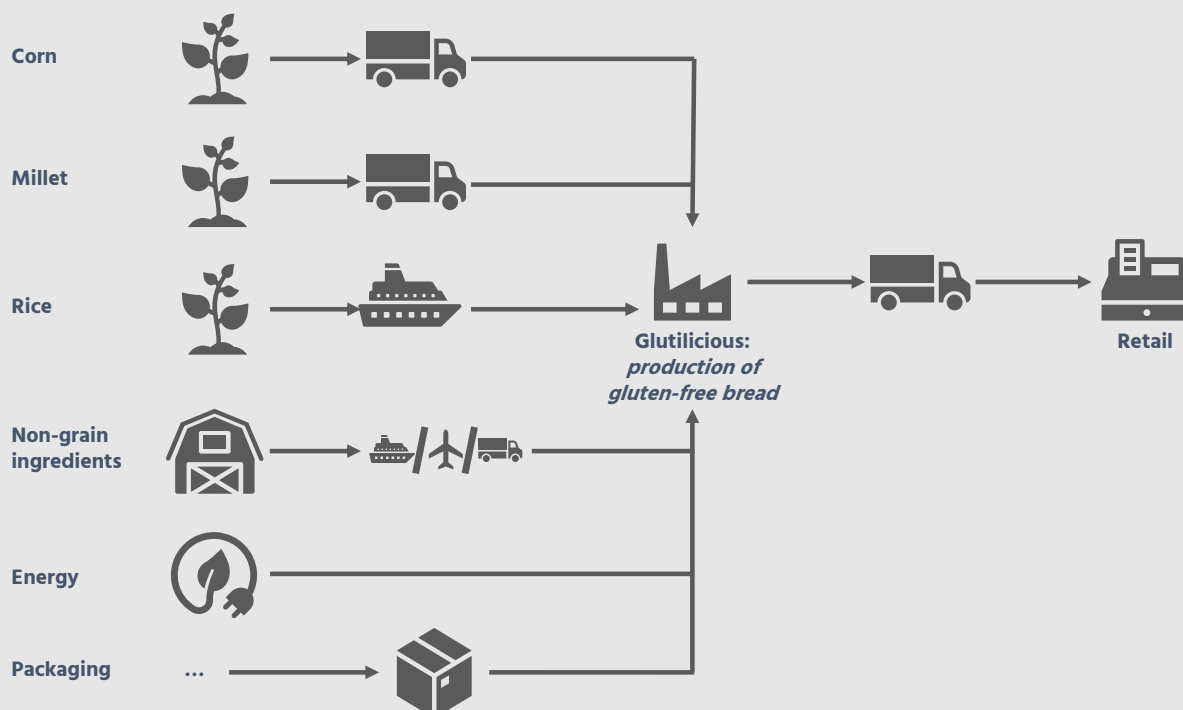
To make the analysis feasible, Gluticious sets the following boundaries:

- *Business activities:* in principle, the ambition is to assess all business activities. However, in Year 1, it will focus solely on the production and sale of pre-packaged gluten-free bread. As Gluticious sells many types of bread, this is still quite wide. It is prepared to also simplify further on in the process (for example, to assume that the most-sold product is representative of the entire offering).
- *Timeframe:* the timeframe is the last financial year.
- *Functional unit:* For most impacts the unit is for the full company in the full year. In some analyses (in particular, towards improving its performance), the appropriate unit might rather be per bread than per year.
- *Value chain:* A simplified version of the value chain for the analysis in Year 1 is shown in the figure below.

Although Gluticious realised its products have hundreds of ingredients, its analysis will focus on the three main grains (corn, millet and rice), with all other ingredients combined in a category “non-grain ingredients”. For all ingredients, there is a transportation step.

In addition to the ingredients of the bread, Gluticious acknowledges energy and packaging materials as important inputs. It simplifies the downstream value chain to retailers only (and a transportation step).

Note that the value chain does not cover the side activity where Gluticious opens small lunchrooms.



Determine assessment type

- As Glutilicious is interested to determine its full impact, it will make an assessment over all capitals.
- It expects that many Natural and Social capital impacts are in the (upstream) value chain, so it will see both direct and indirect impact.
- In principle, Glutilicious is interested in both absolute and marginal impact. However, as it is similar to many of its competitors, it foresees that absolute impact might be more material than marginal. It will therefore assess this more specifically when making detailed impact pathways.
- Glutilicious aims to perform a predominantly quantitative analysis. However, it foresees that some impacts might be difficult to assess quantitatively, in which case, a qualitative assessment is better than no assessment at all.
- Glutilicious would like to make an IP&L and also analyse two of the derived statements, the Stakeholder Value Creation Statement and the Sustainability statement for external costs. The Integrated Balance Sheet and the Sustainability Statement for SDG Contribution are not in scope in year 1.
- The analysis is not intended to be audited in Year 1, but it aims to improve the robustness in the future.

Identify potential impacts

- Glutilicious uses the list of standard impacts as a starting point.
- Discussions with the stakeholder group (final) customers points at specific focus on “client experience” (which can be linked to the standard impact “value of products for consumers”) and two health effects: firstly, the benefits that people have when they eat a healthy diet (that Glutilicious believes their products are part of), and secondly, the negative impact when allergens slip through the production process or are mislabelled. This is unlikely to happen, but when it does, the effect is large. Glutilicious decides to split the impact “Effect on human health” into two elements (namely “Contribution to a healthy diet” and “Effect of unintentional allergens in food”), reflecting these two effects.
- Discussions with other stakeholder groups do not add impacts to the list Glutilicious already had.

Materiality and feasibility assessment

- Glutilicious decides to include all financial capital impacts, as these are all of medium to high materiality and easy to assess.

Impact	Materiality	Feasibility	Note
1 Payments from clients	●	●	Feasibility high as Euro value can be directly obtained from financial reporting
2 Profit	●	●	
3 Salaries	●	●	
4 Taxes	●	●	
5 Interest payments	○	●	
6 Payments to suppliers	●	●	
7 Other financial capital elements	○	●	



- Gluticious realises that many of the financial capital impacts reflect value transfer and value transformation: therefore, to have a balanced and complete assessment, it should also include impacts that represent “the other side of the coin”.
- In some cases, a full assessment of the value of these impacts might be challenging, but a simplified assessment is possible. Therefore, all these impacts are included.

Impact	Materiality	Feasibility (full assessment)	Feasibility (simplified assessment)	Note
8 Client value of products	●	○	●	Related to “Payments by clients”
9 Cost of Capital	●	●	N.A.	Related to “Profit” and “Interest payment”
10 Time invested by employees	●	●	●	Related to “Salaries”
11 Value of input materials	●	○	●	Related to “Payments to suppliers”

- Regarding the other impacts identified in the previous step, Gluticious makes the following assessment (question marks indicate higher uncertainty):

Impact	Materiality	Feasibility (at least simplified assessment)	Conclusion: in scope	Note
12 Wellbeing of employment	●	○	Yes	Relevant to its employees
13 Value to employees due to training and experience	●	○	Yes	Relevant to its employees
14 Effects on human health: contribution to a healthy diet	●	○	Yes	Difficult impact to assess, but of very high importance to its clients
15 Effects on human health: effect of unintentional allergens in food	●?	○	Yes	It is hoped this does not apply, but if it does, very material to clients
16 Contribution to climate change	●	●	Yes	Food production is associated with net emissions
17 Contribution to/limitation of pollution	●	○	Yes	Use of fertilizer and pesticides upstream may lead to pollution
18 Contribution to poverty	●	●	Yes	Some evidence that workers in the rice value chain are underpaid (which contributes to their poverty). Likely zero for employees, but still assessed
19 Contribution to human rights violations	●?	○	Yes	No clear picture whether human rights violations occur in the various upstream value chains (Gluticious aims to investigate this). Likely zero for employees, but still assessed
. Change in fixed assets	○	●	No	Not a focus area to assess value creation for external stakeholders

.	Client value of services	N.A.	N.A.	No	Glutiticious provides products to clients, not services
.	Creation of intellectual capital	●	○	No	Not a focus area to assess value creation for external stakeholders
.	Occupational health & safety incidents	○	●	No	No indication that this applies at the company or its supply chain
.	Limitation of availability of scarce natural resources	○	○	No	No indication that this is particularly pressing in this value chain



Measure and Value

Stage

MEASURE AND VALUE

This stage supports you in measuring and valuing the impacts in scope, as well as in determining the responsibility of your organisation and combining the impacts into useful metrics for comparison and decision making. The stage consists of four steps.

Steps

Goal of the steps

04
Measure impacts

In this step, you will calculate the size of your organisation's impact. Before starting the calculations, you will define clear impact pathways and acquire the required process data.

05
Value impacts

The goal of this step is to convert all quantified impacts into a single common unit, which allows for comparison between impacts. This common unit will often be monetary, so for each impact in scope, you will determine a monetisation factor.

06
Attribute and aggregate

This step helps you to prepare for the interpretation of the results in the next stage. You will decide how to distribute impacts over the different actors in the value chain and how to combine impacts into useful metrics without losing relevant information.

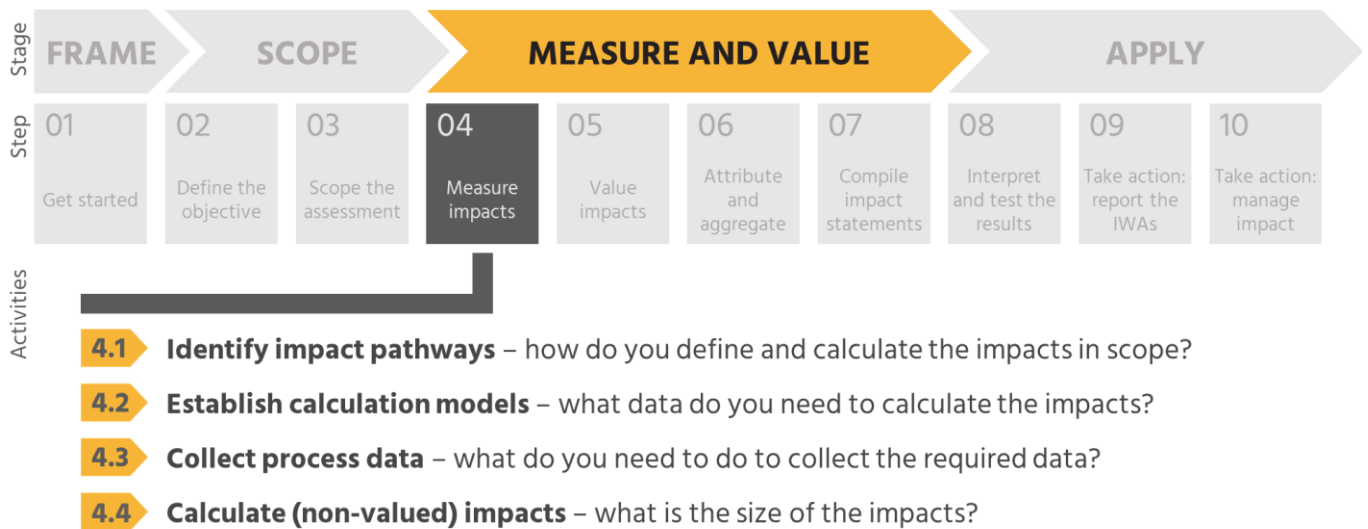
07
Compile impact statements

In the last step of this stage, you will compile the impact information into different statements: each one relevant for a specific objective. This step also requires you to prepare any documentation to support your impact assessment.

Step 4: Measure impacts

In the previous step, typically you selected several impacts to be assessed quantitatively: the measure impacts step then follows. At the end of this step, you will have measured the size of the selected impacts.

Some specific preparation is required to complete the calculations successfully. Firstly, you need to specify the impact pathway of each impact in scope. These then must be translated into impact-specific calculation models that make explicit what data are needed to calculate the impacts. Once you have collected these data, you can calculate the impact sizes.



4.1 Identify impact pathways

Impact pathways make the effect of an organisation’s activities explicit by comparing the outcomes of that activity to the outcomes of a reference scenario (see [Conceptual Framework for Impact Accounting, Appendix C](#)). Outcomes are related to the input or output of an activity. Impact pathways specify how an activity leads to an increase, decrease or transfer of value, or capital stock, available to stakeholders (**Figure 4**).

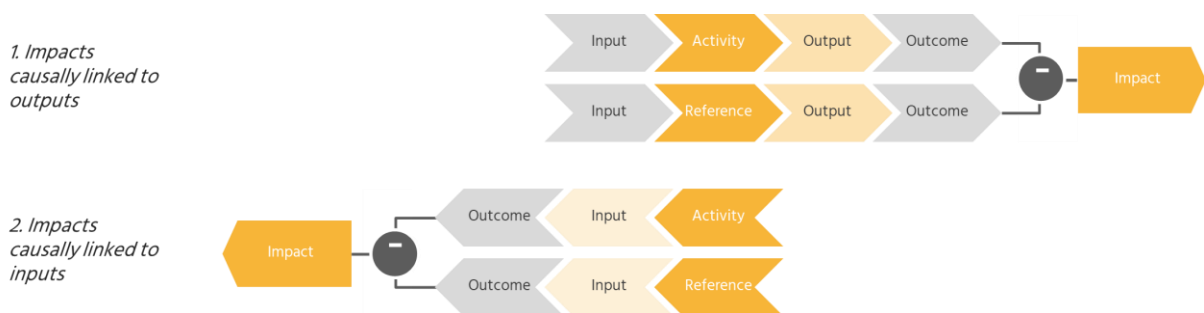


Figure 4: Diagrams of impact pathways for both input-related and output-related impacts.

For this activity, you should establish an impact pathway for each impact in scope. You may already have roughly drawn impact pathways in *Activity 3.3: Identify potential impacts*. Continue from those rough pathways to further refine and identify all the elements of an impact pathway for each impact in scope. Make use of the sources in the further reading section at the end of this activity to find standardised impact pathways and valuable information when defining impact pathways from the bottom up. The activity consists of four parts:

- Formalise reference scenarios
- Identify the input and output of each activity
- Identify the outcomes related to the input and output
- Link outcomes to impacts

4.11 Formalise reference scenario

Impacts are assessed with respect to a reference scenario that describes what would occur if your organisation did not undertake its activities. Reference scenarios determine which impacts can be attributed to your organisation, and which impacts would have occurred despite its activities. Two types of reference scenarios exist: an absolute and a marginal reference scenario.

In a complete impact assessment, both the absolute and marginal versions of each impact are included, although the scoping stage discussed that sometimes one reference scenario is more relevant for the objective of the assessment than the other scenario.

Absolute reference scenario

The reference scenario for absolute impacts is a stylised situation in which:

- The organisation is not active
- No other organisation (competitors, for example) takes over its activities
- Other actors behave the same as in the actualised scenario

Examples are a scenario in which an organisation does not produce a specific product, without competitors taking the available market share, or a situation in which the organisation does not provide training to its employees and the employees do not receive alternative training elsewhere.

Such scenarios allow the assessment of the impact of, for example, the total amount of greenhouse gas (GHG) emissions of an activity and its value chain (i.e., compared to a no-emission reference scenario). Similarly, such a reference can be used to assess the impact of the total amount of pollution, or of the training received by employees, in an absolute sense.

Marginal reference scenario(s)

Defining a marginal reference scenario is less straightforward than defining an absolute reference scenario. A marginal reference scenario requires you to identify and include activities of any competitors or substitute organisations that would most likely take over the production or clientele. For a marginal

reference scenario, you should clearly identify the differences with respect to the activities of your organisation.

In most cases, the sector-wide or local average production provides a suitable marginal reference activity. However, the situation in different regions or different sectors can vary significantly. Therefore, the marginal reference scenario is dependent on the specific situation, and you should be as specific as possible when defining average values for the assessment.

There is often more than one marginal reference scenario that provides a plausible alternative to your organisation's activities. You are free to choose the most suitable reference scenario for each impact. However, you should choose the most realistic reference scenario, and not the scenario that overestimates positive impacts or underestimates negative impacts (see the [Impact-Weighted Accounts Framework, Part 1, Section 2.5](#), Other Principles - Conservative).

There are several aspects to consider when determining realistic marginal reference scenarios:

- **Characteristic of the organisation to the context**
An organisation can be disruptive and/or unique to the market when it, for example, is innovative or provides a product/service to an underserved market. A reference scenario in which a competitor fills the total available market share in absence of your organisation might not be realistic. The opposite is true for a highly competitive market: it is likely that the large majority market share would be taken over by competitors.
- **Multiple alternatives or substitutes to the product**
Consumers may choose different alternatives when a product disappears from the market. Ideally, you should consider a combination of different alternatives to substitute your organisation's product or service and assign each a weight—although for practical reasons you might focus on the most likely one only. To estimate the most plausible reference scenario, you could use data on consumer behaviour (e.g., surveys) or use a sector-average alternative

After deciding on the reference scenarios and before you continue to the next activity, you should revisit *Step 3: Scope the assessment*. You should reconsider whether any impacts are more or less relevant now you have chosen the reference scenario(s).

4.1.2 Identify the input and output of each activity

You have already specified the business activities and their value chains in *Activity 3.1: Set boundaries*. For each of those activities, you should determine the input (i.e., the required resources) and the output (i.e., the direct results) for the complete timeframe.

For both input and output, you should consider each type of capital. Examples of input are payments to suppliers (financial capital), half products (manufactured capital), time from employees (human capital) and fresh water use or raw materials (natural capital). Examples of output are products or services produced



(manufactured/intellectual capital), salary payments (financial capital), pollution (natural capital) and GHG emissions (natural capital).

You should identify input and output for both the activities of your organisation and for the activities in the reference scenario(s).

4.1.3 Identify the outcomes related to the input and output

Outcomes are the effects of the input and output have on the valuable(s) of the affected stakeholders [34]. Organisations have no direct control over outcomes, unlike they have over inputs and outputs. Outcomes can be both intended and unintended (see [Conceptual Framework for Impact Accounting, Section 3.5](#)). Intended outcomes can be the well-being consumers gain by using the organisation's product. Unintended outcomes can be the effect on climate due to emissions from the production.

To the degree that you haven't done so in *Step 3: Scope the assessment*, you should define outcomes for each stakeholder related to both the input and output of each reference scenario. It is especially important to understand the externalities as they are often not considered but are material, nonetheless. Consider the outcomes that occur on both a short term and a longer term.

4.1.4 Link outcomes to impacts

An impact is a difference in an outcome with respect to a reference scenario during a given timeframe. In other words, outcomes of your organisation's activity and those of the reference scenarios need to be subtracted to obtain impact. The list of key impacts in [Appendix A](#) links outcomes to specific impacts and their relevant capital.

For some impacts, existing sources provide standardised impact pathways. Mainly environmental impacts have already been well addressed. These standardised impact pathways can serve as a base, but some adjustments might be required to fit specific circumstances and to ensure consistency throughout your assessment.

When creating impact pathways from the bottom up, rather than using existing sources, make sure to consider both direct and indirect impact pathways (see [Conceptual Framework for Impact Accounting, Section 3.4.15-3.4.16](#)).

4.2 Establish calculation models

An impact pathway shows the cause (input and/or output) and effect (outcome) that lead to an impact. A calculation model specifies the different steps to calculate the footprint, or size/quantity, of an impact. In this activity, you should establish a calculation model for each impact in scope.

You can visualise a calculation model as a tree (**Figure 5**). A calculation tree starts with the process data at the bottom and ends with the impact's footprint indicator(s) at the top. The calculations (i.e., multiplications, divisions, subtractions or additions) are the branches of the tree. For those calculations, you might also need modelling parameters.

A footprint indicator expresses the size or quantity of an impact in a relevant unit.⁷ Examples of footprint indicators and their relevant units are GHG emissions expressed in CO₂-equivalents or health and safety incidents expressed in disability adjusted life years (DALYs).

Process data describe the input, output and/or outcome of your organisation’s activities specifically.

Process data are (often) measurable and will be expressed in different units:

- Data related to the input and output of activities, such as salaries or revenue expressed in the local currency, materials used or produced in kilograms / litres / tons / pieces, energy usage in kWh, time in days / years / FTE, emissions expressed in CO₂-equivalents.
- Data related to the outcome, such as customer/employee satisfaction, working circumstances at value chain partners, etc.

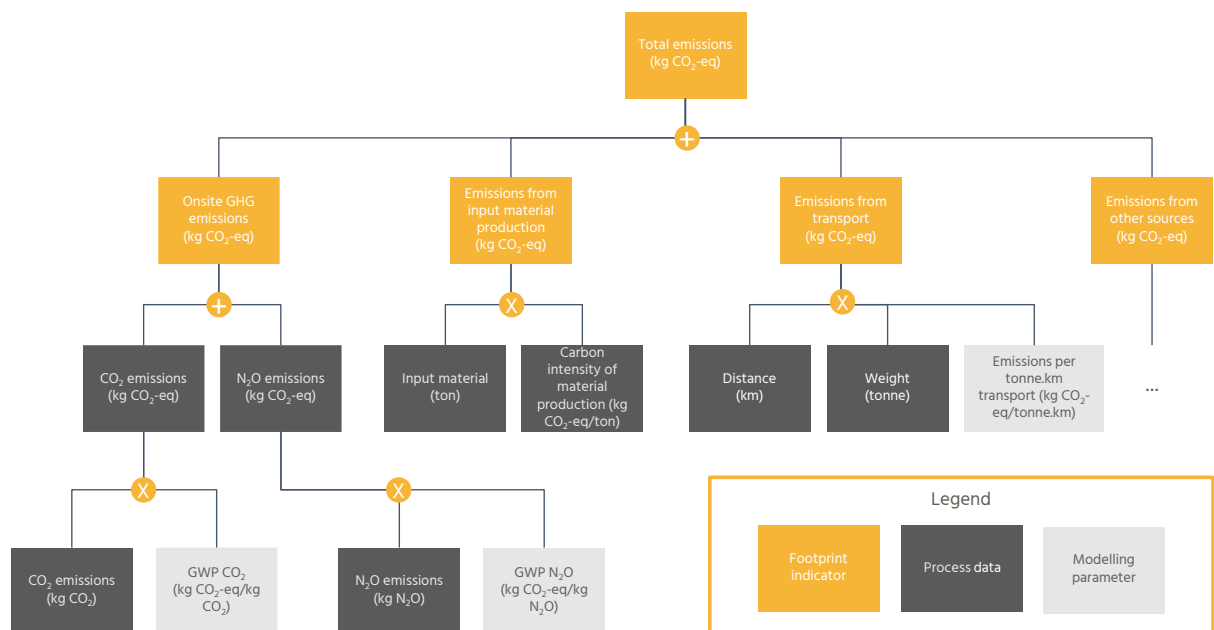


Figure 5: Example of a calculation tree to calculate the GHG greenhouse gas emissions footprint of a hypothetical situation (GWP = global warming potential).

Modelling parameters are variables that you need to translate process data into footprint indicators but that are not specific for your organisation or its value chain. Examples of modelling parameters are the global warming potential of specific GHG, risk factors or local regulatory requirements.

⁷ In LCA, indicators can be either mid-point or end-point indicators. For impact assessments, there is no fundamental reason to choose one over the other. Make sure to consider data availability when making a choice.



Often, impact models directly follow from your impact pathways. Other sources to consult include

- Generally accepted standards (e.g., GHG Protocol [35])
- Guidelines with wide adoption (e.g., ReCiPe life cycle assessment methodology [36], ISO 14040:2006 [37], ISO 14044:2006 [38])
- Peer-reviewed scientific literature
- Professional literature (see [Appendix E](#))

If methods from existing literature are inadequate or there is no method available to measure a specific impact, you can choose to create your own calculation model. To prevent bias in your calculations, you should consult experts in the relevant field.

You can also use a calculation model to consider how feasible it is that you will be able to collect the required data.

4.3 Collect process data

You need to collect process data to measure impact. Before you can collect the data, you need to identify the relevant sources. You can distinguish two types of data [39]:

- Primary data: data from specific processes within the supply chain of the organisation
Primary data are site specific, organisation specific or value-chain specific.
- Secondary data: data not from a specific process within the value chain of the organisation
This refers to data that are not directly collected, measured, or estimated by the organisation, but which are sourced from a database or other sources.

4.3.1 Identify primary data sources

Primary data are data obtained from your organisation or its value chain directly. Primary data may be obtained through meter readings, purchase records, utility bills, direct monitoring, customer/employee surveys, material/product balances or other methods for obtaining data from specific processes.

Preferably, the data are quantitative, but often only qualitative data is available. For example, data on customers' experiences indicate that 50% of customers experience improved health outcomes (but unspecified by how much). This type of data then does not serve directly as adequate information for impact measurement. In this case, secondary data and assumptions are required to convert the qualitative data into quantitative estimates.

4.3.2 Identify secondary data sources

Secondary data is the data obtained from external sources, such as global database and scientific literature. This data is usually used as complementary data and/or an estimate if certain primary data is not available. This can be the case when a deepdive into the value chain is necessary, not all suppliers are well-known and approachable. Secondary data include industry average data (e.g., from published production data, government statistics and industry associations), literature studies, engineering studies and patents, and may also be based on financial data, and contain proxy data and other generic data.

You can use secondary data for the following purposes:

- To fill the gap of missing primary data
Most often, your impact assessment will rely on secondary data for indirect impacts, but primary data might also be unavailable for direct impacts. For example, your organisation may not record data on externalities or might not have information on the CO₂ emitted on the supplier's site. Country or sector averages can be useful for this purpose.
- To calculate the marginal reference scenario
It is unlikely that competitors will be willing to provide you with organisation-specific data.
- To obtain modelling parameters to convert process data to footprint indicators
For example, your organisation may only have information on the number of employees and not on the wellbeing effect of employment. Scientific literature on the improved life satisfaction due to having a job could be a useful source of secondary data.
- To obtain monetisation factors
These factors are used to convert footprints indicators into monetarily valued impacts. *Step 5: Value impacts* provides specific guidance on how to determine monetisation factors.

Appendix E provides reliable sources for secondary data. A few examples are highlighted below:

Impact	Source	Description
Contribution to underpayment	Wage Indicator [86]	Provides data on real wages, salary check, minimum wage, living wage, wage in context, labour law, etc.
Contribution to climate change / pollution	Exiobase [82]	Global Multi-Regional Input–Output Table that can be used for the analysis of environmental impacts associated with the final consumption of product groups

4.3.3 Consult with data owners internally and externally

After you have identified which data can be collected from primary sources (internally and through value chain partners) and which has to be collected from secondary sources, you should involve the data owners. Data owners are well-informed regarding data properties, and they can ensure adequate traceability. Their information is essential when assessing the reliability and validity of data. Any assumptions you make on the data should be well-documented.

4.3.4 Collect data

When collecting data, you should ensure that you cover every data point identified in the calculation model. Appendix D provides a data hierarchy to help you select preferable data sources. You are free to choose any other system to assess the suitability or quality of data.



In case your assessment involves an impact projection, you must predict how some relevant data will change over time. When collecting data, consider that you might need additional information to make a forecast. A possible approach is to take a similar approach to the financial forecasts your organisation makes. You should ensure that the same approach is applied across all relevant scenarios.

Reversing the data strategy

Unfortunately, having sufficient resources to obtain all the relevant data is uncommon. Out of the three ways to obtain data, collecting primary data is usually the most expensive in terms of time and effort. You have to go out in the field and do surveys, measurements, and experiments, instead of using information from publications and databases that others have already worked hard to create.

However, in practice, the prioritisation of primary data is often reversed. Potential steps could be:

1. At the start of the measurement phase, estimations of all relevant data points are roughly based on readily available secondary or modelled data sources. This first, rough estimate can be made using hotspot analysis⁸. Figure 1 provides an example hotspot analysis for Dutch a grid-management company.
2. In the next step, the preliminary conclusions of the TCA study are drafted based on the outcome of the first estimations.
3. You test to which datapoints the first conclusions are the most sensitive: if a further data quantification would change the datapoints, how much would the conclusions change?
4. Only for the data points data selected under step 3, data need to be refined. Here, more resources can be used to collect primary data or refining secondary data. For example, to obtain more spatial or temporal detail, but this again involves greater complexity.
5. Even when following the 'reversed' data strategy, there could be instances where crucial datapoints cannot be covered. In such cases, instead of accepting there is no data and using the value 0 for the data point, a better approach is to start gap-filling. This involves roughly estimating the data point based on the already obtained data for other datapoints. Keep in mind that gap-filling likely leads to a lower quality data representation and, hence, the quality of the analysis. Box 1 provides a case study on the true price of cocoa, illustrating gap-filling in practice.

⁸ Hotspot analysis is an alternative to full quantification and is helpful in the first step of the reversed data strategy. In a hotspot analysis, the relative importance of the different indicators is made explicit without fully quantifying them. It can be used when data are scarce, but also in other contexts where quantification is not possible, for example, if there are no methods to assess certain indicators.

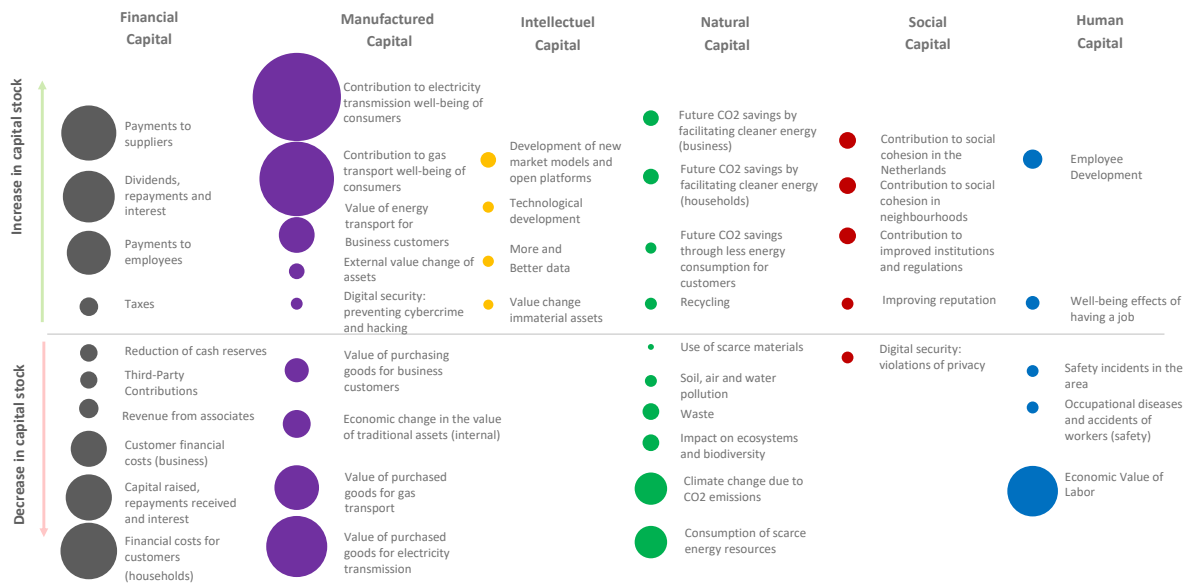


Figure 1 Hotspot analysis of a Dutch network provider company

Box 1 Gap-filling in practice – case study on the true price of cocoa

This TCA study assessed the true price gap of the cocoa used to make Tony’s Chocolonely compared with a benchmark for both 2013 and 2017. The cacao is sourced from Ghana and Côte d’Ivoire. See IEF (2023) for a full description of the case study.

Data gaps for material indicators were encountered frequently in the study. The below provides an indication of how gaps were filled:

Occurrence of child labour

Data on the total number of child workers (per age category and type of work [hazardous/non-hazardous]) were collected in 2015, right in the middle of the two-year scope. There was qualitative evidence that this number was not increasing or decreasing rapidly.

Côte d’Ivoire, 2015

Number of child workers (5–14, hazardous)	840 000
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However, total production and labour productivity improved over time, suggesting a decreasing amount of child labour per kilogram of cocoa. In addition, labour productivity at Tony’s farms was higher than the national average (in both years).

Variable	Côte d’Ivoire		Tony's farms	
	2013	2017	2013	2017



Total cocoa production	1.5 billion kg	2.0 billion kg	5.1 million kg	7.1 million kg
Average labour productivity	532 kg/FTE	769 kg/FTE	1 015 kg/FTE	1 302 kg/FTE

Tony's could not prove a lower occurrence of child labour at its farms compared with the national average in 2013. In 2017, it performed an audit that did prove this.

Côte d'Ivoire, 2017		
	Country	Tony's
Percentage of farms with child labour	32%	11%

The above provides sufficient information to estimate child labour per kilogram of cocoa in every system in a comparable way.

Variable	Côte d'Ivoire		Tony's farms	
	2013	2017	2013	2017
Est. child workers per kg cocoa (1/1 000)	0.58	0.40	0.30	0.08
Calculation	840 000 children / 1.5 billion kg	$0.58 \times 769 / 532$	$0.58 \times 1\,015 / 532$	$0.58 \times 1\,015 / 532 \times 11\% / 32\%$

Occupational health and safety risks

- For occupational health and safety risks, the best available data were on the occurrence of incidents on farms both UTZ certified* and not UTZ certified. Explicit data for the farms producing Tony's cacao were not available. However, all Tony's farmers are UTZ certified.
- Tony's farms were set to the average of UTZ-certified farms. For the national average, the proper weighted average of UTZ-certified and non-UTZ-certified farms was used.

Variable	Benchmark 2013		Tony's 2013		Benchmark 2017		Tony's 2017	
	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire
Share of farms UTZ certified (%)	12	28	100	100	19	33	100	100
Occurrence of incidents (incidents/person/year)	0.36	0.35	0.32	0.32	0.36	0.35	0.32	0.32

Fertilizer use

- For fertilizer use, basically only one data point was available: for Tony's farms in Ghana in 2017.
- There is no clear indication that fertilizer use changed over time, was different on Tony's to other farms, or on Ghanaian and Ivorian farms. Therefore, fertilizer use per hectare in all systems was assumed to be the same.
- Amounts per unit output (kg cocoa) did differ, however, due to variations in land productivity.

Variable	Benchmark 2013		Tony's 2013		Benchmark 2017		Tony's 2017	
	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire	Ghana	Côte d'Ivoire
Crop yield	377	518	230	633	420	486	573	680
Phosphorus fertilizer (kg/ha)	44	44	44	44	44	44	44	44
Phosphorus fertilizer (kg/unit output)	0.12	0.08	0.19	0.07	0.10	0.09	0.12	0.08

Note: * UTZ certification provides a label for sustainable farming practices for tropical products such as cocoa and coffee.

Source: True Price. 2018. *The True Cost of Cocoa: Tony's Chocolonely*. Amsterdam, Impact Institute. <https://impactinstitute.com/wp-content/uploads/2018/11/Impact-Institute-The-True-Cost-of-Cocoa-Progress-Tonys-Chocolonely-2018.pdf>

4.4 Calculate (non-valued) impacts

The final activity of *Step 4: Measure impacts* is to calculate non-valued impacts. This activity requires you to take the followings actions for each impact in scope:

- Implement the calculation model into a software tool
You can use spreadsheets for relatively simple calculations or advanced software tools for more complex calculations.
- Double check whether the collected data meet the input requirements of the calculation model



For example, make sure that the data are expressed in the expected units. If not, you have a choice either to update the model to fit the available data or to collect new data.

- Calculate the footprint indicators of your organisation and those of the reference scenario
- Calculate the non-valued impact of your organisation by subtracting the footprint indicator of the reference scenario from the footprint indicator of the reference scenario

An external independent party, such as an auditor or an expert in the field, can perform a final validation—see Step 8. But it is also important to verify and validate the calculation models throughout the assessment process. You can challenge different aspects of the model:

- Impact pathways: do they capture all effects your organisation’s activities have?
- Reference scenarios: do they represent a suitable alternative to your organisation?
- Quality of primary and secondary data: is the quality of the data you use sufficient for its purpose?⁹
- Assumptions and limitations: how do the assumptions in your model affect its validity?
- Calculation steps: are the calculations implemented correctly?
- Results: are the results within the expected order of magnitude?

Further reading



The following sources provide guidance on identifying impact pathways/metrics

- GRI Topic-specific Standards [40]
- A methodology promoting standardized natural capital accounting for business [41]
- Sector-specific SDG-related metrics for corporate reporting [42]

The following sources provide (quantitative) modelling approaches

- Impact Management Platform [43]
- IRIS+ System [8]
- Impact-Weighted Accounts Project [10]
- LCA standards, such as ReCiPe2016 [36]

The following sources provide potentially relevant impact data

- Global Impact Database [44]
- Impactdatabase.eu [45]
- Phenix Capital Group’s Impact Database [46]

⁹ The European Commission’s Product Environmental Footprint (PEF) method provides recommendations how to assess data quality [39].

Illustrative example: Gluticious—Step 4: Measure impacts

Identify Impact Pathways



Illustrative example: Gluticious—Step 4: Measure impacts



Identify Impact Pathways

Gluticious reflects on its activities and defines the following two references for its activities:

- *Absolute reference: Gluticious does not make gluten-free bread, does not employ people, does not purchase supplies from (and pay to) suppliers, etc. None of these are directly replaced by the activities of others.*
- *Marginal reference: Gluticious expects that in its absence, people eat more gluten-free bread from one of the competitors. These will continue to produce in line with their standards, but scale up their volume. Most employees will find work elsewhere, but some might be unemployed. It is likely that competitors need a similar supply of input materials (and pay equivalent amounts) to their suppliers.*

The analysis in Year 1 is mostly on absolute impact for two reasons. Firstly, Gluticious foresees that it needs time to learn how to work with the impact models and the absolute reference is easier to model. Once it masters this, it can utilise this experience in subsequent years. Secondly, Gluticious sees that there are some differences to its competitors (e.g., its supplies mostly from local suppliers and all its breads have high fibre contents), but the similarities are also large. It therefore foresees that marginal impact is less material than is the absolute impact.

Gluticious uses the (absolute) reference to draw impact pathways. There are many of these. In this example box, we focus on the impact “Contribution to climate change”. This has both a direct and an indirect component. The indirect component has several impact pathways. In this example, we focus on the grain value chains.

Direct impact

		Input	Activity	Output	Outcome	Impact
Activity	Gluticious is in operation	Raw materials, energy, time and expertise of the employees, etc.	Gluticious produces GF bread (use of the oven, electricity, etc.)	GHG emissions during GF bread production	Contribution to climate change	Absolute impact Contribution to climate change (a negative impact)
Reference	Gluticious is not in operation. Their activities are not taken over by competition.	No input required	No GF bread production	No GHG emissions	No contribution to climate change	



Indirect impact (associated with emissions in the grain value chains)

		Input	Activity	Output	Outcome	Impact
Activity	Glutilicious is in operation	Grain (to be supplied by suppliers).	Glutilicious produces GF bread; They require grains (rice, corn, millet, ...) and pay suppliers to provide this			Absolute impact Demand for grain: Glutilicious pays the suppliers to supply grains
Reference	Glutilicious is not in operation. Their activities are not taken over by competition.	No inputs	No GF bread production; No demand for grain			
Activity	The suppliers of Glutilicious are in operation	<ul style="list-style-type: none"> Financial input (from Glutilicious) Other inputs 	The suppliers produce grains for Glutilicious	GHG emissions during grain production (and transport)	Contribution to climate change	Absolute impact Contribution to climate change
Reference	The suppliers of Glutilicious are not in operation. Their activities are not taken over by competition.	No input required	No raw materials production	No GHG emissions	No contribution to climate change	

Glutilicious makes similar impact pathways for the other ingredients and the transportation steps. In theory, it could also do so for the downstream value chain (e.g., energy use in supermarkets). However, this seems less material and Glutilicious does not assess it further.¹⁰

Establish calculation models

Glutilicious makes calculation models for each impact. Again, we focus here on Contribution to climate change. Here, Glutilicious follows the GHG protocol. Its calculation models are in line with **Figure** , but can be even simpler, given that their sources have values already included CO2-eq, so there is no need to use the global warming potential factors for different gasses.

Own operations: Electivity use × Emissions per kWh + Gas use × Emissions per m³

Upstream: $\sum_{Ingredients} (LCA\ of\ ingredient\ [kg\ CO_2 - eq/kg\ sources] \times mass\ sourced + Emissions\ of\ transport\ [kg\ CO_2 - eq/tonne.kg \times mass\ transported \times distance\ covered)$

Collect input data

Glutilicious uses the following approach to collect data.

¹⁰ Glutilicious notes that downstream emissions are not something it can control anyway, as opposed to the upstream value chain (e.g., it can select suppliers, or specifically select grains for the bread). While this is in itself not a valid argument for excluding it (materiality should be leading), it does simplify the decision.

Own electricity and gas use	Know from operations
Emissions per kWh and m ³	Data delivered by energy and gas suppliers (Glutlicious is using 100% green energy) In earlier years, when it used energy in line with the national energy mix, it could have used the Statistical Office.
Emissions associated with ingredients	Corn manufacturer able to provide high-quality data (including its own upstream value chain). Estimates from literature for other grains Vegetable oil also material despite low volumes (association with deforestation)
Emissions per tonne km	Using global averages for transportation by ship, car and plane (Glutlicious aims to refine this in the future)
Distance and mass transported	(Roughly) estimated from location of suppliers and amount of materials sourced

Calculate non-valued impacts

Glutlicious calculations give the following results:

- Direct impact (from own operation): 16 kton CO₂-eq / year
- Indirect impact (from value chain): 45 kton CO₂-eq / year

A note on other impacts

Most impacts are calculated in a similar manner.

Two notes on the specific health impacts and one on client value of products

- Mislabelling: there is no indication that this happened in the last year. The best estimate of the size of the impact is zero.
- Health of consumers: Glutlicious finds this can be expressed through healthy years won or lost (DALYs). However, it cannot make a model of how many healthy life years would be won by eating healthy bread. Instead, it assesses the indicator in a qualitative way. The effect is large, but Glutlicious could still make further improvement (having even more fibre and protein and less salt in the bread).
- Glutlicious finds it hard to make the value of their products to consumers explicit. In focus group discussions with a sample of consumers, most express that Glutlicious breads are “worth every Euro”. Glutlicious translates this to the value of products is at least as large as payments from clients. The value could be much higher, but Glutlicious is not able to make this surplus explicit.



Relation to CSRD

If you are complying with CSRD, it requires you to collect and disclose quite granular data points, *such as total energy consumption from fossil sources, from nuclear sources and renewable sources (ESRS E1-5) scope 1, 2 and 3 emissions (ESRS E1-6) or total water consumed, total water consumption in areas of high-water stress and total water recycled and reused (ESRS E3-4)*. Many of the impacts measured with IWAF are already captured in those data points.

You can use data points collected under CSRD to match them with the impact categories that IWAF applies. While data points on metrics such as insights from the stakeholder engagement might be useful, there are plenty of data points from CSRD which are not necessary for impact measurement under IWAF, such as data on policies, process descriptions, governance and targets or metrics which are only a driver of impacts rather than inputs or outputs.

A high-level map of the CSRD metrics and IWAF impacts can be found in the publication [From Transparency to Transformation: Unlocking the Full Potential of CSRD with Impact Accounting](#).

At the same time, IWAF also requires including additional impacts not necessarily captured by the sector-agnostic CSRD standards. These include time invested by employees, and impacts related to intellectual capital. Besides, the metrics used to display the impact are different. Most importantly – they differ in scope: IWAF suggests to always have a full value chain scope rather than focussing on impacts resulting from own operations only. This is the case for some metrics prescribed by CSRD e.g., pollution of air, water and soil and water consumption.

For the impact measurement complying with IWAF, this means that you might have some necessary process data readily available from your CSRD compliance, saving you some efforts. At the same time, impact pathways and calculation models still need to be established, for which you might use CSRD data as input, but will also need more /additional process data.

Step 5: Value impacts

In this step, you will value each impact in scope. Through valuation, you convert all quantified impacts from their natural unit into a single common unit that allows for comparison of impacts. Often, monetary valuation will be applied.



Activities

- 5.1 Determine monetisation factors** – how do you monetarily value the impacts in scope?
- 5.2 Calculate valued impacts** – what is the value of the impacts?

5.1 Determine monetisation factors

As a first activity to value impacts, you should determine the appropriate monetisation factors. Monetisation factors are generally complex to calculate. Therefore, you are advised to use directly applicable monetisation factors from a source provided in [Appendix F](#).

As the list is not exhaustive, the possibility exists that there is no monetisation factor available for an impact in scope. In that case, you can estimate the factor yourself. Different approaches to estimate monetisation factors exist for impacts associated with rights and those non-associated with rights.

5.1.1 Valuation of impacts not associated with rights violations

The underlying principle of valuing this type of impact is to estimate the monetary equivalent of the effect to the wellbeing of the affected stakeholders. Available methods include cardinal utility approaches (by using market prices as an estimate) and stated or revealed preference methods (if the goods/service has no market price) (see [Conceptual Framework for Impact Accounting, Section 6.2.7-6.2.10](#)). In any case, you should use a valuation approach that weighs each individual stakeholder's wellbeing equally.

5.1.2 Valuation of impacts associated with rights violations

As this type of impacts involves a violation of basic rights, the valued, absolute impacts are negative per definition. These impacts can only be positive in marginal terms (i.e., in case of a smaller absolute impact



with respect to the marginal reference scenario). Valuation can be done by estimating the costs of providing remediation to those who incurred the effect of the rights violation (see [Conceptual Framework for Impact Accounting, Section 6.2.11-6.2.14](#)).

Monetisation factors are estimations of the value of an effect to a certain stakeholder. It is impossible to include a monetisation factor for each individual stakeholder, but you should be aware of the sources of uncertainty in the monetisation factors you use. Regional and time specificity are sources of uncertainty (variation), but also a limited understanding of limits in modelling interaction between determining factors. You should ensure that the level of specificity of the monetisation factors you use is suitable for your objective.

Some technical notes on monetisation factors are given in the [Impact-Weighted Accounts Framework, Part 3, Section 4.2.16-4.2.19](#). This includes in particular that all impacts in scope are expressed in the same currency and within the same base year. This can be guaranteed through proper exchange rates and inflation rates. When you use the same monetisation factor for every year, all impacts are measured at the same price level. For example, using monetisation factors expressed in Year 0 International \$ (Year 0 Int.\$) for all years, will result in Year 5 impacts being expressed in Year 0 Int.\$.

5.2 Calculate valued impacts

In this activity, you convert an impact from its natural unit into a monetary unit by using the following equation:

$$\text{Monetarily valued impact} = \text{Footprint indicator} * \text{Monetisation factor}$$

You have already calculated the footprint indicator of each impact in *Activity 4.4*. You should apply the above equation to the footprint indicator of each impact in scope.

Further reading



Methodological frameworks on monetary valuation

- Impact-Weighted Accounts Project [10]
- Monetisation of the MMG Method [47]
- The Guide to SROI [48]
- Natural Capital Protocol, Step 7 [2]
- Valuing the impact of food by FoodSIVI [33]
- ISO 14008:2019 - Monetary valuation of environmental impacts and related environmental aspects [49]

Valuation databases

- Monetisation Factors for True Pricing [50]
- Valuation Framework for True Price Assessment of Agri-food Products [51]

- Environmental Prices Handbook [52]
- TEEB Valuation Database [53]

Illustrative example: Gluticious—Step 5: Value impacts



From the previous step, the non-monetised contribution to climate change impact of Gluticious is:

- Contribution to climate change from own operation: 16 kton CO₂ / year
- Contribution to climate change in the value chain: 45 kton CO₂ / year

This impact information needs to be converted into single monetised unit that can be comparable with other impacts.

It is done by simply multiplying the footprint with the monetisation factor. The monetisation factor for CO₂ is 224 Int.\$/ton CO₂ (*taken from Appendix F*). It results in:

- Contribution to climate change from own operations:
16 kton CO₂ / year * 224 Int.\$ / ton CO₂ = 3.6 million Int.\$ / year.
- Contribution to climate change in the value chain:
45 kton CO₂ / year * 224 Int.\$ / ton CO₂ = 10.1 million Int.\$ / year.

Gluticious applies a similar approach for other impacts.



Relation to CSRD

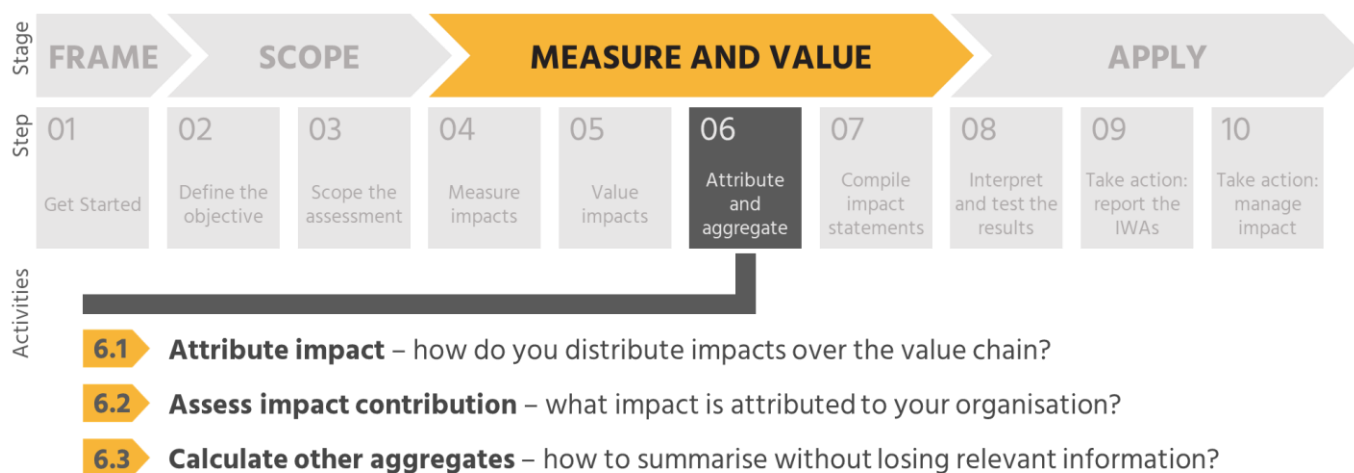
Under CSRD, valuation in monetary terms is not included. However, monetization, as incorporated by IWAF, offers numerous advantages, including enhanced comparability, improved understanding of the different impacts a company has and management of trade-offs.

As mentioned in Step 4, some data points collected under CSRD might be useful for measuring the impacts with IWAF, while others won't be needed, and additional data points will be required in any case. Once you have done the measuring and start with the valuation, you can focus on the impacts calculated with the pathways under IWAF (for which you might have used both CSRD and additional data) only.

Afterwards, a potential next step for CSRD-compliant companies is using those monetized impacts to include them in their business strategy and disclose this in the next Integrated Report under CSRD on general disclosure such as ESRS 2 - SBM (Strategy and Business Model).

Step 6: Attribute and aggregate

In this step, you will prepare the interpretation of the results in the next stage. First, you will distribute impacts over the different actors in the value chain (a process called attribution) and assess the impact attributed to your organisation. Then you will combine, or aggregate, impacts into useful metrics without losing relevant information.



6.1 Attribute impact

So far, you have assessed both direct and indirect impact. For example, you have measured and valued the scope 1, 2 and 3 emissions of your organisation. In principle, you can report and manage direct and indirect impact separately (similar to the GHG Protocol, where scope 1, 2 and 3 are reported individually). However, it is often useful to report and manage your organisation’s impact according to its responsibility or influence, for direct and indirect impacts combined. Attribution gives an estimation of the influence your organisation has on a specific type of impact.

The IWAF attributes impact based on influence: the organisation at whose operations the impact originates gets the largest part of the impact attributed, and other value chain partners share the remaining portion of the impact. IWAF suggests attributing impact using a (linear) combination of direct and indirect impact. The framework provides requirements on attribution of impact in the [Impact Weighted Accounts Framework, Appendix D](#). Most importantly, you should not double count impact (see principle of *Conservation of impact during attribution and aggregation*).

No “best approach” to attribution exists and specifically, no attribution distribution satisfies all five principles for attribution (*Conservation of impact, Additivity of impact, Sensitivity to impact, Sufficient resolution, and Co-responsibility*) in a unique way. The [Impact Weighted Accounts Framework, Appendix D](#) provides a possible approach to attribution, while acknowledging the possibility of using different approaches. This guidance document follows the suggested approach (see [Table 1](#) and [Appendix G](#) for an overview).

Table 1: Summary of attribution approach based on impact categories

Type of impact	Responsibility	Attribution
Category 1: Predominantly internal effects	Resides only with the business; no need to re-distribute	No re-attribution over value chain
Category 2: Externalities with primary responsibility and value chain responsibility	Shared among value chain partners Most responsibility assigned to the organisation where the impact actually occurs	Impact equivalence <ul style="list-style-type: none"> • 50% attributed to organisation at which the impact initially occurs • 50% re-attributed over value chain
Category 3: Effects without a primary responsibility	Shared among value chain partners Not possible to identify a specific partner to assign primary responsibility to	Fully attributed over value chain

For each impact, you should determine the relevant attribution category (Section 6.1.1). Then you need to determine the attribution factors for each impact (Section 6.1.2). Once you have determined the attribution factors, you can calculate the share of the total impact that you attribute to your organisation.

6.1.1 Determine attribution category

For most impacts on the standard list of impacts (see Appendix to Step 3: Standardised list of impacts), the attribution categories are pre-defined. When no pre-defined attribution category is suggested for an impact in scope, you can determine the category based on the approach specified in [Appendix G](#).

6.1.2 Determine attribution factors

A pragmatic approach to determine attribution factors is to use value added¹¹ (or added value) as a proxy to impact influence, as suggested in the [Impact Weighted Accounts Framework, Appendix D](#). The advantage of using added value as a proxy is that it is a well-known and well-documented indicator.

When determining the value chain attribution factor for your organisation, you might need to estimate added value considering upstream and downstream organisations.

- For upstream added value: payments to suppliers as a part of your organisation's revenue indicates the added value of your suppliers. This will also include the added value of suppliers of suppliers, but that is not of interest when determining the attribution factor for your organisation.
- For downstream added value: the percentage of the consumer price that flows back to your organisation indicates the added value of your organisation downstream.

¹¹ "Value added reflects the value generated by producing goods and services, and is measured as the value of output minus the value of intermediate consumption. Value added also represents the income available for the contributions of labour and capital to the production process." - OECD (2018), [National Accounts of OECD Countries](#) [54].

The comparability of impact assessments between years is sensitive to the added value estimations. If the attribution factors vary significantly between years due to the added value estimations, you should disclose this information when reporting on impact. You can opt to show how the results of the assessment would compare if added value had not changed.

6.2 Aggregate impact contribution

Once you attributed impact to your organisation, you can aggregate its impact contribution. When aggregating impact, you combine impacts into useful metrics, without altering the meaning. In this activity, you will aggregate impacts following the aggregation principles (see [Conceptual Framework for Impact Accounting, Section 7](#)). First, you will aggregate impact based on whether the impact is measured with respect to an absolute or marginal reference. Then, you will aggregate based on other impact properties.

Make sure to aggregate impact that is attributed and expressed in the same (often monetary) unit.

6.2.1 Assess absolute, marginal, or total impact contribution

In the previous activity, you have determined the attribution factors for the direct and indirect part of each impact. In this part of the activity, you will use those attribution factors to calculate the absolute, marginal or total impact contribution of your organisation:

- **Absolute impact contribution** is a (linear) combination of direct and indirect absolute impact.
- **Marginal impact contribution** is a (linear) combination of direct and indirect marginal impact.
- **Total impact contribution** is a (linear) combination of all four types of impact (direct and absolute, direct and marginal, indirect and absolute, and indirect and marginal impact).

For example, when calculating absolute impact contribution, you can use the following equation:

$$\begin{aligned} \text{Absolute impact contribution} \\ &= \text{direct attribution factor} \times \text{direct absolute impact} \\ &+ \text{indirect attribution factor} \times \text{indirect absolute impact} \end{aligned}$$

You calculate these impact contributions by combining:

- Impact of the same type that result from different impact pathways. The combined impacts have a similar effect (e.g., contribution to climate change, wellbeing effect of employment or contribution to violations of human rights) but are related to a different input or output of (potentially) different activities.
- Direct and indirect impact of the same type. For example, you can combine the valued and attributed impact from scope 1, 2 and 3 emissions of the GHG Protocol into the valued impact contribution “Contribution to climate change” [35]. The action of combining direct and indirect impacts can have some overlap with combining impacts of the same type from different impact pathways.



After aggregating the absolute impact contributions, you will have assessed one valued absolute impact contribution for each impact for each stakeholder. For example, you will have, among others, one value for the impact “Contribution to climate change” for the stakeholder group “Society” and a value for each of the stakeholder groups “Employees”, “Consumers” and “Society-at-large” for the impact “Effect on health & safety”.

6.2.2 Aggregate other impact contributions

You can choose to aggregate impact information beyond absolute, marginal or total impact contributions. However, it is important to realise that you will inherently lose information when aggregating. Therefore, when you decide to present aggregated impact, you should in all cases also to present each of its elements separately. Whenever you aggregate impact, you should adhere to the principle outlined in [Conceptual Framework for Impact Accounting, Section 7](#). You can, at most, sum the positive impacts to one aggregated value, the negative impacts that are not externalities to another value, and all negative impacts that are externalities to a third value.

Three possible aggregates are:

1. All impacts of one capital (for different stakeholders)

Impact can be aggregated per type of capital. For example, salaries, payments to suppliers, and profit & loss can be aggregated into Financial Capital impact. This type of aggregation can be useful for steering, future monitoring and evaluating your organisation’s strategy.

2. All impacts of one stakeholder group (for different capitals)

Impact can be aggregated per stakeholder group. For example, salaries, value of time and wellbeing effect of employment can be aggregated to the employees. This type of aggregation can be useful for steering, future monitoring of impact and evaluating organisation’s strategy.

3. Aggregation at organisational level

Impact can be aggregated to the positive impact, negative impact that is an externality, and negative impact that is not an externality of the complete organisation. This type of aggregation can be useful to compare impact between different organisations and between different periods, and with the ideal situation your organisation aims to achieve.

Illustrative example: Glutilicious—Step 6: Attribute and aggregate



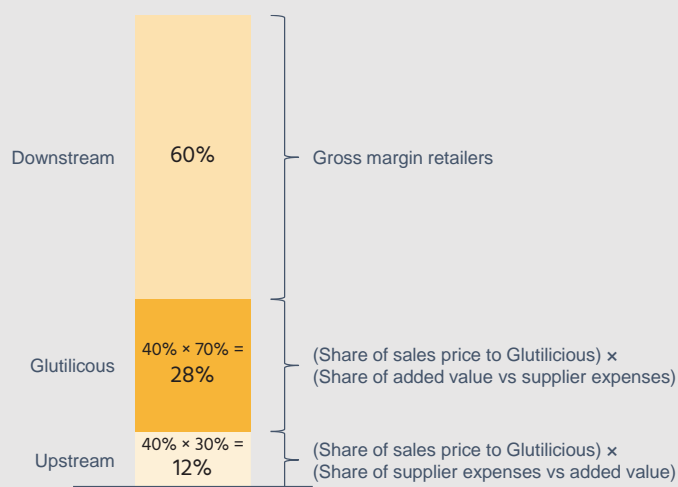
After having assessed the valued (direct and indirect) absolute impacts in Step 5, Glutilicious aggregates these into the (absolute) impact contribution. In this box, we again focus only on contribution to climate change.

Contribution to climate change is an impact of Category 2: Externalities with primary responsibility and value chain responsibility. This means that part of the impact is “kept” by the organisations that emit the GHG in the first place. A second part is distributed over the various value chain partners.

Glutilicious first assesses the attribution factors in line with the added value criteria. They use the following inputs

- The average Glutilicious bread is sold for €1.20 by Glutilicious to the supermarket chains, who then sell it for €3.00 in their stores (i.e., the gross margin of retailers is 60%).
- Payments to various suppliers represent 30% of Glutilicious revenue. The other 70% represents elements of added value, such as salaries, net profit and taxes.

Based on this, they assess their share of added value in the value chain at 28%. This is visualised in the figure below.



Now they can assess the relevant attribution factors

$$\text{Attribution factor direct impact} = 50\% + \frac{1}{2} \times 28\% = 64\%$$

$$\text{Attribution factor indirect impact} = \frac{1}{2} \times 28\% = 14\%$$



Recalling the valued impacts from the previous section: 3.6 for direct and 10.1 million Int.\$/year for indirect, Glutiticious can easily calculate the (absolute) impact contribution.

$$(Absolute) \text{ impact contribution} = 64\% \times 3.6 + 14\% \times 10.1 = 3.7 \text{ million Int\$/year}$$

Other impacts are assessed in a similar way.

Relation to CSRD

Attribution

CSRD and IWAF both consider impacts deriving from own operations as well as from a company's value chain. However, the value chain is fully in scope for IWAF, while it is only partially captured in CSRD metrics. In contrast to CSRD, IWAF thus uses an attribution method to distinguish between impacts caused by own operations and value chain partners to avoid double-counting or no counting at all. Since you have already separately calculated direct and indirect impacts in Step 5, the difference between IWAF and CSRD does not play a role at this step. You can solely focus on the impact pathways calculated under IWAF.

Aggregation

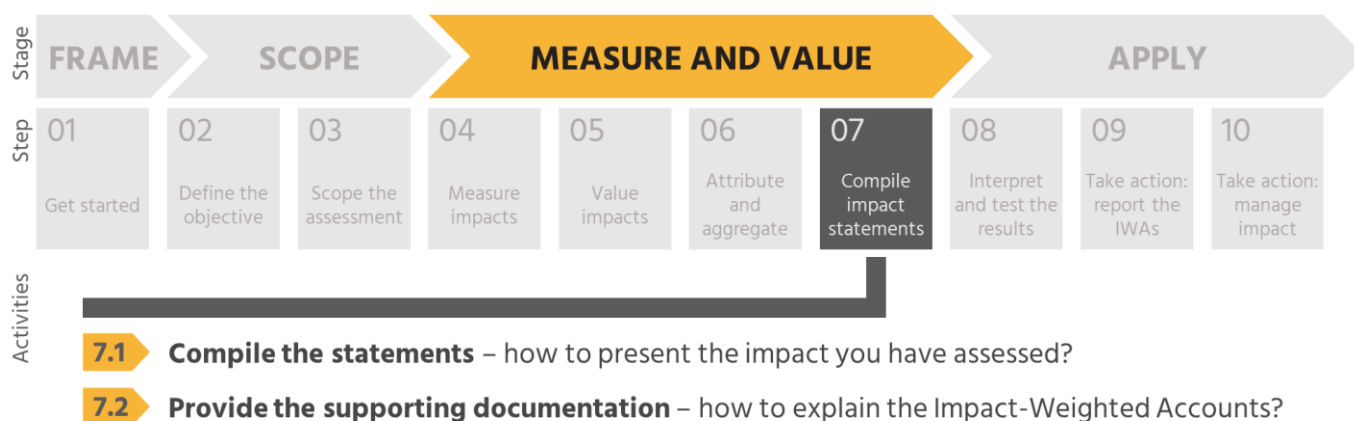
Similarly, following the logic of the previous chapters on impact measurement and comparability, aggregation is another core concept that makes IWAF a helpful framework for impact management decisions (and comprehensible reporting).

Having followed the previous steps, the information can be aggregated according to IWAF guidelines without additional consideration of CSRD.

However, after having aggregated the impacts caters comparison across impacts, thereby facilitating strategic decisions based on a holistic view of value creation. This, in turn, can also feed into data points to be disclosed under CSRD, for example which new policies or actions will be taken.

Step 7: Compile impact statements

In this step, you will compile the impact contributions into different statements. Each statement is relevant for a specific objective. You will also prepare the supporting documentation that explains what is included in the IWAs.



7.1 Compile the statements

In *Step 4: Measure impacts* and *Step 5: Value impacts*, you have measured and valued multiple impacts. In *Step 6: Attribute and aggregate*, you have aggregated impact to form valued impact contributions. Impact statements present impact contributions in a structured way. The IWAF provides five types of statements that form the elements of IWAs (see the [Impact-Weighted Accounts Framework, Part 2, Section 2-3](#)):

- Integrated Profit & Loss Statement
- Stakeholder Value Creation Overview
- Sustainability Statement for External Cost
- Sustainability Statement for SDG Contribution
- Integrated Balance Sheet

This activity requires you only to organise the valued impact contributions according to certain properties, or labels. Most of these labels, you have already determined in previous steps.

7.1.1 Compile the Integrated Profit & Loss Statement

The IP&L Statement collects and presents impact contributions per capital and per stakeholder. The valued impact contributions already have the required “labels”, their associated capitals and stakeholders, to organise them within an IP&L Statement.

7.1.2 Compile the Stakeholder Value Creation Overview

The IP&L Statement contains a lot of information about every capital and each stakeholder. You can reduce the amount of information on a single statement by providing a separate statement for a specific stakeholder with the Stakeholder Value Creation Overview.

As with the IP&L Statement, you can still organise the impact on each statement per capital. In addition, it might be interesting to show the distinction between input-related and output-related impacts explicitly. This distinction provides a transparent overview of what each stakeholder group put in and what the group got out (both intentionally and unintentionally). When you specified impact pathways in *Step 4: Measure impacts*, you determined whether impacts are linked to input or output of activities.

7.1.3 Compile the Sustainability Statement for External Costs

The IP&L Statement does provide information on the external costs that your organisation caused. However, when presented together with other, larger impacts, the information about external costs can easily be overlooked. Regardless of the relative size of impacts, when the organisation's activities contribute to impacts associated with rights violations, these external costs should be addressed. The Sustainability Statement for External Costs collects and presents impacts associated with rights violations specifically. In previous steps, you have already determined the (non-)association with rights for each impact, which usually makes collecting the relevant impacts straightforward.

7.1.4 Compile the Sustainability Statement for SDG Contribution

Some impacts in the IP&L Statement contribute to the Sustainable Development Goals (SDGs) [21]. The Sustainability Statement for SDG Contribution can show your organisation to what the extent it contributes to achieving the SDGs. When compiling this statement, you should:

- Map impacts to the relevant SDG. An impact can contribute to no SDGs at all, to a single SDG or to multiple SDGs at the same time.
- Map each SDG-related impact to the most granular information of the SDGs. Aim to map impacts to specific SDG indicators first, then to SDG targets, and lastly to the goal itself (there are 232 indicators, 169 targets and 17 goals).
- Any impacts with no contribution to SDGs should not be reflected in the SDGs Contribution Statement.
- Any impacts that contribute to multiple SDGs should be distributed equally to the respective SDGs.
- Disclose the criteria that you used when assigning impacts to SDGs.

7.1.5 Compile the Integrated Balance Sheet

Currently, the concept of the IBaS is under development (see [Conceptual Framework for Impact Accounting, Section 8.8](#)). Therefore, inclusion of the IBaS is, at this moment, not seen as a requirement for IWAs. When the concept has matured, recommendations on how to compile IBaS will be added.

7.2 Provide supporting documentation

Make sure that for each impact included in the assessment, you have documented well what data sources, calculation models and assumptions and limitations are relevant. A complete supporting documentation is important for the interpretation of the results and for further improvements of your assessment methodology, but also required for audits of your impact reports.

Illustrative example: Glutlicious—Step 7: Compile impact statements



In the previous steps, Glutlicious assessed the valued and attributed impact contribution for all impacts in scope (or at least all impacts where a quantitative assessment was feasible). Drafting the IP&L does not require more work than combining this information and structuring it per stakeholder and type of capital.

The three derived statements follow from the IP&L. In the Stakeholder Value Creation Statement, all input-related and all output-related impacts are collected per stakeholder. In the Sustainability Statement for External Costs, all negative impacts of the rights dimension are collected. And the Sustainability Statement for SDG Contribution combines all impacts in the IP&L that can be linked to an SDG.

Appendix H contains the full impact statements of Glutlicious.

Relation to CSRD

While information gained through the application of IWAF can feed into the content disclosed under CSRD, its presentation is distinct. Opposed to the ESG structure that CSRD follows, the statements derived from IWAs, especially the IP&L, uses six capitals (natural, social, human, manufactured, intellectual, financial) and shows how the respective value creation with an explicit stakeholder view.

While such an overview serves as a valuable basis for integrated decision making, IWAs statements cannot replace disclosures on sustainability information with a prescribed format in the Integrated Management Report required by CSRD.

However, if impact statements under IWAF inform strategic management decisions, this can be mentioned in the disclosures under CSRD, especially in General Disclosures (ESRS 2) that describe Strategy and Business Model (ESRS 2 – SBM) or how impacts, risks or opportunities are identified and managed (IRO).

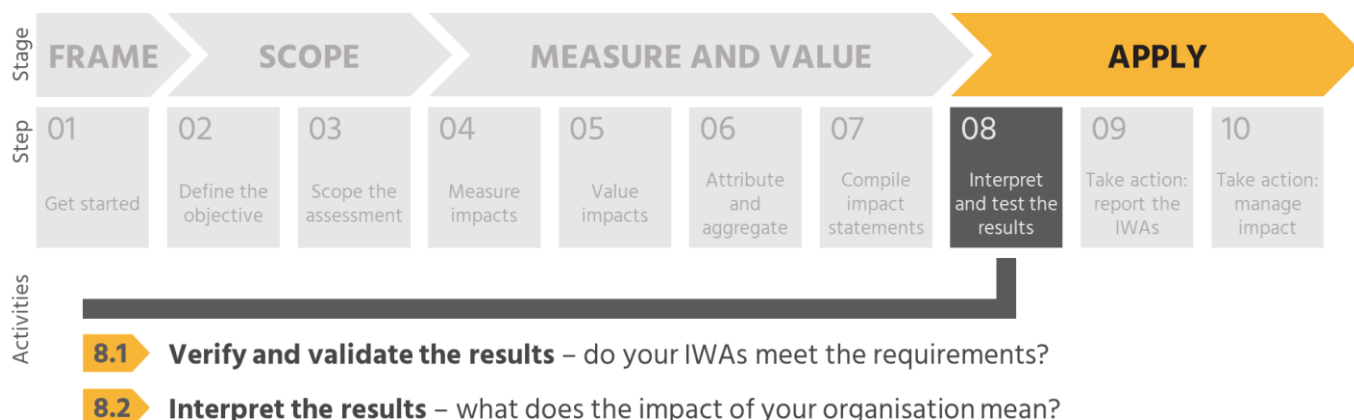
At the same time, IWAs and derived statements can be published separately to the Integrated Management Report, allowing for grasping the holistic value creation of a company in a more comprehensive way than the extensive disclosures under CSRD.



Apply

Step 8: Interpret and test the results

Before you start using the information in IWAs to manage the impact of your organisation, and especially before you make the IWAs of your organisation publicly available, you should ensure the quality of the IWAs is sufficient. Furthermore, you will need to interpret the results to understand what they mean for your organisation's impact decisions.



8.1 Verify and validate the results

To ensure the quality of the IWAs, the underlying methodology and the accounts themselves need to be verified and validated.

- **Verification:** you ensure that the IWAs are compiled in accordance with their specifications. This includes, for example, checking that the impact calculations are implemented correctly.
- **Validation:** you ensure that the IWAs are suited to serve their purpose. This includes, for example, checking that the impact calculations represent the effects they intend to represent.

It is good practice to perform quality control throughout the process of compiling IWAs. You can, for example, ask experts who have not been involved with the assessment to review the objective and scope that you have defined in the Scope stage, or to validate the impact measurement and valuation methodology you intend to use in the Measure and Value stage.

Verification and validation also occur as an additional activity at the end. The level of quality control that you need to do depends on the objective of your impact assessment. IWAs that you intend to make publicly available require a more in-depth verification and validation process than do a smaller assessment intended for internal use. Revisit the audit requirements that you have specified in *Activity 3.2 Determine assessment type*. Quality control can be performed by internal or external experts.

8.1.1 Internal quality control

When you perform quality control internally, you can prevent bias by consulting an expert who has not been involved in the project directly. Verification and validation are resource intensive processes, and it might not be feasible to check every aspect of the assessment in detail. You can decide to perform detailed quality control only on part of the assessment. Make sure that the sample is representative of the overall quality of the assessment. For example, you can choose a subset of impacts or only specific parts of the value chain. Make sure that the sample covers a broader area of the assessment by combining different capitals, stakeholders, etc.

The following questions might help you choose what to include in the sample for in-depth verification and validation:

- Do the results lie within the expected **order of magnitude**? For example, is one impact much larger or smaller than the other impacts? If so, is this in line with what was expected?
- Do the results seem **plausible**? Are there any results that you did not expect? For example, does the impact that the organisation considered the most important, also turn out to be the largest impact in the assessment?
- Are the results **comparable** to those calculated in previous years or to those for other, similar organisations? If not, is there a valid reason?

Sensitivity analysis

To understand what level of confidence you can have in results, you can test their sensitivity to changes in key assumptions or variables. The basic principle is to alter the value of (key) assumptions and variables to obtain a range of results. Sophisticated techniques to perform sensitivity analyses require knowledge on statistics and are beyond the scope of this document. However, a simple approach is to identify key variables and alter the value of one variable at a time. In that way, you identify the sensitivity of the results to one specific variable. For example, you can alter the price of carbon or raw materials, you can double the scarcity level of fresh water, you can change the timeframe, or alter the monetisation factors of impacts.

8.1.2 External audit

You can opt for, or you might be required to, obtain assurance of the IWAs through an external audit. An external audit can validate the scope, the calculation models and the underlying data, to ensure the results are reliable and representative.

Next to the final results of your assessment, the supporting documentation that you have prepared in *Activity 7.2: Provide supporting documentation* are an important source of information for external auditors.

The following questions can help you prepare for validation of the scope:

- Is the scope complete in terms of activities, value chain, impacts and timeframe?
- Is the defined reference scenario reasonable?

- Have impact pathways been drawn and do the outcomes described seem reasonable?
- Have all activities in scope been included in the impact pathways drawn?
- Have all impacts in scope been included in the impact pathways drawn?
- Have assumptions been well-documented and are they reasonable and motivated?
- Are the assumptions made in previous years still valid?

The following questions can help you prepare for validation of calculation models:

- Is the model well-documented?
- Are calculations clear and traceable?
- Is the model sound and is it consistent (e.g., when calculating the same impact but different scenarios)?
- Have assumptions been well-documented and are they reasonable and motivated?
- Are the assumptions made in previous years still valid?

The following questions can help you prepare for validation of the underlying data:

- Are the data accurate (does it represent what it is supposed to)?
- Are they reliable (are the data consistently measured in the same way)?
- For secondary data, are they sufficiently representative in terms of time and geography?
- For secondary data, is the source sufficiently reliable and valid?
- Are the data traceable—have all sources been documented and can the data be traced down to an existing source?

8.2 Interpret results

Interpreting the results of your assessment is the first step towards managing the impact of your organisation. In *Step 2: Define the objective*, you have determined what you want to use your IWAs for. The objective can vary from providing a first insight in what the impact of your organisation is, to incorporating IWAs into the decision making of your organisation. Make sure to keep the objective in mind when you interpret the insights that your impact assessment provides you with.

Further reading

- Natural Capital Protocol, Step 8 [2]
- Social & Human Capital Protocol, Step 8 [7]



Appendix E provides many sources (databases and journals) that can be relevant when testing the results of your impact assessment.

The following standards can inform you on the specific requirements for assurance



- Report Assurance Standard [55]
- Providing Limited Assurance for Reporting - Principles for Responsible Banking [56]
- AA1000 Assurance Standard [57]

Illustrative example: Glutilicious—Step 8: Interpret and test the results



Glutilicious takes time to reflect upon the results of their impact assessment. The IP&L and derived tables are all collected in Appendix H of this document.

Glutilicious finds that the biggest positive impact of Glutilicious is for its clients. This is true, considering the main activity of Glutilicious is to produce fresh and healthy bread for them. The second largest positive impact is to its own organisation through the profit it makes. The third is to employees through its payments to employees and their derived wellbeing from working at Glutilicious. This all sounds reasonable.

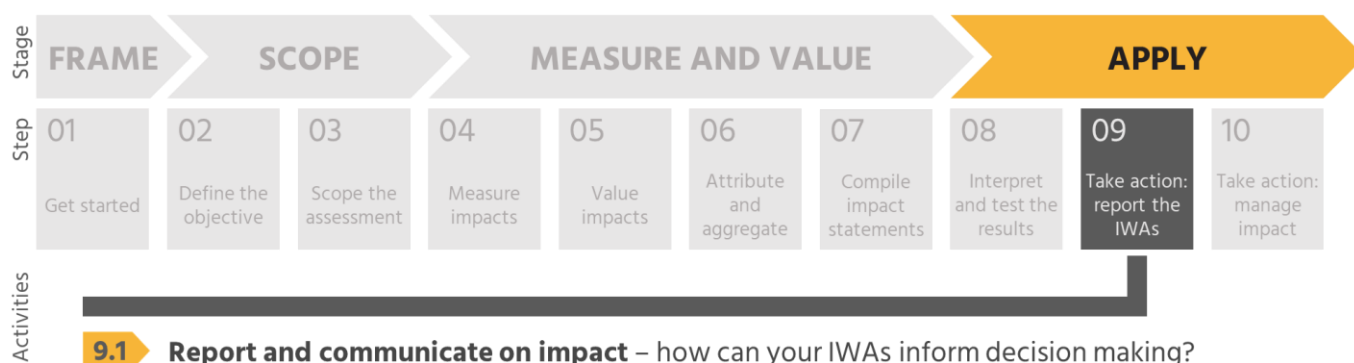
Meanwhile, the largest negative impact it creates is for Nature and its beneficiaries, through contribution to climate change impact and contribution to environmental pollution. Glutilicious did not expect these to be one of the biggest. It already uses green energy where possible. Through the IP&L, it is shown that the biggest contribution of this impact is through its value chain (i.e., from indirect impact).

Glutilicious now zooms in into which ingredients are particularly harmful and revisits the calculations, data points and assumptions to make sure no errors were made. When the results hold, they have identified a clear path towards managing impact in the next step.

Glutilicious also finds its contribution to poverty and child labour relatively low. This might be because it already does due diligence of human rights with their suppliers. However, the occurrence of the impact still indicates that Glutilicious needs to work better on its monitoring and evaluation system.

Step 9: Take action: report the IWAs

In this step, you will ensure that the IWAs are reported and presented in a standardised and consistent format. The users should recognise and understand the content of the report to support their integrated decision-making.



9.1 Report and communicate on impact

After the results have been tested and interpreted, you need to report and communicate on impact in a transparent way. Any assumptions, limitations and uncertainty that were encountered during the assessment should be included in the report. How you report on impact depends on the objective of the assessment.

9.1.1 Consider the objective and the audience

You have specified the objective of the assessment in *Step 2: Define the objective*. For example, the assessment's objective could be to better understand the value creation potential of business activities, or to identify risks and opportunities. The IWAs should be reported in a way that brings across the information to the target audience.

A likely objective of IWAs is to inform integrated decision-making. If this is your goal, it could benefit to report the IWAs as part of an existing process within your organisation. For example, you could aim to include relevant impact information in the periodic performance analyses or risk assessments your organisation's management uses to make strategic decisions.

When reporting to internal or external stakeholders, it is again important to recall who the audience of the report is and what the objective is. In addition, it could be of benefit to consider from whom the communication on the assessment occurs and what media you can use to reach the target audience.

9.1.2 Consider how to incorporate the IWAs in existing reporting

Before publishing IWAs, you can reflect on the following questions to adhere with the reporting principles and requirements outlined in the [Impact-Weighted Accounts Framework](#):

- Do the IWAs provide timely information when publishing the results?
- Has every uncertainty, assumption, limitation, and justification been reported?
- Has the standard and consistent format been applied throughout the report?
- Are the results understandable not only for experts, but also for non-experts?
- Are the results presented detailed enough to aid decision-making?
- Are the results sufficiently robust, i.e. would minor changes lead to different decisions?
- To which extent are the IWAs compliant with the IWAF?

Further reading



Guidance on reporting beyond financial information

- International <IR> Framework [5]
- GRI Standards [40]
- CDSB Framework for reporting environmental & social information [58]
- SASB Standards [59]
- Transition to integrated reporting – A guide to getting started [60]
- TCFD Recommendations Report [61]

Examples of impact assessment reports

- Case studies from the <IR> Business Network’s Integrated Thinking & Strategy Group [62]
- DBS Bank’s Measuring Impact pilot studies [63]
- ABN Amro’s Impact Report 2021 [64]

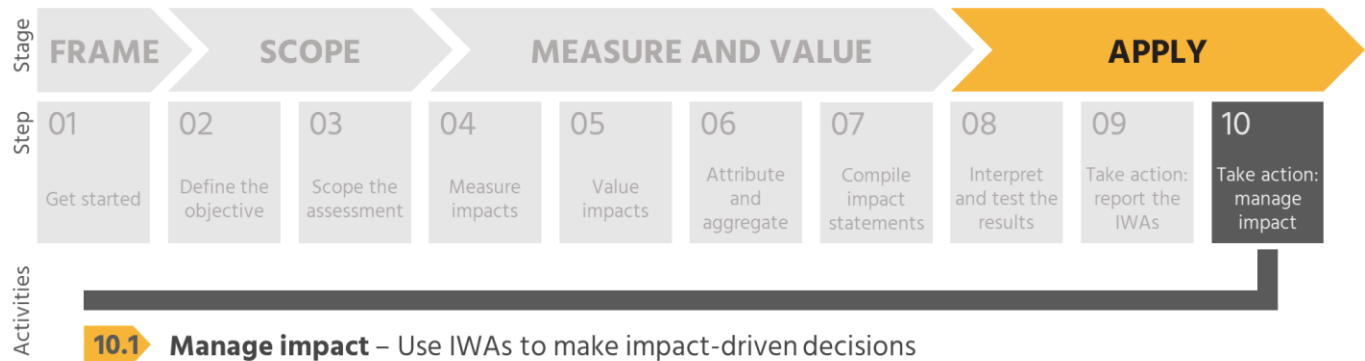
Illustrative example: Gluticious—Step 9: Take action: report the IWAs



The impact team at Gluticious combines all findings into a report for senior management. They have decided not to publish result externally this year. Still, they already start visualising what such a report could look like next year—and where they would need to make the assessment and the messaging more robust to be able to do so.

Step 10: Take action: manage impact

The last step is to start making impact-informed decisions based on the information that your IWAs provide.



10.1 Manage impact

By now, you will have an impact report that includes your organisation's IWAs. The next step is to use the information in the report for decision making, strategic planning and communication purposes. The Impact Economy Foundation has drafted a separate publication, the [Impact Management with IWAF](https://impacteconomyfoundation.org/publications/) specifically designed to assist companies in navigating their impact management journey effectively. This forthcoming resource will offer detailed and tangible guidance on implementing impact information in common business practices. We invite you to visit our website's digital library where the guide will be published: <https://impacteconomyfoundation.org/publications/>.

Further reading



For further guidance on how to manage your impact, the following resources provide insightful starting points:

- Natural Capital Protocol, Step 9 [2]
- Social & Human Capital Protocol, Step 9 [7]
- Impact Management Platform [43]
- Maximise your impact: A guide for social entrepreneurs [65]

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A. Appendix to Step 3: Standardised list of impact categories

The set of impacts that are material to the organisation and thus appear in the IWAs depends on the type of business activity of that organisation. Table A.1 provides the standard list of impact categories that are relevant to many types of organisations. It is suggested that these impact categories should always be included in IWAs if these are material to the organisation. Note that this list is not exhaustive.

The list specifies the type of capital and the stakeholders with which an impact category is associated. When using a different classification of stakeholder groups, the organisation should modify the list accordingly. The list also provides the possible valences for the accounts in the impact categories. Note that the valence of impacts financial capital impacts is defined from the stakeholder external to the organisation in scope. In addition, the list indicates whether an impact is typically an input or an output and whether it is associated with rights.

Often, the activities of your organisation lead to value transformation or value transfer. As mentioned in Section 3.3, you should always consider the output impact when considering the related input impact. An overview of which input and output impacts belong together (“mirror-impacts”) can be found below:

Input Impact	Output impact	Stakeholder
Payment from clients	Client value of products / services	Clients
Value of input materials	Payments to suppliers	Suppliers
Time invested by employees	Salaries	Employees
	Additionally: Value to employees arising from training and experience, Wellbeing of employment	
Cost of capital	Profit	Organisation and investors

Furthermore, be aware that for the following ‘contribution/limitation to’ impacts no netting of the ‘contribution to’ and the ‘limitation of’ impacts should occur:

- Contribution to / limitation of climate change
- Contribution to / limitation of pollution
- Contribution to / limitation of availability of scarce natural resources
- Contribution to / limitation of poverty
- Contribution to / limitation of human rights violations



Table A.1: Key impact categories

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Profit	Profit made by organisation	Financial	Organisation; Investors	Output	Positive	No	1
Salaries	Remuneration and other comprehensive benefits paid to employees by the organisation	Financial	Employees	Output	Positive	No	1
Interest payments	Interest payments to an organisation's lenders and bond holders	Financial	Organisation; Investors	Output	Positive	No	1
Taxes	Taxes paid to the government by the organisation	Financial	Governments, local communities and other	Output	Positive	No	1
Payments to suppliers	Payments to suppliers by the organisation	Financial	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	1
Payments from clients	Payments from clients to the organisation	Financial	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Input	Negative	No	1
Cost of capital	The cost of the capital that is provided to the organisation by equity holders, bond holders and others	Financial	Investors	Input	Negative	No	1



Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
Change in fixed assets	A change in the fixed assets of the organisation (e.g, due to new investments, divestments or depreciation)	Manufactured	Organisation; Investors	Output	Positive or Negative	No	1
Client value of products	Value to clients of products sold by the organisation	Manufactured	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Client value of services	Value to clients of services sold by the organisation	Financial / Manufactured / Intellectual / Human	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Value of input materials	Value of input materials supplied by suppliers to the organisation	Manufactured	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Input	Negative	No	1
Creation of intellectual capital	Creation of intellectual capital such as new knowledge and technology by the organisation	Intellectual	Organisation; Investors	Output	Positive	No	1
Wellbeing of employment	Additional wellbeing experienced by employees resulting from	Human	Employees Value chain partners (suppliers and B2B clients) specifically their	Output	Positive	No	2

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
	their employment at the organisation		employees (workers in the value chain)				
Value to employees arising from training and experience	Increase in skills and associated Human Capital of employees arising from their employment at the organisation	Human	Employees Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Positive	No	2
Effects on human health	Various effects on human health associated with the operations and products of the organisation	Human	Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain) Governments, local communities and other; (End-)Consumers	Output	Positive or Negative	Yes	2 or 3 ¹²
Occupational health and safety incidents	The effects of occupational health and safety incidents that occurred during the operations of the	Human	Employees Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain)	Output	Negative	Yes	2

¹² Category 2 if the effects on health/emissions/... can directly be attributed to one organization, category 3 if not (e.g., if they occur in the consumer use phase).



Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
	organisation or in the value chain.						
Time invested by employees	The value of time invested by employees to work for the organisation	Human	Employees	Input	Negative	No	1
Contribution to / limitation of climate change	Emission or absorption of greenhouse gasses (GHG) during the operations of the organisation	Natural ¹³	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of pollution	Emission or absorption of pollutants to or in air, soil and water during the operations of the organisation	Natural ⁸	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of availability of scarce natural resources	The effects of increasing or decreasing scarcity of natural resources resulting from the operations of the organisation	Natural ⁸	Nature and its beneficiaries	Output	Negative or positive	Yes	2 or 3
Contribution to / limitation of poverty	The effects of increased or decreased poverty resulting from the	Social	Employees; Value chain partners (suppliers and B2B clients) specifically their employees	Output	Negative or positive	Yes	2 or 3

¹³ All negative natural capital impacts also (indirectly) lead to negative effects on human health (Human Capital) and human economic activity (Financial Capital). As these effects are in first order (directly) on the environment, these impacts are classified as Natural Capital. In the context of Life-Cycle Assessments, these effects are reflected as midpoint indicators rather than endpoint indicators.

Impact	Description	Capital	Stakeholder	Associated with input/output	Valence (for absolute impact)	Rights dimension (Yes/No)	Attribution category
	operations of the organisation		(workers in the value chain); Governments, local communities and other				
Contribution to / limitation of human rights violations	(Indirect) contribution to human rights violations, or preventing others from engaging in this	Social	Employees; Value chain partners (suppliers and B2B clients) specifically their employees (workers in the value chain); Governments, local communities and other	Output	Negative or positive	Yes	2 or 3



B. Appendix to Step 3: Relation of IWAF to HBS indicators

Table B.1: Comparison between Harvard Business School’s IWA Project product and service-level indicators and IWA Framework impacts

	IWA indicator ¹⁴	Related IWAF impact	Type of impact
Dimensions of customer usage	Access		
	Access – <i>Affordability</i>	Payments from clients (marginal impact)	<p>‘Affordability’ calculates the costs to the customer, compared to a reasonable alternative. If the product or service is cheaper than the alternative, then affordability is positive. If it is more expensive, then affordability is negative.</p> <p>The same holds for the marginal version of ‘Payments from clients’</p>
	Access: <i>Underserved</i>	Client value of products (for subset of clients)	<p>‘Underserved’ reflects the benefits of a product or service specifically for underserved customers with a higher marginal utility of consumption. In order to do so, it estimates the additional access benefits realized by underserved customers. For example, a calculation in the Framework for</p>

¹⁴ In addition to the impacts described in the table, IWAI also includes ‘Reach’. Reach has two dimensions: 1) Quantity, which reflects the magnitude of individuals reached, and 2) Duration, which reflects the length of time the product can be used, particularly for durables. Since these indicators have not been monetized, they have not been compared to IWAF impacts.

	Limitation of poverty	<p>Product and Service IWAs is a bottom-up calculation based on the value of time saved through access to the product.</p> <p>'Underserved' represents the impact 'client value of products' for a subset of clients, namely those assessed as underserved. If as a result of the use of the product fewer people live in poverty, the indicator is also linked to 'Limitation of poverty'.</p>
Quality		
Quality: <i>Health and Safety</i>	Effects on human health (stakeholder group Customers)	<p>'Health and Safety' reflects costs associated with a failure to meet health, safety, and/or privacy standards as a result of using the product or service. 'Health and Safety' refers to costs that are not directly related to the primary customer value proposition.</p> <p>It directly maps to the impact 'Effects on human health' for the stakeholder group Customers.</p>
Quality: <i>Effectiveness</i>	Client value of products	<p>Assesses the value created by the product or service in meeting the customer value proposition for standard use cases.</p> <p>This is directly linked to the impact 'Client value of products'¹⁵ (note that this holds for all customers as opposed to 'underserved').</p>

¹⁵ The formula in the [Framework](#) provides the marginal version of the impact, but can be absolute as well.



	Quality: <i>Necessity</i>	Client value of products (for subset of clients)	'Basic Need' assesses the value of fundamental human necessities in accordance with the Universal Declaration of Human Rights. The Framework for product or service IWAs is based on the averted costs stemming from a lack of access.
	Optionality		
	<i>Optionality</i>	(Correction to) Client value of products	<p>The optionality indicator is a negative indicator that reflects complaints, monopoly behaviour, and customer coercion. It challenges the assumption that for rational people with full information the value of a product or service is at least what they pay for it. It makes explicit that for some clients, buying and enjoying the product or service does not create value for them.</p> <p>One of the suggested ways to calculate the impact 'Client value of products' is exactly based on</p>
<i>Environmental: Use Phase</i>	<i>Emissions and pollution</i>	<p>Contribution to climate change</p> <p>Contribution to pollution</p>	<p>'Environmental use' Reflects the emissions (e.g. CO₂) and other pollutants to the environment through product or service use. The emissions cost is consistent with Scope 3, Category 11 emissions under the GHG protocol.</p> <p>This directly maps to the impacts 'Contribution to climate change' and 'Contribution to pollution' (both for absolute impact only)</p>
	<i>End of life recyclability</i>		

<i>Environmental: End of Life</i>	<i>Recycling</i>	(Driver to) limitation of scarce natural resources	<p>Recycling and recovering material from the product at the end of its life ensures there is a lower net strain on the availability of scarce natural resources.¹⁶</p> <p>The example calculation in the Framework for Product IWAs reflects that recycling material is preferred to recovering is by using a higher value per pound</p>
	<i>Recovered</i>		
	<i>Emissions, pollution, and waste</i>	Limitation of availability of scarce natural resources	<p>The share of material that is not recycled or recovered, puts a cost to society as emissions, pollution, and waste generate costs. The emissions portion of the cost is consistent with Scope 3, Category 12 emissions under the GHG protocol.</p> <p>This is directly related to the impact 'Limitation of availability of scarce natural resources'.</p>

¹⁶ Recycling or recovering material from outside the own value chain is a way to (net) contribute to the availability of scarce natural resources



Table B.2: Comparison between HBS IWA Project employment indicators and the IWAF impacts

	IWA indicator	Related IWA Framework impact	Specification
Stakeholder Employee	<i>Wage Quality</i>	Net result of the four impacts 'Salaries', 'Time invested by employees', 'Underpayment' ¹⁷ and '(Income) discrimination' ¹⁸	<p>'Wage quality' assesses benefits to employees based on their wage (or salary) level.</p> <p>It first assesses whether a wage is above or below the living wage. If it is below, the wage quality is set to zero.¹⁹ If it is above, the full wage is counted as a benefit. Plus, a credit is applied if a wage is above minimum wage. Two corrections are applied. A marginal utility adjustment (reflecting decreasing marginal utility of earning very high salaries) and a wage equity correction (reflecting differences in salaries to minority groups) is performed.</p> <p>IWAF assesses this through four impacts. For all employees, the basic value creation is the difference between their salaries and the value of their time. There are separate negative indicators for underpayment and income discrimination.</p>
	<i>Career Advancement</i>	Value to employees due to training and experience	<p>'Career Advancement' reflects the internal mobility resulting in increased earnings. Professional development can be achieved through formal or informal training and other skills development opportunities. The calculation in Accounting for Organizational Employment Impact makes an explicit</p>

¹⁷ Part of the impact category 'Contribution to poverty'.

¹⁸ Part of the impact category 'Contribution to human rights violations'.

¹⁹ A credit is applied for wages below the living wage, but above the local legal minimum wage.

		comparison to a internal mobility benchmark making this directly reflective of the marginal version of the impact ' Value to employees due to training and experience' (i.e., the degree to which the value is higher or lower than at likely alternative employment)
<i>Opportunity (across seniority levels)</i>	'(Income) discrimination' ²⁰	Opportunity reflects differences in average salaries for different minority groups across seniority levels within the firm. This directly reflects the income discrimination impact for these groups. ²¹
<i>Opportunity (across job categories)</i>	'(Income) discrimination' ²²	Opportunity reflects differences in average salaries for different minority groups across job categories within the firm. This directly reflects the income discrimination impact for these groups. ²³
<i>Health and Wellbeing</i>	Individual elements map to 'Occupational health & safety incidents',	The health and wellbeing indicator has a number of subdimensions. The safety subdimension assesses occupational health & safety incidents and maps directly to the negative IWAF impact of that name.

²⁰ Part of the impact category 'Contribution to human rights violations'.

²¹ In a US context, detailed data are collected on racial background of employees. In other contexts (e.g., the European one, this is less common or even considered sensitive. IWAF suggests to scope the quantitative assessment of the discrimination impact partly based on available data. In some contexts, that can mean that only a gender element can be assessed quantitatively.

²² Part of the impact category 'Contribution to human rights violations'.

²³ In a US context, detailed data are collected on racial background of employees. In other contexts (e.g., the European one, this is less common or even considered sensitive. IWAF suggests to scope the quantitative assessment of the discrimination impact partly based on available data. In some contexts, that can mean that only a gender element can be assessed quantitatively.



		<p>'Harassment'²⁴ (and Incivility)' and 'salaries and other comprehensive benefits' or 'Lack of social security'²⁵</p>	<p>The culture sub indicator assesses Harassment and Incivility and again directly map to related negative IWAF impacts.</p> <p>For the sub-dimensions 'Healthcare', 'Chronic Disease and Lifestyle Management', 'Paid Sick Leave' and 'Family Friendly Workplace' two views are possible. If the benefits related to these sub-dimensions are seen as optional, they effectively contribute to the positive impact 'Salaries and other comprehensive benefits'. If instead they are seen as basic rights that every employee should be entitled to, any facility below the required level would contribute to the negative impact 'Lack of Social Security' instead.</p>
Stakeholder: Labour com.	<i>Diversity</i>	<p>'(Income) discrimination'²⁶ for the stakeholder group 'Governments, Local communities, and other'</p>	<p>The diversity indicator assesses the missing employees at the firm compared to local demographics in (gender and racial) minority groups required for parity. (Often) lack of diversity stems from (implicit) discrimination that harms the underrepresented minorities.</p>
	<i>Location</i>	<p>Contributes to 'Limitation of poverty'</p>	<p>'Location' describes the additional employment the organization provides, relative to local employment levels with benefits for the local through additional impact on top of unemployment benefits.</p>

²⁴ Part of the impact category 'Contribution to human rights violations'.

²⁵ Part of the impact category 'Contribution to human rights violations'.

²⁶ Part of the impact category 'Contribution to human rights violations'.

			The indicator links to the impact 'Limitation of poverty' with the reference where unemployed people receive unemployment benefits. Additional employment by the organization is seen as a way to fight poverty at community level.
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C. Appendix to Steps 3, 4 and 5: Guidance on compiling Impact-Weighted Accounts per Capital

This appendix contains additional guidance for Steps Stage (Scope the assessment), Step 4: (Measure impacts) and Step 5: (Value impacts) for several of the impacts users are likely to encounter when compiling IWAs for their organisations. For each capital, various impacts that are likely to apply to many organisations are identified, with the examples focusing on organisations that produce a tangible product (for example, manufacturing companies). For these impacts, guidance on their assessment is provided, albeit at a rather high-level. More detailed guidance at a more basic level will follow in due course. Also, see Appendices E and F on reliable sources (mainly for use in *Step 4: Measure impacts*) and monetisation factors (for use in *Step 5: Value impacts*), respectively.

C.1 Financial Capital

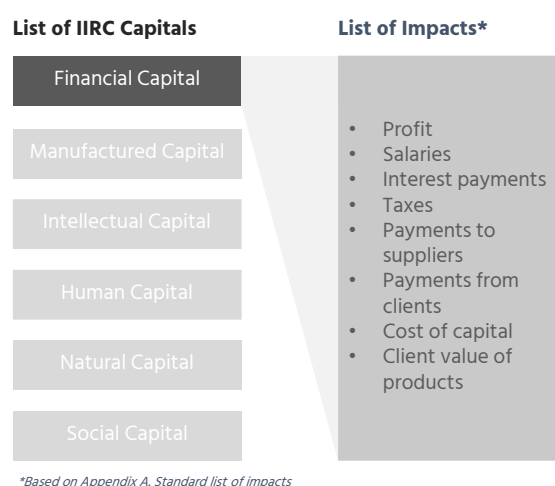


Figure C.1: List of impacts in Financial Capital

In the [Impact-Weighted Accounts Framework Part 1, section 3.1](#), Financial Capital is defined as the pool of funds available for an organisation to utilise in the production of goods or the provision of services, as well as additional funds that may be obtained through financing.

Financial Capital shows the clearest link between conventional financial statements, the Profit & Loss (P&L) account, and the IP&L account. Most of the Financial Capital in the IP&L can be assessed by studying the conventional P&L account and identifying how it describes inputs and outputs for the organisation's impact pathway.

Specifically, Financial Capital shows the flows *from* external stakeholders *to* the organisation and vice versa. Flows that reduce the Financial Capital owned by an external stakeholder (for example, payments from customers to the organisation) in and of itself decrease the valuables of that stakeholder and they

are negative impacts.²⁷ Note that this may be counterintuitive as revenue is a positive thing from the perspective of an organisation.

Conversely, impacts such as salaries and taxes have a positive impact: they should increase the valuables of, respectively, the employees and the national community. However, from an organisational perspective, these are costs and often regarded as negative.

The above logic is summarised in **Table C.1** that gives the example how a stylised P&L is translated into the Financial Capital part of an IP&L.

Table C.1: Link between a (simplified) traditional P&L account and Financial Capital impact in an IP&L account

P&L items	Value (in \$ million)	P&L logic	IP&L items	Value (in \$ million)	Stakeholder	IP&L logic
Revenue	100	Positive for the organisation				
		A cost (in and on itself negative for the organisation)	Payments from clients	-100	Clients	In and on itself negative for clients (they give up money) - but they do receive good or services in return
COGS of which payments to suppliers	-30		Payments to suppliers	35	Suppliers	Positive for suppliers
COGS of which salaries	-20	A cost				
Gross profits	50		Salaries	30	Employees (+ government)	Positive for employees (and the government due to salary related taxes)
Other costs of which payments to suppliers	-5	A cost	Interest payments	15	investors	Positive for investors
Other costs of which salaries	-10	A cost	Taxes	5	Government (Equity)	Positive for the government
Interest	-15	A cost	Profit	15	investors	Positive for investors and the organisation
Earnings before tax	20					
Taxes	-5	A cost				
Net earnings	15	Positive for the organisation				

Financial flows are already expressed naturally in monetary terms. Hence, valuation can be simple. A Dollar is simply a Dollar²⁸ (1-on-1 monetisation, see also the [Impact-Weighted Accounts Framework, Part 3, Chapter 4](#)).²⁹

Various standard Financial Capital impacts do not follow from the P&L as described above. These include the cost of capital and the value of services to clients, to the degree that this value to clients is purely financial (for instance, it represents a direct financial benefit). The latter is assessed in a similar way to those of products, as described below under Manufactured Capital.

²⁷ The negative effect is typically more than compensated for in other impacts, for instance, the value to that customer of the product or service offered; that is, there are other impacts (for example, in Manufactured Capital) that are positive and as least as large as the Financial Capital Impact. There is net value creation if they are indeed larger.

²⁸ Technically: 1 Dollar of financial value is assumed to represent 1 Dollar-equivalent of wellbeing.

²⁹ In a more advanced analysis, however, one can challenge this assumption. The basis for the challenge is that a given sum of Financial Capital does not represent the same increase in wellbeing for all. For people in poverty, a few hundred Dollars can change their lives. For people with middle incomes, it is a “welcome extra”, while a Jeff Bezos or an Elon Musk would not even notice. The analysis of Financial Capital can be refined by considering the non-linear relation between wellbeing and financial flows. For application to the salary impact, see Freiberg et al. [11].



C.2 Manufactured Capital

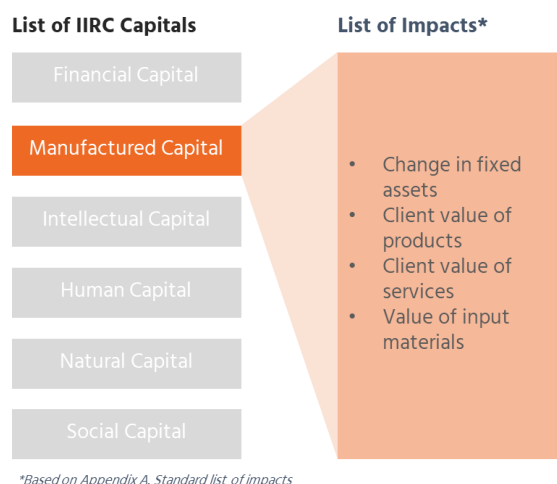


Figure C.2: List of impacts in Manufactured Capital

Manufactured Capital in the narrow sense: fixed assets

The narrow definition of Manufactured Capital is “manufactured physical objects that are available to an organisation for use in the production of goods or the provision of services”, which focusses on the perspective of the organisation. In terms of stocks, this includes property, plant and equipment—or more broadly, fixed assets.³⁰ The associated flow is the change in fixed assets.

This impact is already covered in traditional financial-centred accounting. The total values for depreciation, investments and divestments of fixed assets can all be found in the organisation’s reporting data, and they are also already expressed in monetary terms based on the associated costs and/or changes in value of the assets, where local accounting rules dictate the details.

Manufactured Capital in a wider sense: value creation through value transfer

In a wider sense, Manufactured Capital also includes manufactured physical objects made available to other stakeholders (such as clients of the organisation) or delivered to the organisation by others (for instance, its suppliers). If the related impacts occur in the IP&L, it is mostly in the context of value transfer: the organisation sells Manufactured Capital to its clients (and gets paid for it in Financial Capital), or the organisation buys Manufactured Capital from suppliers (and pays for it in Financial Capital).

The IP&L can capture this exchange of capital as shown in **Figure C.3** below.

³⁰ Given that a part of these assets is used in the production processes, when the scope is mostly limited to these impacts, Manufactured Capital is sometimes referred to as Manufacturing Capital.



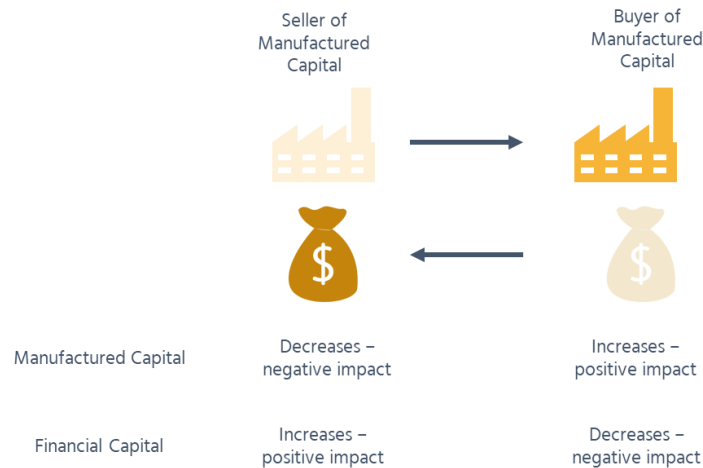


Figure C.3: Exchange of Manufactured Capital and associated payment (in Financial Capital)

The IP&L lists impacts from an outside-stakeholder perspective. That means that when the organisation sells products, the IP&L has a positive entry for Manufactured Capital at the customers (and we have seen that there is a negative entry of Financial Capital for this stakeholder group). The IP&L reflects value creation if the customers value the Manufactured Capital more than the Financial Capital they gave up. Below, we discuss three approaches to valuing client value of products.

Value of services

For organisations that provide a service rather than a product, it can often be debated as to which capital they create value for their clients.

- When the service is such that it increases the value of a portion of Manufactured Capital (for example, in a cleaning or a maintenance service), the value of service can be included under Manufactured Capital.
- If the service directly creates financial value (as many financial products do), it can be included under Financial Capital.
- If it increases the knowledge and capabilities of the client (as advisory services tend to do), they are included under Intellectual Capital.

For each of these, the approach to valuing the client value of services can be similar to the approaches outlined below.


Approaches to assess client value

It is vital for all organisations that their products or services create value for their clients. If they do not, clients will stay away and the organisation's whole business is in danger. At the same time, it is often difficult to put an exact value on the value of products and services. This is less of an issue than it might seem at first sight. Few companies will use the IP&L to provide guidance on value creation for clients—the

market does that well enough. The IP&L can be much better used to make externalities in Social, Human and Natural Capital explicit and to provide guidance on that.

Nevertheless, we give three (high-level) approaches to valuing client value of products and services, ranging from basic and simple to more complex and complete.

Table C.2: Three approaches to assess client value

Approach		Description	
1	Lower-bound	Consumers value the product at least as much as the money they paid for it.	<i>Simple, but incomplete model</i>  <i>More complete, but more complex model</i>
2	Revealed or stated preference	The consumer surplus is assessed based on revealed or stated preference, often using the elasticity of demand.	
3	Bottom-up model	The value of a product or service is based on the benefits enjoyed.	

Simplest approach: lower bound

Under assumptions of rationality, freedom of transaction and the availability of sufficient information, the value of the product to client should be at least as high as what they paid for it. The lower bound of the consumer surplus is 0 and the lower bound of the value of products or services is equal to the payments by clients. Valuation is done by simple 1-on-1 monetisation techniques.

Note that in this approach there is no explicit value creation for clients.

Intermediate approach: revealed or stated preference

The second approach is direct research on how much the consumer is willing to pay for the products or services and to link this to their value. This can be done by researching either the consumer’s revealed preference or willingness to pay (stated preference) [66]. As different consumers value products differently, this requires relatively large samples. We do not recommend obtaining this information only for the purpose of reporting IWAs.

A relatively efficient approach to estimate total consumer surplus is to use the elasticity of demand as sketched in **Figure** . The elasticity of demand gives information on the slope of the demand curve at the



equilibrium point. By assuming a linear demand curve, one can draw the entire curve and calculate the total consumer surplus as the yellow area in the figure.³¹ The consumer surplus is equal to $\frac{1}{2} * P * Q * 1 / P_{ed}$.

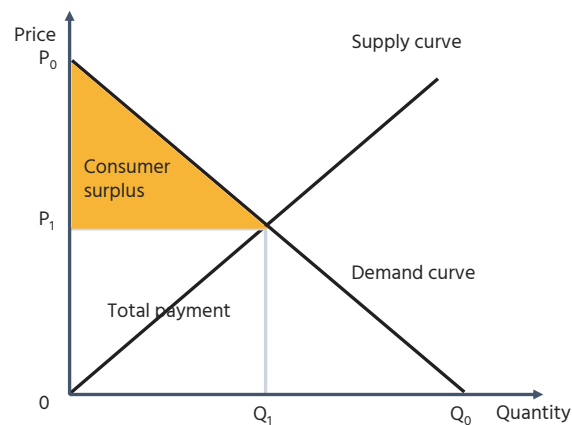


Figure C.4: Consumer surplus illustration

Complete but complex: bottom-up model

The most complete way to assess client value of products or services is using a bottom-up model of value creation for the clients.

In this approach, client surplus is estimated based on direct measurement of how they benefit from having the product or service. As an example, if the product increases the client’s health, the value can sometimes be estimated using DALYs (see Human Capital for more details). A second example is where having the product leads to cost or time savings that can be assessed and (in the latter case) assigned a value based on how people value this extra time.³²

Two notes are in order. Firstly, the benefits of a bottom-up model are often only a subset of the benefits to the client (for example, a quicker mode of transport saves time, but can also be associated with comfort and status as a well). Therefore, this approach might again give a lower limit. Secondly, the user should always check whether the value that follows from the bottom-up model is sufficiently large. If it is lower than what the clients pay for (see Approach 1), the scope of the benefits should typically be expanded.

³¹ In reality, most demand curves are convex, i.e., they *curve* upwards instead of being linear. This means that the actual value of consumer surplus is higher than the one estimated here. In other words, the estimate is a conservative one.

³² The first example links to *Quality – Health and Safety* the second example links to *Access – underserved* dimension as expressed in Serafeim et al. [13].

C.3 Intellectual Capital

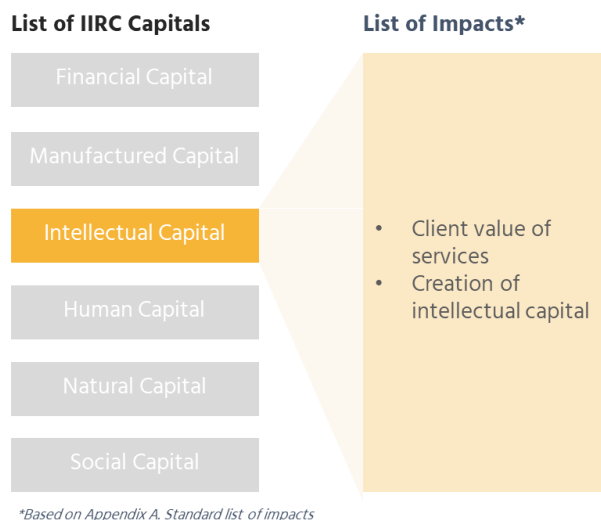


Figure C.5: List of impacts in Intellectual Capital

In a narrow sense, Intellectual Capital is defined as organisational, knowledge-based intangibles, including intellectual property and “organisational capital”. This means that Intellectual Capital at stock level includes intangible assets such as (the value of) patents, copyrights and licences, but also tacit knowledge, systems, procedures and protocols [5]. Slightly stretching this, one can include (the value of) the organisation’s brand and reputation. At flow level, it includes the year-on-year changes in each of these stocks.

Traditional financial reporting is cautious about including these in valued form on the balance sheet, where only patents, licenses and copyrights are regularly included. The IWAF suggests basically copying this information to the IBaS (and its year-on-year changes to the IP&L Account). If strong sources are available to make other elements (for example, brand value) explicit, these can be added as well. All of this can fit under the umbrella term “creation of Intellectual Capital” for the stakeholder and the organisation itself.

In a more inclusive sense, Intellectual Capital also includes knowledge of others. This can lead to “creation of Intellectual Capital” for other stakeholders (for example, when knowledge is shared). In addition, some value of services qualifies under Intellectual Capital (see previous section). It can typically be assessed in similar ways to the client value of products.



C.4 Human Capital

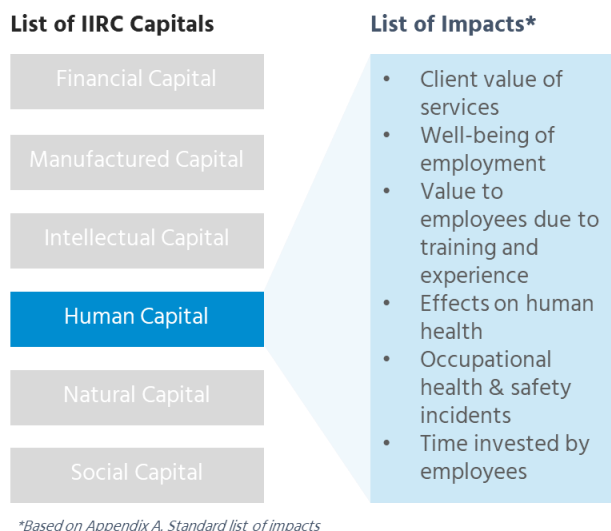


Figure C.6: List of impacts in Human Capital

Human Capital reflects impacts at the level of individual people. A narrow definition, based on the IIRC, reads “people’s competencies, capabilities and experience, and their motivations to innovate.” This naturally focusses on effects on employees. An important impact is the value to employees due to training and experience. The IWAF also includes the wellbeing of employment, the time invested by employees and occupational health and safety incidents.³³ A slightly wider view also includes effects beyond employees—especially customers. This leads to the impacts “client value of services” (for services that lead to direct wellbeing at individual level, as an example, wellness treatment) and “effects on human health”.

Below, we provide a short description for each impact. Note that for most of these, an assessment should include both direct impact (of own operations) and indirect impact (of value chain operations).³⁴

Client value of services

Where services are listed under Human Capital, they can be assessed in a similar way as products as discussed under Manufactured Capital.

Wellbeing of effects of employment

Research shows that for the average person in Europe, their wellbeing level is higher when they have meaningful employment *even when corrected for income effects*. The [European Social Survey \(ESS\)](#) indicates the effect of seven wellbeing points on a scale of 0–100 for the average employee. This can be

³³ Note that due to their financial nature, salaries are included in Financial Capital. Employment-related impacts that relate to basic human-rights violations are included under Social Capital to stress the damage to society if such rights are not respected.

³⁴ Employees from the own organisation form the “employees’ stakeholder group”, while employees from other organisations are typically included under “Governments, local communities and other”.

refined to a company-specific score using a comparison between their employee engagement score and a benchmark [67]. See [Mandacaru \(2020\)](#) [68] for a detailed approach to assessing this impact including monetary valuation.

Value to employees due to training and experience

In many organisations, employees experience a learning curve. They start with relatively junior functions: through experience, peer learning, and training while working, they increase their skill and knowledge. This allows them increasingly to take on more complex tasks and responsibilities and grow their careers. The impact “Value to employees due to training and experience” captures this effect.

The basis of the calculation is the assumption that career growth from higher skills (and related productivity) is reflected in the salary growth of the employees. As a salary increase in the current year benefits the full career, the total impact is given by a (discounted) sum over the projected career.

Occupational health and safety incidents and Effects on human health

For both Occupational health and safety incidents and Effects on human health, the central unit in assessing the impacts is the DALY. DALYs reflect the loss of wellbeing and future earnings due to health reasons. One DALY reflects the loss of one year at full health or multiple years at reduced health (technically: n years at $100\% / n$ health). See WHO (2019) for more details [69].

Occupational health and safety issues include both physical (for example, falls or exposure to harmful substances) and mental (for example, stress-related) incidents [70]. Ideally, one would assess the DALY loss for an occupational health and safety incident directly based on the exact nature of what happened and how the employee was affected. If this is not available, tables exist on the average DALY load for various types of incidents. For effects in the value chain, data can be estimated through value chain partners or by using social life-cycle analysis (SLCA) at product level if available, or extended input–output analysis.

The relation between DALYs and other effects on human health, such as the consumption of healthy or unhealthy products, is often even more difficult to assess; but if it can be done, this is how these impacts should be assessed.

Time invested by employees

The time invested by employees is an input to the business model of organisations. Through value transformation, their outputs are their salaries, as well as the benefits of wellbeing and experience (and possibly the cost of health and safety incidents). In a similar argument as discussed under “client value of products” in *Manufactured Capital*, the value they assign to their time should not be larger than the value



of the outcomes.³⁵ Some projects use a value of 54% of net salaries as an estimate, based on Verbooy et al. [71].

C.5 Natural Capital

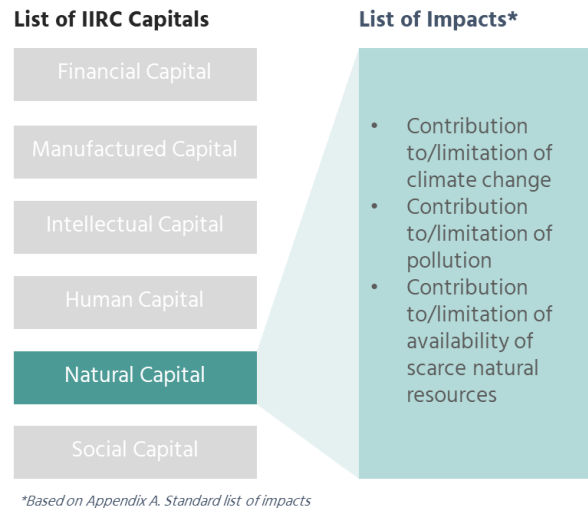


Figure C.7: List of impacts in Natural Capital

In the narrow sense, Natural Capital is defined as all renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organisation. In the wider sense, it also includes prosperity of all others, including local communities and the global community. Regarding Natural Capital, impacts relate to respecting basic environmental rights,³⁶ for example, climate change,³⁷ various forms of pollution and availability of scarce materials.³⁸

Measuring and assessing impact begins with estimating the footprint of the impacts. In Natural Capital, the footprints can be emissions of pollutions (CO₂, SO₂, NO_x, etc.), the quantity of scarce materials used (e.g., water, rare metals or fossil fuel), effect on biodiversity, etc.

To measure the effect of own operations, data can often be sourced from production information. For the effects of the organisations' value chain partners, these data can be obtained from their own direct data whenever available. Alternatively, data from life cycle assessment on product level can also be used. Another option would be modelling based on environmentally extended input–output analysis.

³⁵ Again, this is under a set of assumptions, including rationality, free choice and sufficient information. These assumptions can be debated, especially for people at the lower end of the labour market.

³⁶ Basic rights to a safe, clean, healthy and sustainable environment are covered in [United Nations. \(2018\). Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. A/HRC/37/59](#) [72].

³⁷ Climate and pollution are associated with “environmental use—pollutants and efficiency” dimension as expressed in Serafeim et al. [13].

³⁸ Availability of scarce materials is associated with “end of life—recyclability” dimension as expressed in Serafeim et al. [13].

To assess marginal impact of Natural Capital, the difference of the impact per product level with the most realistic alternative should be estimated. This requires modelling of the alternative as well (for example, by using LCA). However, if production of alternatives is similar to products of the company in scope, then marginal impact is close to zero and can be assumed to be out of scope. This should be disclosed transparently in the impact-weighted accounts.

C.6 Social Capital

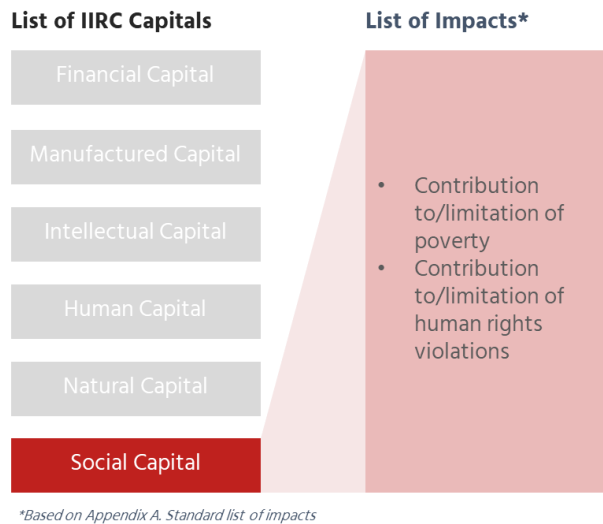


Figure C.8: List of impacts in Social Capital

Social Capital is defined in the [Impact-Weighted Accounts Framework, Part 1, Section 3.1](#) as individual and collective wellbeing as a result of institutions and the relationships within and between communities, groups of stakeholders and other networks. This usually means all stakeholders aside from the organisation’s direct stakeholders. When it comes to impacts, this typically includes the effects on governments (beyond taxes), the organisation’s suppliers, the community affected by the organisation’s activity, and a client’s clients.

Social Capital specifically includes impacts related to violations of basic rights.³⁹ The idea is that aside from those directly affected, these also harm society as a whole. Specifically, this includes contribution to (the continued existence of) poverty and contribution to human rights violations.

A specific realisation of contribution to poverty is underpayment. It means that employees are paid below the *living wage*. A living wage is “the remuneration received for a standard workweek by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, health care, transportation, clothing,

³⁹ Basic human rights are covered in [United Nations. \(1948\). Universal declaration of human rights](#) [73]



and other essential needs including provision for unexpected events” [74]. When a worker receives less than the living wage, they are basically trapped in poverty—even if the payment is above the local minimum wage. Living wage differs per country and per area. A good database is [the Global Living Wage Coalition](#).

Next to the living wage, in a calculation one needs the actual wages. Underpayment is then the difference if the actual wage is below the living wage. For impact in own operations, this can be easily determined since the data should be available. For organisations operating in the developed countries, it is often zero. For value chain impact, the actual wages can be estimated through direct data collection through value chain partners or by using average salary in the sector.

Next to underpayment, impacts related to poverty can also be positive through limitation of poverty impact. It includes value creation for the poorest clients, (indirect) employees and communities, for example, by making products and services by the organisations accessible for all populations.⁴⁰

Contribution to human rights violations include, forced labour, child labour (beyond what is safe and legally allowed), harassment and incivility,⁴¹ and discrimination. Data are often difficult to obtain because not many organisations report on it. Data is even more difficult to obtain in value chain partners. Therefore, estimates are often used by, for example, conducting anonymous large-scale surveys or using sector-level / country-level databases.

⁴⁰ Pricing and efforts to make the product available especially for underserved populations link strongly to “Access—underserved” dimension as expressed in Serafeim et al. [13].

⁴¹ Harassment and incivility links directly to “health and wellbeing—contribution to employment impact” dimension as expressed in Freiberg et al. [11].

D. Appendix to Step 4: Data hierarchies

Primary data hierarchy

Primary data from organisations generally provide information about “output” data. This can be operational data and/or impact-specific data and can be subject to various level of validations. To convert the output data into outcomes, secondary data are required. However, providing the most relevant primary data could help in reducing the complexity when converting the data into outcomes.

Therefore, the following data hierarchy should be considered when collecting primary data based on the level of validation and data relevance. The hierarchy of each dimension is listed below in order of preference and is illustrated in **Figure D.1**:

1. Level of validation

- Primary data measured and validated by independent third party, for example, as part of an audited report
- Primary data oversight and/or reporting following a third-party framework, for example, data on emissions per scope based on GHG Protocol
- Primary data reported by the organisation and/or its partners, and which are only validated internally

2. Data relevance

- Outcome data that are directly measured; for example, an organisation in the medical field has data on the number of patients being declared healthy after receiving treatment from the organisation
- Outcome data that are based on survey-data, for example, the number of employees (in %) experiencing increase in wellbeing
- Output data with a more direct relation to the achieved outcome/impact, for example, emissions data
- Operational data, for example, energy used (in kWh)

However, there is a risk when using these data because calculations with conversion factors and underlying assumptions will be involved. Hence, the additional assumptions and additional data required should be understood correctly to provide the correct effect of the operational data and to transform it into measurable outcomes.



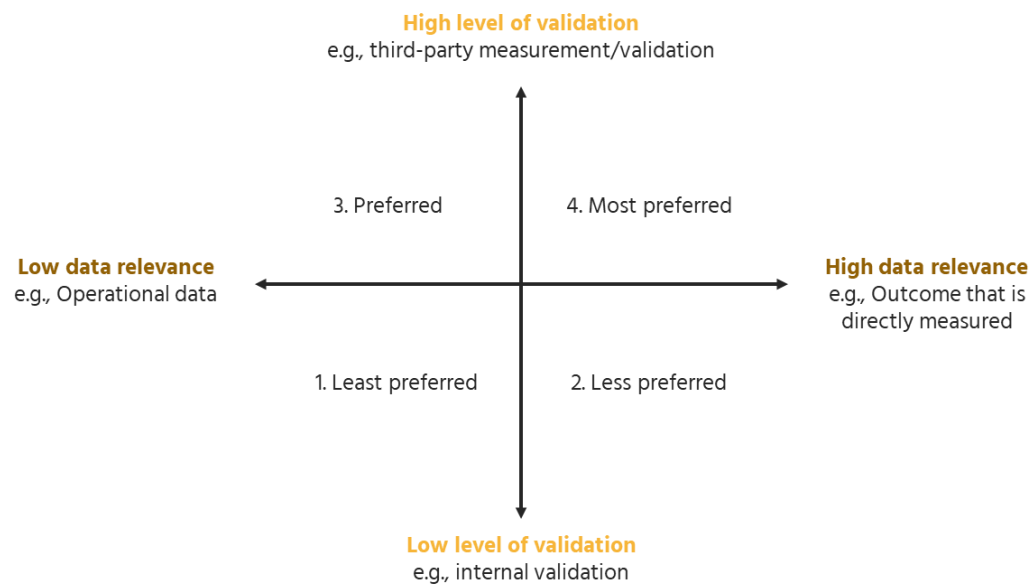


Figure D.1: Primary data hierarchy

Secondary data hierarchy

Secondary data act as complementary data to convert primary data into measurable and informative outcomes, and/or as an estimate should primary data not be available. The role of secondary data is therefore considered crucial for reliable and valid impact assessment. The following two dimensions—in the order of preference—should therefore be considered when reviewing secondary data sources:

1. Scope

Secondary data that are retrieved from the most relevant existing impact assessment literature

The relevance of the study that is preferred is the one that is undertaken in the same geography (area level or country level—the more representative the better), in the same timeframe and under similar situations and conditions to the assessed impact. Below is the priority (in order of preference) that IWAF-compliant organisations should look for in scope if they use secondary sources:

- Similar product/service
- Similar geography
- Similar population group
- Similar period

2. Validation of sources

Secondary data that is retrieved from external sources

This should also come from high quality and reliable literature. Hence, it is highly preferred that the source represents the best available literature that meet those criteria. The criteria can be measured by the degree that it is validated.

Examples of validated sources are official national or global database/statistics, peer-reviewed academic journals or published life-cycle analyses literature, etc. Examples of *non*-validated sources are reports by independent research organisations, news articles, unpublished data and experts' opinion.

Listed below are the priorities (in order of preference) that organisations should look for in validation if they use secondary sources:

- Peer-reviewed research paper or meta-analysis and/or results of randomised control trial
- Official statistics or published life-cycle analysis
- Single study or research report or triangulation of multiple studies
- Opinion of (trusted) expert



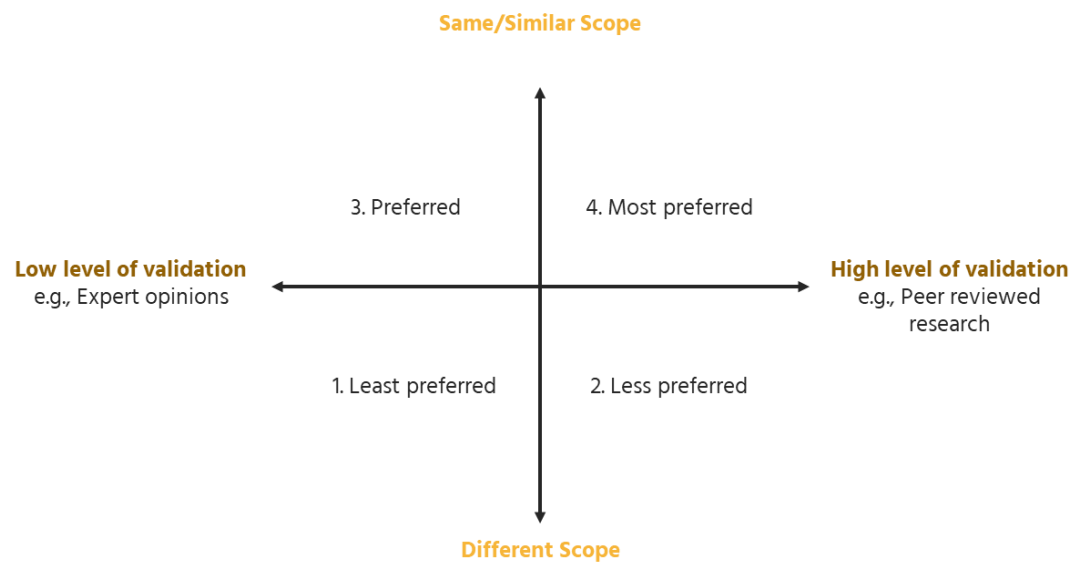


Figure D.2: Secondary data hierarchy

E. Appendix to Step 4: Reliable Sources

This Appendix provides a list of suggested reliable sources that the organisation can use when compiling IWAs. It includes a globally well-known database, categorised per component topic, for example, materiality and impact indicators. The Appendix also includes a list of reputable journals in various fields related to the environment, human rights, etc. These journals may periodically publish articles that attach prices to various impact indicators.

Table E.1: List of reliable sources for compiling IWAs

Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
Materiality	Identify indicators that are material to the industry your organisation operates in	SASB Materiality Map [28]	Identifies the subset of environmental, social and governance issues that are most relevant to financial performance in each of 77 industries. Designed to help companies disclose financially-material sustainability information to investors. Ranks issues by industry based on (i) evidence that investors in the industry are interested in the issue, and (ii) evidence that the issue could impact companies within the industry.	-	/ 77	SASB and IIRC merged to form the Value Reporting Foundation in June 2021. Updated annually
Input–Output analysis	Understand how activities impact other stakeholders along the industry value chain	EORA [76]	Time-series of high-resolution Input–Output tables with matching environmental and social satellite accounts. Provides environmental indicators covering GHG emissions, labour inputs, air pollution, energy use, water requirements, land occupation, Nitrogen (N) and	1990–2021	190 / 26	Widely used for Input–Output analysis in international trade studies



Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
	Used to define impact pathway		Phosphorus (P) emissions, and primary inputs to agriculture Raw data is drawn from a wide range of national and international data sources.			Provides data on the global economy
		IDE-JETRO Asian IOTs [77]	Develops Input–Output tables with a focus on the Asia-Pacific Region	1985, 1990, 1995, 2000 and 2005	10 / 76	
		OECD Inter-Country Input–Output Tables ICIOs [78]	Presents data on domestic transaction flows of intermediate goods and services across industries, as well as inter-country flows of intermediates via exports and imports	1995–2018	66 / 45	Last updated December 2018
		WIOD 2016 [79]	Provides Input–Output tables and data on employment, capital stocks, gross output and value-added at current and constant prices at the industry level	2000–2014	43 / 56	
Indicators	Used to develop specific line indicators applicable to the six Value Reporting Foundation (<IR> Framework) Capitals	EU Corporate Sustainability Reporting Directive (CSRD) [80]	Guidelines published by the EU Commission to help companies disclose relevant non-financial information in a more consistent and comparable manner Guidelines based on national, EU-based and international frameworks Provides a non-exhaustive list of thematic aspects that companies can consider when disclosing non-financial information (e.g., environment, social and employee, and respect for human rights)			
		EU Taxonomy [81]	A classification system that establishes a list of environmentally sustainable economic activities			Used by companies, investors and policymakers

Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
			Provides definitions on which economic activities can be considered environmentally sustainable The Taxonomy Regulation establishes six environmental objectives that are used to screen if an activity is environmentally sustainable Backed by research from EU's Joint Research Centre, reports from the EU Technical Expert Group and developed by the Platform on Sustainable Finance, comprising a panel of experts from various backgrounds			
Impact Factors	To express impact in quantitative units that reflect their normative desirability under each Value Reporting Foundation (<IR> Framework) capital with respect to the relevant stakeholder.	EORA [76]	Provides sector/product-level footprints such as GHG, labour and environmental footprints			
		European Social Survey [67]	Cross-national general social survey conducted across Europe since 2002			
		Exiobase [82]	Global Multi-Regional Input-Output Table that can be used for the analysis of environmental impacts associated with the final consumption of product groups			Widely used for Input-Output analysis in international trade studies
		Version 1 Version 2 Version 3 Monetary Form Hybrid Form				



Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
		ILOSTAT [83]	Provides international data on labour-related topics (e.g., labour supply, working conditions, poverty and inequality)	Varied by data		
		OECDstat [23]	Provides country-level economic data over a range of themes (agriculture, environment, health, info-communication)		OECD countries and selected non-members	
		ReCiPe Impact Assessment method [36]	A life cycle impact assessment methodology. The primary objective of the ReCiPe method is to transform the extensive list of life cycle inventory results into a limited number of indicator scores. Scores express the relative severity on an environmental impact category. This method includes factors according to three cultural perspectives (individualist, hierarchist and egalitarian).			Focuses on the environmental impact factor
		Social hotspot database (SHDB) [84]	An extended Input–Output Life Cycle Inventory database; the Input–Output model is based on Global Trade Analysis Project (GTAP) 7. Provides data on labour productivity, child labour impact and health and safety incidents		140 / 57	
		UNICEF Data [85]	Access child-related data			
		Wage Indicator [86]	Provides data on real wages, salary check, minimum wage, living wage, wage in context, labour law, etc.		167 / 350	

Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
		WIOD 2016 [79]	Provides data on employment, capital stocks, gross output and value added at current and constant prices at the industry level	2000 – 2014	43 / 56	
		World Development Indicators [87]	Provides internationally comparable time-series statistics about global development and the fight against poverty Data themes Poverty and Inequality People Environment Economy States and Markets Global Links	Varied by data	266 / -	
		World Governance Indicators [88]	Provides aggregate and individual governance indicators according to six dimensions of governance: <ul style="list-style-type: none"> • Voice and accountability • Political stability and absence of violence • Government Effectiveness • Regulatory Quality • Rule of Law • Control of Corruption 	1996 – 2020	200+ / -	.



Component	Contribution to IWA	Name of Source	Description	Period Coverage (if applicable)	Country / Industry coverage (if applicable)	Notes
			Aggregate indicators combine the views of enterprise, citizen and expert survey respondents in industrial and developing countries.			
Monetisation Factors	To express impact in monetary terms	CE Delft Environmental Prices Handbook EU28 Version [52]	Prescribes environmental prices by studying the value that society attaches to environmental quality			Prices are average values for emissions from an average source in Europe in 2015. Prices expressed in €/kg emission
		True Price Monetisation Factors [50]	Open-access monetisation factors for a wide set of social and environmental costs Defines true price as the market price plus the unpaid external costs; seeks to address all costs made in the production of goods and services by making hidden costs transparent.			
Financial Data	To convert monetised terms such that they are comparable (e.g., to adjust for inflation or exchange rate effects)	IMF [89]	Provides time series data on IMF lending, exchange rates and other economic and financial indicators			Country-level data
		World Bank [24]	Provides data that can be used to adjust for inflation, exchange rate and the purchasing power parity rate in the Global Infrastructure Emission Database model			Country-level data



Table E.2: Alternative sources of high-quality factors to be used for research

Field of Study	Description	Name of Journal	Publisher
Accounting and finance	Journals in this field of study typically publish research surrounding accounting standards and financial theories.	Accounting, Organisations and Society	Elsevier
		Contemporary Accounting Research	Wiley-Blackwell
		Journal of Accounting and Economics	Elsevier
		Journal of Accounting Research	Wiley-Blackwell
		The Accounting Review	American Accounting Association
		Journal of Finance	Wiley-Blackwell
		Journal of Financial Economics	Elsevier
		Journal of Financial and Quantitative Analysis	Cambridge University Press
		Review of Accounting Studies	Springer
		Review of Finance	Oxford University Press
		Review of Financial Studies	Oxford University Press
Economics	Journals in this field of study typically publish studies surrounding economic theory: monetary theory, fiscal policy, labour economics, income distribution, demographic transition, etc.	American Economic Journal: Applied Economics	American Economic Association
		American Economic Journal: Macroeconomics	American Economic Association
		American Economic Review	American Economic Association
		Econometrica	Wiley-Blackwell
		Economic Journal	Royal Economic Society
		European Economic Review	Elsevier
		Journal of Econometrics	Elsevier
		Journal of Economic Growth	Springer
		Journal of Economic Literature	American Economic Association
		Journal of Economic Perspectives	American Economic Association
		Journal of European Economic Association	European Economic Association
		Journal of Human Resources	University of Wisconsin Press
		Journal of International Economics	Elsevier
		Journal of Labour Economics	The University of Chicago Press

Field of Study	Description	Name of Journal	Publisher
		Journal of Monetary Economics	Elsevier
		Journal of Political Economy	The University of Chicago Press
		Journal of Public Economics	Elsevier
		Quarterly Journal of Economics	Oxford University Press
		RAND Journal of Economics	RAND Corporation
		Review of Economic Studies	Oxford University Press
		Review of Economics & Statistics	MIT Press
Environmental science and energy research	Journals in this field of study typically publish research on the nature, causes and impacts of climate change	Annual Review of Environment and Resources	Annual Review
		Energy Policy	Elsevier
		Global Environmental Change	Elsevier
		International Journal of Greenhouse Gas Control	Elsevier
		Nature Climate Change	Nature Publishing Group
		Renewable and Sustainable Energy Reviews	Elsevier
		Reviews of Environmental Contamination and Toxicology	Springer
Human rights	Journals in this field of study focus on issues surrounding human rights. For example, human rights and law, race, religion, gender, etc.	Health and Human Rights	Harvard University Press
		Human Rights Quarterly	John Hopkins University Press
		Human Rights Review	Springer
		International Journal of Human Rights	Taylor and Francis
		Journal of Human Rights Practice	Oxford University Press
Information and operations management		Information Systems Research	INFORMS (Institute for Operations Research and the Management Sciences)
		Journal of Computing	INFORMS (Institute for Operations Research and the Management Sciences)
		Journal of Management Information Systems	Taylor & Francis
		Journal of Operations Management	Wiley-Blackwell



Field of Study	Description	Name of Journal	Publisher
		MIS Quarterly	Management Information Systems Research Centre
		Manufacturing and Service Operations Management	INFORMS (Institute for Operations Research and the Management Sciences)
		Management Science	INFORMS (Institute for Operations Research and the Management Sciences)
		Operations Research	INFORMS (Institute for Operations Research and the Management Sciences)
		Production and Operations Management	Wiley-Blackwell
Strategy, organisation, marketing and entrepreneurship	Journals in this field of study typically publish research that impacts the management field, and usually features research on organisational behaviour, psychology and human resource management.	Academy of Management Journal	Academy of Management
		Academy of Management Review	Academy of Management
		Administrative Science Quarterly	SAGE
		Entrepreneurship Theory and Practice	SAGE
		Human Relations	SAGE
		Human Resource Management	Wiley-Blackwell
		Journal of Academy of Marketing Science	Springer
		Journal of Applied Psychology	American Psychological Association
		Journal of Business Ethics	Springer
		Journal of Business Venturing	Elsevier
		Journal of Consumer Psychology	Wiley-Blackwell
		Journal of Consumer Research	Oxford University Press
		Journal of International Business Studies	Springer
		Journal of Management	SAGE
		Journal of Management Studies	Wiley-Blackwell
Journal of Marketing	SAGE		
Journal of Marketing Research	SAGE		
Journal of Organizational Behaviour	Wiley-Blackwell		

Field of Study	Description	Name of Journal	Publisher
		Management Science	INFORMS (Institute for Operations Research and the Management Sciences)
		Organization Science	INFORMS (Institute for Operations Research and the Management Sciences)
		Organization Studies	SAGE
		Organizational Behaviour and Human Decision Processes	Elsevier
		Research Policy	Elsevier
		Strategic Entrepreneurship Journal	Wiley-Blackwell
		Strategic Management Journal	Wiley-Blackwell
Social Science	Journals in this field of study focus on research pertaining to areas of social science such as applied sociology, politics, psychology and public policy.	American Political Science Review	Cambridge University Press
		American Sociological Review	SAGE
		Annual Review of Political Science	Annual Review
		Annual Review of Sociology	Annual Review
		Journal of Public Administration Research and Theory	Oxford University Press
		Policy Studies Journal	Wiley-Blackwell
		Social Indicators Research	Springer
		Social Issues and Policy Review	Wiley-Blackwell
		Social Science Quarterly	Wiley-Blackwell



F. Appendix to Step 5: List of Monetisation Factors

A list of suggested monetisation data is provided below. For impacts related to basic rights, True Price Monetisation Factors are used, unless otherwise stated [50]. All values are expressed in International dollar equivalent (Int.\$) 2022.

The list includes the monetisation factor on impact indicator level. Footprint indicators are used to estimate the size of each impact. Some of the footprint indicator have footprint sub-indicators. To estimate the size of the impact the following steps should be followed:

1. Estimate the sizes of the footprint indicators for the impacts without footprint sub-indicators. For impacts with multiple footprint-indicators and footprint sub-indicators, estimate the sizes of all the footprint (sub-)indicators individually.
2. The footprint indicators and the footprint sub-indicators are all multiplied by the respective monetisation factors to obtain monetary values of the impacts. Each footprint sub-indicator has its own monetisation factor.
3. For the impacts with multiple footprint (sub-)indicators, the monetary valued footprint sub-indicators are summed to obtain the monetary valued impact.

Water pollution is a type of the ‘Contribution to / limitation of pollution’ impact and consists of multiple footprint sub-indicators and associated footprint sub-indicators. Water pollution is captured by the toxic effect of emissions to water, which causes damage to humans and to terrestrial, freshwater and marine ecosystems. The other footprint indicators are freshwater and marine eutrophication, which indicate an overload of nutrients to lakes, rivers and seas.

Impact	Footprint indicator	Footprint (sub-)indicator
Contribution to / limitation of pollution: Water pollution	Toxic emissions to water	Human toxicity
		Terrestrial ecotoxicity
		Freshwater ecotoxicity
		Marine Ecotoxicity
	Freshwater eutrophication	
	Marine eutrophication	

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Profit	Financial	Net profit/loss of the organisation		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another. [11]	No
Salaries	Financial	Salaries to employees		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another.	No
Interest payments	Financial	Interests paid to each applicable stakeholder		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Taxes	Financial	Taxes	Income tax	Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing.	No

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [50].	
			Other tax	Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [50].	
Payments to suppliers	Financial	Payments to suppliers		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Payments from clients	Financial	Payments from clients		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Cost of capital	Financial	Cost of capital		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Change in fixed assets	Manufactured	Change in fixed assets		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Client value of products	Manufactured	Client value of products		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Client value of services	Manufactured / Intellectual / Human	Client value of services		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing.	No

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	
Value of input materials	Manufactured	Value of input materials		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Creation of intellectual capital	Intellectual	Creation of intellectual capital		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Wellbeing of employment	Human	Wellbeing effect per one additional point of life satisfaction		Life satisfaction point (scale 0-100)	2,647 Int.\$ / life satisfaction point (scale 0–100)	The value of wellbeing is based on two studies on the valuation of wellbeing [90], [91]. A value of wellbeing was derived from both articles, each of which was adjusted for inflation and purchasing power parity. These values are based on a reduction in wellbeing value resulting from unemployment [50] and an increase in wellbeing value resulting from education [11]. These two values	No



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						were weighted equally to arrive at the final life satisfaction.	
Value to employees from training and experience	Human	Creation human capital for each applicable stakeholder		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Occupational health & safety incidents	Human	Non-fatal occupational incidents	Insured non-fatal occupational incidents	# Incidents	4,360 Int.\$/incident	A combination of compensation, prevention and retribution costs. The compensation cost represents the average cost of medical expenses for occupational injuries not covered by the employer, estimated from Dutch data and adapted to other countries using value transfer [92], the value of health loss (measured in Disability-adjusted Life Years [DALY]) loss in the case of non-fatal incidents, and the Value of Statistical Life (VSL) in the cause of fatal incidents, as a compensation to the family of the victim [93]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution costs represent a penalty for the cases in which workers perform their duties in conditions that violate Health and Safety regulations, which is based on the weighted average of penalties from various countries to express a global penalty.	Yes
			Uninsured non-fatal occupational incidents	# Incidents	4,550 Int.\$/incident		
			Fatal occupational incidents	# Incidents	3,700,000 Int.\$/incident		
			Occupational injuries with breach of H&S standards	# Incidents	6,150 Int.\$/incident		
			Work performed in violation of H&S standards	# FTE	2,780 Int.\$/FTE		
			Labour force to be audited for H&S	# FTE	9.47 Int.\$/FTE		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Time invested by employees	Human	Time invested by employees		Already monetary valued	1 Int.\$/Int.\$	Impact is often already expressed in currency units. To translate it to dollar-equivalent, it is assumed that 1 dollar of financial value is equal to 1 Dollar-equivalent of wellbeing. The approach can be refined by explicitly considering that 1 Dollar can represent more wellbeing for one stakeholder than for another [11].	No
Effects on Human Health	Human	Effects on human health ⁴²		DALY	119,000 Int.\$/DALY	A compensation cost that expresses the Value of Statistical Life (VSL) based on a meta-analysis of the VSL from 92 willingness-to-pay studies, conducted by the OECD.	Yes
Contribution to / limitation of climate change	Natural	GHG emissions		kg CO2-eq	0.236 Int.\$/kgCO2 eq	A restoration cost that expresses the abatement cost for achieving the policy targets of reducing GHG emissions to meet the <i>2-degree target</i> as set in the Paris Agreement, based on a meta-study of 62 marginal abatement cost estimates [94].	Yes
Contribution to / limitation of pollution: Air pollution	Natural	Toxic emissions to air	Human toxicity	DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes

⁴² Other impacts such as pollution and child labour are also associated with human health through their footprint sub-indicators but are valued separately from Effects on Human Health.



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Terrestrial ecotoxicity	kg 1,4-DB emitted to industrial soil eq	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage. Ecosystem's damage is valued by looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the Economics of Ecosystems and Biodiversity (TEEB) database [95]. ReCiPe (2016) endpoint characterisation factors for ecotoxicity to the respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g., it is not specified where the damage occurs, only the size of the damage).	
			Freshwater ecotoxicity	kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq		
			Marine Ecotoxicity	kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq		
		Nitrogen deposition NH3	Animal Husbandry (in stables)	kg NH3 eq	18.90 Int.\$/kg NH3 eq	A marginal cost of the abatement measures needed to reach the regulatory target of nitrogen deposition in nature areas. Types and magnitude of emissions that contribute to nitrogen deposition in the Netherlands are	
			Use of manure	kg NH3 eq	12.10 Int.\$/kg NH3 eq		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Other sources	kg NH3 eq	10.60 Int.\$/kg NH3 eq	based on van der Maas [96]. The costs to prevent the deposition of 1 mol of Nitrogen per hectare per year from NH3 emissions coming from animal husbandry (in stables) are derived from Van der Born et al. [97]. Adjusted values for nitrogen deposition in other European countries are provided based on the Product Environmental Footprint (PEF) characterisation factors and data on the average accumulate exceedance per hectare [98].	
		Nitrogen deposition NOx	Use of machines and vehicles	kg NOx eq	1.84 Int.\$/kg NOx eq	A marginal cost of the abatement measures needed to reach the regulatory target of nitrogen deposition in nature areas. Types and magnitude of emissions that contribute to nitrogen deposition in the Netherlands are based on Van der Maas [96]. The costs to prevent the deposition of 1 mol of Nitrogen per hectare per year from NOx emissions coming from use of agricultural machines and vehicles are derived from Van der Born et al. [97]. Adjusted values for nitrogen deposition in other European countries are provided based on PEF characterisation factors and data on the average accumulate exceedance per hectare [98].	
			Other sources	kg NOx eq	3.49 Int.\$/kg NOx eq		
		Particulate matter (PM) formation		kg PM2.5 eq	78.50 Int.\$/kg PM2.5 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage	



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						(morbidity—i.e., sickness and disease and premature mortality). The endpoint valuation of human health is based on a valuation of a DALY (Disability Adjusted Life Year). ReCiPe 2016 endpoint characterisation factors for PM formation are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	
		Photochemical oxidant formation (POF)	Photochemical oxidant formation (POF): human health damage	kg NOx eq	0.114 Int.\$/kg NOx eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage (morbidity—i.e., sickness and disease and premature mortality) and ecosystems damage. Ecosystem's damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. The endpoint valuation of human health is based on valuation of a DALY. ReCiPe 2016 endpoint characterisation factors for POF are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	
			Photochemical oxidant formation (POF): ecosystem damage	kg NOx eq	4.27 Int.\$/kg NOx eq		
		Acidification		kg SO2 eq	7.02 Int.\$/kg SO2 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic	

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						welfare when pollutants are emitted into the environment, looking at ecosystems damage. Ecosystem damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for acidification are used to derive the monetisation factors [36]. Country-specific characterisation factors are given.	
		Ozone layer depleting emissions		kg CFC-11 eq	68.50 Int.\$/kg CFC-11 eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at human health damage (morbidity—i.e., sickness and disease and premature mortality). The endpoint valuation of human health is based on valuation of a DALY. The global ReCiPe 2016 endpoint characterisation factor for Ozone layer depleting emissions is used to derive the monetisation factor [36]. The monetisation factor for ozone layer depleting emissions also includes the cost of damage to	



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						agricultural crops, taken from CE Delft [52]. The cost of damage to agricultural crops represents average damage costs for ozone depletion for an average emission source in the Netherlands. Although the damage could be different in different geographies, for example because of different thickness of the ozone layer, at present the value is used without adjustments for different countries due to the lack of an appropriate coefficient for regional adjustments.	
Contribution to / limitation of pollution: Water pollution	Natural	Toxic emissions to water	Human toxicity	DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes
			Terrestrial ecotoxicity	kg 1,4-DB emitted to industrial soil eq, for example	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil, for example	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage.	
			Freshwater ecotoxicity	kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq	Ecosystem's damage is valued looking at the value of ecosystems services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for ecotoxicity to the	
			Marine Ecotoxicity	kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g., it is not specified where the damage occurs, only the size of the damage).	
		Freshwater eutrophication		kg P eq to freshwater	304 Int.\$/kg P eq to freshwater	A combination of restoration and compensation costs based on a literature review on the costs of eutrophication. Restoration costs express average abatement costs for bringing nutrient levels to a regulatory target, for the impacts that are reversible. Compensation costs express other damage (economic damage, damage to human health and biodiversity loss), for residual impacts after restoration has taken place. Country-specific factors can be derived based on water basin-level risk of eutrophication.	
		Marine eutrophication		kg N eq to marine water	21.10 Int.\$/kg N eq to marine water	A combination of restoration and compensation costs based on a literature review on the costs of eutrophication. Restoration costs express average abatement costs for bringing nutrient levels to a regulatory target, for the impacts that are reversible. Compensation costs express other damage (economic	



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						damage, damage to human health and biodiversity loss), for residual impacts after restoration has taken place.	
Contribution to / limitation of pollution: Soil pollution	Natural	Toxic emissions to soil	Human toxicity	DALY	125,000 Int.\$/DALY	A compensation cost that expresses the value of a DALY based on a meta-analysis of the Value of Statistical Life (VSL) from 92 willingness-to-pay studies, conducted by the OECD [93].	Yes
			Terrestrial ecotoxicity	kg 1,4-DB emitted to industrial soil eq	0.0004 Int.\$/kg 1,4-DB emitted to industrial soil eq	A compensation cost that expresses the social cost of pollution and indicates the occurring loss of economic welfare when pollutants are emitted into the environment, looking at ecosystems damage. Ecosystem damage is valued looking at the value of ecosystem services lost, which are in turn valued in terms of impacts on biodiversity. The endpoint valuation of ecosystem damage is based on the annual value of ecosystem services (ESS) of one hectare of nature, based on the median annual value per hectare of ESS of six terrestrial biomes. These values are based on a published meta-analysis of the TEEB database [95]. ReCiPe 2016 endpoint characterisation factors for ecotoxicity to the respective environmental compartments are utilised to derive the monetisation factors [36]. A global value is preferred rather than location-specific values, due to the high uncertainty and because the quantification of ecosystems damage from ReCiPe is not location-specific (e.g., it is not specified where the damage occurs, only the size of the damage).	
			Freshwater ecotoxicity	kg 1,4-DB emitted to freshwater eq	0.0606 Int.\$/kg 1,4-DB emitted to freshwater eq		
			Marine Ecotoxicity	kg 1,4-DB emitted to seawater eq	0.0028 Int.\$/kg 1,4-DB emitted to seawater eq		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Contribution to / limitation of pollution: Soil degradation	Natural	Soil organic carbon (SOC) loss		kg SOC loss	0.0450 Int.\$/kg SOC loss	A compensation cost that expresses the damage cost for the chemical, physical, biological and ecological decline of soil resulting from loss of soil organic carbon, based on a study on the shadow prices of soil quality by TNO and Wageningen University [99].	Yes
				kg soil loss	0.0331 Int.\$/kg soil loss	A compensation cost that expresses the cost of soil erosion based on an extensive review on the costs of soil erosion by the FAO (2014) [100]. The costs include on-site damage such as loss of nutrients, reduced harvests and reduced value of the land and off-site damage such as the silting up of waterways, flooding and repairing public and private property.	
				kg soil loss	0.0259 Int.\$/kg soil loss		
				corrected tonne kilometer (tkm)	0.830 Int.\$ / corrected tonne kilometer (tkm)	A damage cost based on lost future crop yields. Other off-site costs such as flooding, water pollution and increased GHG emissions, associated with subsoil compaction, are not included in the monetisation factor. The damage cost from soil compaction is calculated based on the average gross revenue of crop production lost resulting from irreversible subsoil compaction. This is quantified as the present value future crop yield losses (over 100 years) that are due to one year of machinery use. Average yearly loss (%) of crop yield per corrected tkm per ha over 100 years of production is provided in Stoessel et al. (2018), with country- and region-specific	



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
						<p>factors [101]. Average value of annual gross production per hectare (in euro/ha) is estimated from data collected from FAOSTAT for all crops produced in each country [102]. Since the average yearly loss is given for 100 years of production, future crop production losses (0.12 EUR/corrected tkm) are discounted to determine the present value, with a discount rate equal to 3% [103] and summed over 100 years.</p> <p><i>Values represent a European average, rather than a global one.</i></p>	
Contribution to / limitation of availability of scarce natural resources: Land occupation	Natural	Land occupation	Tropical forest	Mean Species	3,170 Int.\$/	A compensation cost that expresses the opportunity cost of land occupation based on the value of ecosystem services for main biomes based on a meta-analysis from TEEB [95]. Country-specific factors can be derived based on biome cover per country.	Yes
				Abundance	(MSA)*ha*yr		
			Other forest	Mean Species	1,510 Int.\$/		
				Abundance	(MSA)*ha*yr		
			Woodland/shrubland	Mean Species	2,050 Int.\$/		
				Abundance	(MSA)*ha*yr		
			Grassland/savannah	Mean Species	3,640 Int.\$/		
				Abundance	(MSA)*ha*yr		
			Inland wetland	Mean Species	22,300 Int.\$/		
				Abundance	(MSA)*ha*yr		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			Coastal wetland	Mean Species Abundance (MSA)*ha*yr	16,400 Int.\$/(MSA*ha*yr)		
Contribution to / limitation of availability of scarce natural resources: Land transformation	Natural	Land transformation	Tropical forest	Mean Species Abundance (MSA)*ha	4,350 Int.\$/(MSA*ha)	A restoration cost that expresses the average cost of ecosystem restoration projects in different biomes based on a review of case studies [104]. Costs include capital investment and maintenance of the restoration project.	Yes
			Other forest	Mean Species Abundance (MSA)*ha	3,020 Int.\$/(MSA*ha)		
			Woodland/shrubland	Mean Species Abundance (MSA)*ha	1,250 Int.\$/(MSA*ha)		
			Grassland/savannah	Mean Species Abundance (MSA)*ha	328 Int.\$/(MSA*ha)		
			Inland wetland	Mean Species Abundance (MSA)*ha	41,600 Int.\$/(MSA*ha)		
			Coastal wetland	Mean Species Abundance (MSA)*ha	3,630 Int.\$/(MSA*ha)		
			Contribution to / limitation of availability of	Natural	Fossil fuel depletion		



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
scarce natural resources: Fossil fuels							
Contribution to / limitation of availability of scarce natural resources: (Other) non-renewable materials	Natural	(Other) non-renewable material depletion		kg Cu eq	0.273 Int.\$/kg Cu eq	A compensation cost that expresses the future loss of economic welfare resulting from increased extraction costs of non-renewable materials in the future [36].	Yes
Contribution to / limitation of availability of scarce natural resources: Water	Natural	Scarce blue water use		m ³	1.560 Int.\$/m ³	A restoration cost that expresses the annualised cost of desalination, including the cost of operation and maintenance, electrical and thermal energy, as well as the cost of covering and repaying initial capital and operational costs of desalination [105].	Yes
Contribution to / limitation of poverty: Underpayment in the value chain	Social	Wage gap of workers earning below minimum wage		Already monetary valued	1.59 Int.\$/Int.\$	A combination of compensation, prevention and retribution costs [51]. The compensation cost expresses the gap to a decent living wage, as well as the interest rate. The prevention cost expresses the cost of generic auditing setup to prevent future instances. The retribution cost represents a penalty for the wage gap that is below the legal minimum wage, based on the weighted average of penalties from various countries to express a global penalty.	Yes
		Wage gap of workers earning above minimum wage but below decent living wage		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for insufficient wages		# FTE	9.47 Int.\$/FTE		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Contribution to / limitation of poverty: Insufficient income	Social	Income gap		Already monetary valued	1.09 Int.\$/Int.\$	A compensation cost that represents the restitution for the income gap.	Yes
Contribution to / limitation of human rights violations: Child labour	Social	Underage workers	Workers below minimum age for light work (12 or 13) involved in non-hazardous economic work	# child FTE	14,400 Int.\$/child FTE	A combination of restoration, compensation, prevention and retribution costs. The restoration cost expresses the costs of providing quality education for children not attending school and the costs of implementing additional components of reintegration programmes for children involved in hazardous child labour [106]. The compensation cost expresses the loss of future earnings when a child is prevented from attending school during youth [36], [107], [108]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution cost represents a penalty for instances of child labour based on the weighted average of penalties from various countries to express a global penalty.	Yes
			Underage workers above minimum age for light work and below minimum age (12 or 14 or 13 or 15) involved in non-hazardous non-light economic work	# child FTE	3,470 Int.\$/child FTE		
			Underage workers below minimum age (12 or 13)	# child FTE	36,600 Int.\$/child FTE		



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			involved in hazardous work				
			Workers above minimum age (14 or 15) and below 18 involved in hazardous work	# FTE	15,900 Int.\$/FTE		
		Underage workers who are not attending school		# children	26,400 Int.\$/children		
		Labour force to be audited for child labour		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Forced labour	Social	Forced workers (least severe)		# FTE	18,000 Int.\$/FTE	A combination of restoration, compensation, prevention and retribution costs. The restoration cost expresses the restitution of past economic losses of forced workers in debt bondage, as well as other costs for reintegration [109], [110]. The compensation cost expresses the cost of lost health valued using DALY for forced workers victims of abuse [93]. The prevention cost expresses the cost of generic auditing setup to prevent future instances. Finally, the retribution cost represents a penalty for instances of forced labour based on the weighted average of penalties from various countries to express a global penalty. Restoration, retribution and compensation costs for harassment may also be included if abuse exists in the specific case.	Yes
		Forced workers (medium severe)		# FTE	98,300 Int.\$/FTE		
		Forced workers (most severe)		# FTE	179,000 Int.\$/FTE		
		Forced workers who are in debt bondage		# FTE	19,900 Int.\$/FTE		
		Forced workers who are victims of abuse		# FTE	43,000 Int.\$/FTE		
		Labour force to be audited for forced labour		# FTE	9.47 Int.\$/FTE		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
Contribution to / limitation of human rights violations: Discrimination	Social	Female workers without provision for maternity leave		# FTE	2,560 Int.\$/FTE	A combination of restoration, prevention and retribution costs. The restoration cost represents the restitution of wage lost due to denied maternity leave, gender discrimination and unequal opportunities. The prevention cost expresses the cost of generic auditing setup to prevent future instances of discrimination. The retribution cost represents a penalty for the violation of denied maternity leave and a penalty proportional to the size of the wage gap from discrimination, based on the weighted average of penalties from various countries to express a global penalty.	Yes
		Value of denied maternity leave		Already monetary valued	1.09 Int.\$/Int.\$		
		Wage gap from gender discrimination		Already monetary valued	1.09 Int.\$/Int.\$		
		Wage gap from unequal opportunities		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for discrimination		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Lack of social security	Social	Workers without legal social security		# FTE	3,400 Int.\$/FTE	A combination of compensation, prevention and retribution costs. The compensation cost represents the restitution of the denied paid leave. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty for the workers without social security, in the case of a legal requirement by law, based on the weighted average of penalties from various countries to express a global penalty.	Yes
		Value of denied paid leave		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for insufficient social security		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of	Social	Workers performing illegal overtime		# FTE	160 Int.\$/FTE	A combination of compensation, prevention and retribution costs. The compensation cost represents the	Yes



Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
human rights violations: Excessive and underpaid overtime		Workers performing underpaid overtime		# FTE	160 Int.\$/FTE	wage gap due to underpaid overtime. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty cost for overtime work above the maximum legal limit or paid under legal requirements based on the weighted average of penalties from various countries to express a global penalty.	
		Overtime pay gap		Already monetary valued	1.09 Int.\$/Int.\$		
		Labour force to be audited for illegal overtime		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Occurrence of harassment	Social	Workers who experienced harassment	Workers who experienced non-physical non-sexual harassment	# workers	34,500 Int.\$/worker	A combination of restoration, compensation, prevention and retribution costs. The restoration cost represents average medical costs for injuries, anxiety, depression and post-traumatic stress disorder resulting from workplace harassment estimated for the Netherlands and adapted to other countries using value transfer [92], [111], [112]. The compensation cost represents the cost of loss of future wellbeing resulting from long-term mental health impact of victims of harassment. The prevention cost expresses the cost of generic auditing setup, to prevent future instances. Finally, the retribution cost represents a penalty for instances of physical non-sexual and sexual harassment based on the weighted average of penalties from various countries to express a global penalty.	Yes
			Workers who experienced non-physical sexual harassment	# workers	37,300 Int.\$/worker		
			Workers who experienced physical non-sexual harassment	# workers	67,300 Int.\$/worker		
			Workers who experienced non-severe physical sexual harassment	# workers	77,900 Int.\$/worker		
			Workers who experienced severe	# workers	89,700 Int.\$/worker		

Impact	Capital	Footprint Indicator	Footprint sub-indicator	Unit	Monetisation factor	Explanation	Rights dimension (Yes/No)
			physical sexual harassment				
		Labour force to be audited for harassment		# FTE	9.47 Int.\$/FTE		
Contribution to / limitation of human rights violations: Lack of freedom of association	Social	Instances of denied freedom of association		# violations	551 Int.\$/violation	A combination of prevention and retribution costs. The prevention cost expresses the cost of generic auditing setup to prevent future instances. The retribution cost expresses a penalty for denied freedom of association based on a review of penalties from five different legal systems and adjusted based on the square root of the corresponding countries' population to express a global penalty. Restoration and compensation are not included so as not to double count the impact of freedom of association with the other social impacts.	Yes
		Labour force to be audited for denied freedom of association		# FTE	9.47 Int.\$/FTE		



G. Appendix to Step 6: Guidance on determining attribution categories

How impact is attributed according to the different categories is summarised in **Table A.1: Key impact categories** and specified in detail in the **Impact-Weighted Accounts Framework, Appendix D** (including equations to calculate attribution factors).

You can determine in which attribution category an impact falls by following the decision tree in **Figure G.1**.

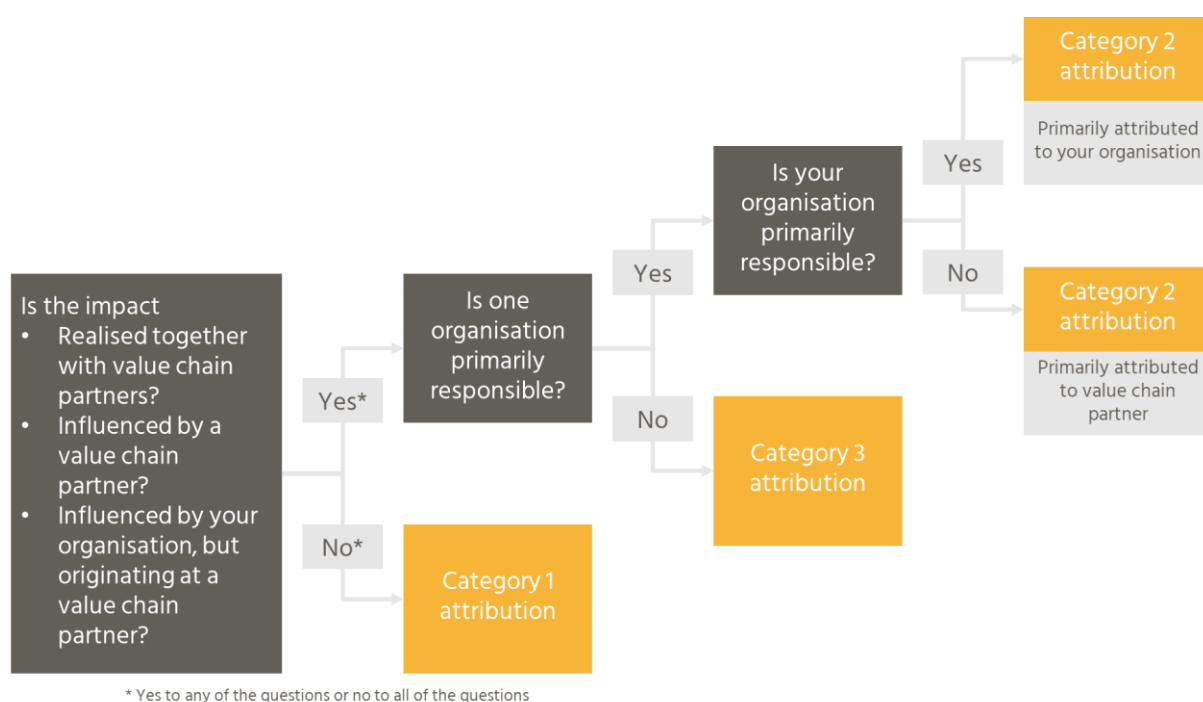


Figure G.1: Decision tree to determine the category of attribution

When answering the question, keep in mind whether impact information would be a reason for your organisation or for its value chain partners to choose other partners to do business with.

Once you have determined the impact category, you need to specify the attribution factors. These factors determine the share of impact that each value chain partner involved gets attributed with. **Figure G.2** visualises the attribution of impacts in the different categories.

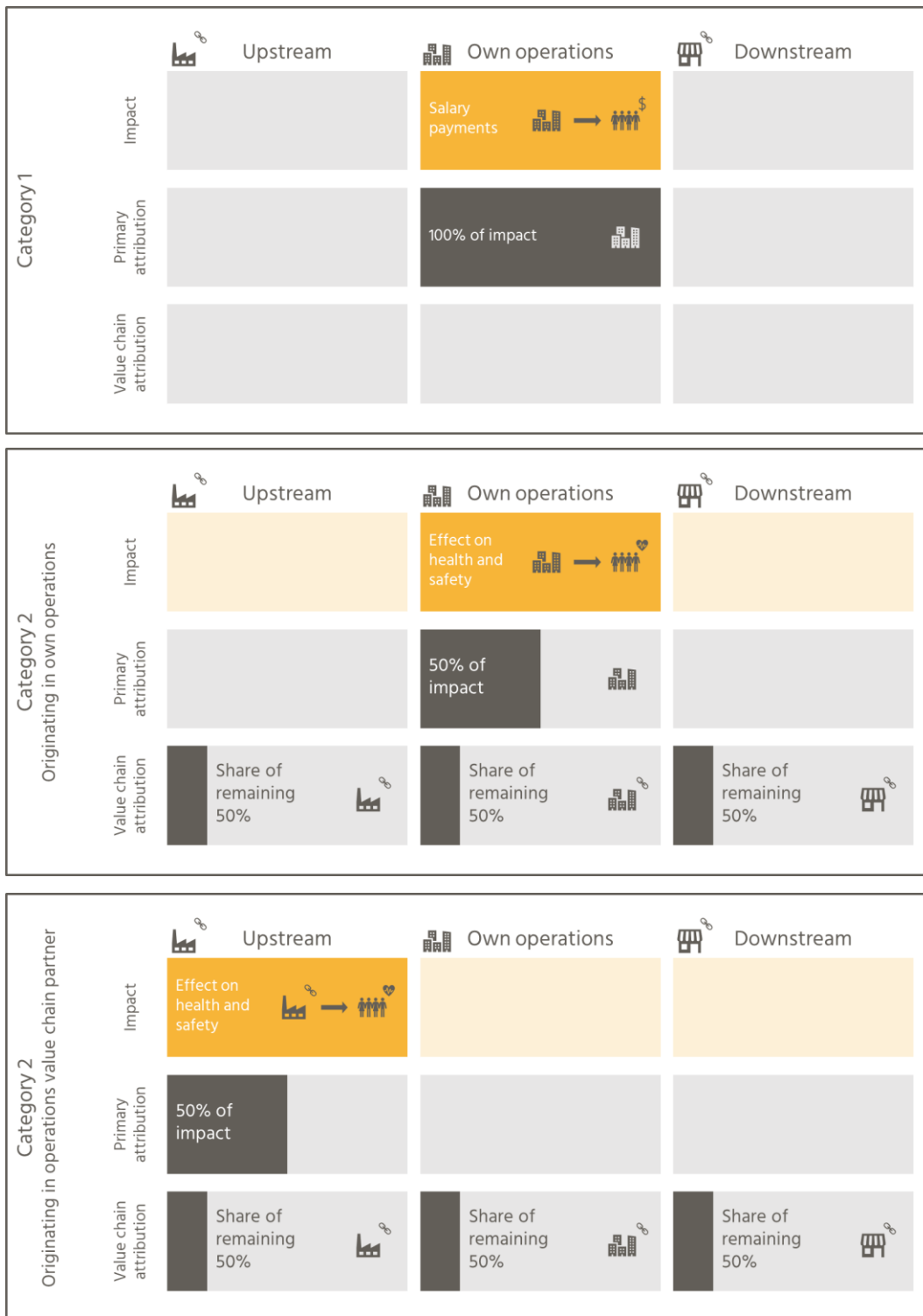


Figure G.2: Attribution of impacts in different categories.

Top: Category 1 impact (Salary payments) is fully attributed to the own organisation, without any attribution of impact over the value chain.

Middle: Category 2 impact (Effect on health and safety) is primarily attributed to the own organisation (50%) and the remaining share is distributed over the value chain, including the own organisation



H. Appendix: Examples of full Impact-Weighted Accounts of Glutiticious

As an example, we show what the IP&L of Glutiticious could look like. Note that all values are made up; they are not representative for companies in the food sector or any other sector—not even at order-of-magnitude level. The “Notes on calculation” are for the readers of this Guidance Document. A company like Glutiticious would not necessarily provide those (in this form).

IP&L Table. All values in millions Int\$

		<i>Customers (people eating Glutiticious bread)</i>	<i>Employees Glutiticious</i>	<i>Company and investors Glutiticious</i>	<i>Value chain partners</i>	<i>Government, local communities and other</i>	<i>Nature and beneficiaries</i>	Notes on calculation
Financial Capital	Payments from clients	-60,2	-	-	-	-	-	Directly from financial statements
	Profit	-	-	10,8	-	-	-	Directly from financial statements
	Salaries	-	15,7	-	-	-	-	Directly from financial statements
	Taxes	-	-	-	-	12,6	-	Directly from financial statements
	Interest payments	-	-	2,4	-	-	-	Directly from financial statements
	Payments to suppliers	-	-	-	18,1	-	-	Directly from financial statements
	Other Financial Capital elements	-	-	0,6	-	-	-	Directly from financial statements
	Cost of capital	-	-	-10,6	-	-	-	Calculated based on cost of capital of equity and debt
Manufactured Capital	Client value of products	Larger than 60,2	-	-	-	-	-	Simplest model: consumers tell that the bread is worth at least the price

		<i>Customers (people eating Glutlicious bread)</i>	<i>Employees Glutlicious</i>	<i>Company and investors Glutlicious</i>	<i>Value chain partners</i>	<i>Government, local communities and other</i>	<i>Nature and beneficiaries</i>	Notes on calculation
	Value of input materials	-	-	-	-18,1	-	-	Simplest model: assume value of input materials is set by the price. Margins and other benefits of up- or downstream value chain players not assessed.
Human Capital	Effects on human health - contribute to a healthy diet	"Large" (only assessed qualitatively)	-	-	-	-	-	Experts consulted see this as large, but a model to quantify this is not available.
	Effects on human health - effect of unintentional allergens in food	0	-	-	-	-	-	There are no indications that this happened in the year. Therefore, the best estimate of the impact is zero.
	Time invested by employees	-	-8,8	-	-	-	-	Based on "opportunity cost of time" and the hours worked
	Wellbeing of employment	-	1,8	-	-	-	-	Estimated through employee engagement surveys to refine global values of wellbeing associated with employment



		<i>Customers (people eating Glutlicious bread)</i>	<i>Employees Glutlicious</i>	<i>Company and investors Glutlicious</i>	<i>Value chain partners</i>	<i>Government, local communities and other</i>	<i>Nature and beneficiaries</i>	Notes on calculation
	Value to employees due to training and experience	-	1,2	-	-	-	-	Estimated based on career paths of employees
Social Capital	Contribution to poverty	-	0	-	-	-0,4	-	Underpayment does not apply to employees, as all employees earn above the living wage. It is likely to occur in the value chains though. Value estimated through social literature. Interviews with suppliers can refine this.
	Contribution to human rights violations	-	0	-	-	-0,5	-	No indication for rights violations at employees, although a larger scope (e.g., assessing potential discrimination related to a gender wage gap) might change this. Effects in value chains estimated based on social literature. Interviews with suppliers can refine this.
Natural Capital	Contribution to climate change	-	-	-	-	-	-3,7	Calculations based production information and LCA for ingredients

	<i>Customers (people eating Glutificious bread)</i>	<i>Employees Glutificious</i>	<i>Company and investors Glutificious</i>	<i>Value chain partners</i>	<i>Government, local communities and other</i>	<i>Nature and beneficiaries</i>	Notes on calculation
Contribution to pollution—Air	-	-	-	-	-	-2,8	Calculations based production information and LCA for ingredients
Contribution to pollution—Water	-	-	-	-	-	-0,9	Calculations based production information and LCA for ingredients
Contribution to pollution—Soil	-	-	-	-	-	-0,2	Calculations based production information and LCA for ingredients

Stakeholder value creation statement

Based on the IP&L table, the following Stakeholder value creation tables are assessed. All values are in millions Int\$.

<i>Customers (people eating Glutificious bread)</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Payments from clients	-60,2		
Client value of products		Larger than 60,2	
Effects on human health— contribute to a healthy diet		"Large" (only assessed qualitatively)	



Effects on human health - effect of unintentional allergens in food			0
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<i>Employees Glutlicious</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Salaries		15,7	
Time invested by employees	-8,8		
Wellbeing of employment		1,8	
Value to employees due to training and experience		1,2	
Contribution to poverty			0
Contribution to human rights violations			0

<i>Company and investors Glutlicious</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Profit		10,8	
Interest payments		2,4	
Other Financial Capital elements		0,6	
Cost of capital	-10,6		

<i>Value chain partners</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Payments to suppliers		18,1	
Value of input materials	-18,1		

<i>Government, local communities and other</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Taxes		12,6	
Contribution to poverty			-0,4
Contribution to human rights violations			-0,5

<i>Nature and beneficiaries</i>	Impact associated with input	Positive impact associated with output	Negative impact associated with output
Contribution to climate change			-3,7
Contribution to pollution—Air			-2,8
Contribution to pollution—Water			-0,9
Contribution to pollution—Soil			-0,2

Sustainability statement for external costs

Finally, Glutilicious collects all external costs in the IP&L and combines these into the sustainability statement for external costs. This is an important statement, as all non-zero values are in fact unacceptable. They should be managed to be as small as possible, both by reviewing own operations and by managing the supply chain. Again, all costs in millions Int\$.

	Employees Glutilicious	Government, local communities and other
Contribution to poverty	0	-0,4



Contribution to human rights violations	0	-0,5
Contribution to climate change		-3,7
Contribution to pollution—Air		-2,8
Contribution to pollution—Water		-0,9
Contribution to pollution—Soil		-0,2



About the Impact Economy Foundation

The Impact Economy Foundation accelerates the transition towards the Impact Economy, an economy that harnesses the power of markets, entrepreneurship and innovation for the common good. In the Impact Economy, every enterprise is an impact enterprise.

To create this shift, IEF redefines value and success in business and the economy: from maximizing short-term financial gain to optimizing societal value. IEF develops the instruments, movement and incentives for the Impact Economy.

[Impacteconomyfoundation.org](https://www.impacteconomyfoundation.org)

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