HANDBOOK

2020

Handbook for

Product Social Impact Assessment

Roundtable for Product Social Metrics

Literature reference

For literature references please use: Goedkoop, M.J.; de Beer, I.M; Harmens, R.; Peter Saling; Dave Morris; Alexandra Florea; Anne Laure Hettinger; Diana Indrane; Diana Visser; Ana Morao; Elizabeth Musoke-Flores; Carmen Alvarado; Ipshita Rawat; Urs Schenker; Megann Head; Massimo Collotta; Thomas Andro; Jean-François Viot; Alain Whatelet; Product Social Impact Assessment Handbook - 2020, Amersfoort, November 1st, 2020.

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www.product-social-impact-assessment.com

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** founders of the Roundtable for Product Social Metrics*

Message from the members of the Roundtable for Product Social Metrics

This Handbook is the fifth iteration of the Handbook for Product Social Impact Assessment. The edition reflects the work that has been done by the Roundtable Members over the last year. Since 2013 over 20 companies have contributed to this Framework, which is the result from many dialogues, the experience obtained by working on case studies and the testing of data tools. During this iteration the social topics have been revised: The Social Topics Report.

The background and explanations of the methodology can be found in the Methodology Report, which has also been updated in 2020. Furthermore an Implementation Guide was published 2019. This guide leads organisations from the first case study, to formalization (policies and procedures), to measurement via KPI to continuous improvements in assessing impact on the value chains. As a result the Product Social Metrics toolkit consist now of the four underlined editions.

With these updates the group aims to contribute further to better decision making by the use of data and evidence in order to honestly evaluate the success or failure of measures taken.

Product Social Metrics is an on-going journey, where organisations can learn from one-another no matter the level of experience in this field. Please feel free to start using the Handbook and develop your own case studies, or even better join the partnership that developed this Handbook. Being a partner provides you opportunities to meet with your peers, get an onboarding training exchange best practices and learn from the experience from others. Only together we can learn and develop more efficient metrics, whilst enjoying the co-creation of setting new standards.

Testimonials

Dave Morris

Global competence leader life-cycle assessment at DSM
Co-Founder Roundtable

"At DSM we provide Brighter Living Solutions; products that are measurably better than the mainstream solution on the market in terms of environmental or social impact. We measure these impacts over the full life cycle of the products. Insights from these studies show us where we can make further progress and where to target our Bright Science so we constantly improve the sustainability performance of our customers or end users.

Innovations in these Sustainable Growth Platforms secure our position as a company providing solutions for urgent societal challenges. DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders. For this we need a shared, credible and broadly accepted methodology to measure the social impact of products. We are proud to be co-founder and contributor to the Roundtable that has now created a next stepping stone towards harmonised metrics with this fifth iteration of the Handbook for Product Social Impact Assessment."

Peter Saling

Director Sustainability Methods, BASF SE
Co-Founder Roundtable

"I see the development of metrics for assessing social indicators as an important initiative in a cross-sectoral setup as it is provided by the Roundtable for Product Social Metrics with PRé as facilitator and multiplier. As a co-founder of this group, we contributed from the beginning to the development of the metrics and the publication of several issues of the Handbook.

I´m looking forward in continuing the work in the Roundtable, encouraging other companies as well to join and to work with the methods and procedures that have been worked out. New case studies and applications will help to disseminate the assessment of social indicators in a holistic way supporting life-cycle assessment (LCA) and sustainability assessments for decision making, but as well for marketing and support of R&D activities."

Anne-Laure Hettinger

Head of Global R&D Sustainability Department ArcelorMittal
Roundtable member since 2017

"One key mission of our team is to support the continuous sustainability progress of ArcelorMittal's products and processes. This means assessing their environmental profile, and also understanding their positive or negative impact on society."

Diana Visser

Sustainability Director Corbion
Roundtable Member since 2014

"To enable our customers to make conscious choices, we will assess both the environmental and the social impacts of our products and work side by side with them to substantiate sustainability claims. To be able to do this, a credible methodology to measure social impacts along the value chain is essential."

Carmen Alvarado

Senior Manager Sustainability and ESG Fuji Europe Africa
Roundtable member since 2019

"Fuji Europe Africa sees itself as a member of society. Insight in the effect that our business activities have on society is key to fulfill our core value of working towards a sustainable society."

Urs Schenker

Sustainability and Novel Packaging Nestlé
Roundtable member since 2016

"At Nestlé, we have been using life cycle assessment and eco-design to evaluate the environmental performance of our products during their design & development process. Simplified eco-design has enabled us to systematically evaluate the environmental performance of different design alternatives, and to improve the sustainability performance of our product portfolio. We now want to expand this approach to social impacts. We intend to integrate social performance into our product design process as early as possible. Therefore, we want to develop a simplified, yet scientifically sound and externally recognized approach with the support of the Roundtable for Product Social Metrics."

Jean-François VIOT

Senior principal scientist
LCA expert SOLVAY
Roundtable member since 2016

"We, at Solvay, strongly believe that building a more sustainable business will create superior value for the society at large. We are convinced, as professionals, that sustainability can and must be measured in a robust, relevant and opposable way. This is why we have developed and implemented our "Sustainable Portfolio Management" – SPM - tool in the Group for about 10 years. The SPM tool is rooted in Life Cycle Assessment methodology, the reference practice for environmental impact assessment in the industry and beyond. Today, being a member of the Roundtable is a key opportunity to enrich our tool and progress in the field of Social impacts. The Handbook represents high valuable guidelines for our future expansions and improvements in our social assessments, within the frame of our overall program for sustainability: Solvay One-Planet."

Mark Goedkoop

Founder of PRé and Facilitator of the Roundtable since 2013.

"I started PRé in 1990 believing that decisionmakers need robust metrics to base their decisions in the field of sustainability on. After developing environmental metrics, I see social metrics as the next challenge for companies that want to understand, manage and improve sustainability in a life cycle perspective.

It has been truly great to work with the 20+ companies that have supported the development, shared their ideas, experiences and many casestudies for the last 7 years. We agreed we need to transform the Roundtable into a much broader partnership, in which many more companies can learn and share ideas, and build consensus on the best approach to use and implement social metics. In the end implementation of social metrics in decisionmaking procedures is key.
My believe that our efforts will enable better decisions, drives me to invest much of my time and resources in this Partnership.

Ilonka de Beer

Programme manager of the Rountable since 2016

"As the programme manager for the Roundtable I have been actively involved now for almost 5 years. I truly enjoy the open spirit and energy of the group and the shared purpose of increasing transparency of value chains in order to improve the well-being of all stakeholders along the life-cycle of products."

Product Social Impact Assessment

Roundtable for Product Social Metrics

Product Social Impact Assessment Framework

CHAPTER 2

Understand the methodology

CHAPTER 3

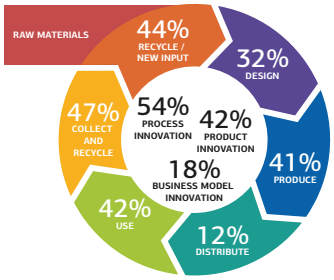
Preparation

1. Communication context
2. Materiality assessment
3. Prepare for data collection

CHAPTER 5

Circular economy (optional)

Define circular economy strategy



Strategies aimed at closing the loop and optimise use

CHAPTER 4

Goal and Scope

1. Define goal
2. Describe product system, functional unit and scenarios
3. Decide which life-cycle stages are included
4. Decide the end-of-life allocation procedures (if relevant)
5. Draw and describe all life-cycle steps according to understanding, use 3 questions
6. Define initial system boundaries
7. Consider adding steps with potential positive impacts
8. Update materiality assessment and select social topics

CHAPTER 6

Hotspot identification

Check all life-cycle steps, processes and actors against all the material social topics for each of the described scenarios

CHAPTER 8

Impact assessment for user

Define user types

Check indirect data sources

Consult internal departments

Score reference scales per social topic

+2	best in class, continuous improvement
+1	beyond generally acceptable situation, continuous improvement
0	generally acceptable situation,
-1	unacceptable situation but improving
-2	unacceptable situation, no improvement

CHAPTER 7

Impact assessment for supply chain + EoL

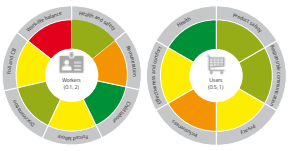
Collect data from supply-chain actor

Collect data from indirect sources

Consult internal departments

CHAPTER 9

Interpretation



Document and assess data quality

Communication guidelines
Consider peer review

Executive Summary of the Handbook

Chapter 1: Introduction

Purpose

The Handbook for Product Social Impact Assessment (PSIA) – ("the Handbook") describes a consensus-based methodology to assess positive and negative social impacts of products and services on four stakeholder groups: workers, local communities, small-scale entrepreneurs and users. Uniquely, the methodology focuses on assessing social impacts of products and services rather than on the impact of a company as a whole. The background of the methodology is described in detail in the Methodology Report.

The Handbook is primarily written for people in the company with environmental life-cycle assessment (LCA) expertise, who now want to start assessing the social aspects of the company's products and want to do the first case study. In addition, the Handbook means to inspire all people and departments to improve responsible decision making and communication of results.

There are some fundamental differences between social and environmental life-cycle approaches. For example, to date, there are no sufficiently detailed secondary databases that can be used to create a complete inventory for social LCA studies.

<table>
<tr><td rowspan="3">Stakeholders addressed</td><td colspan="5">Life-cycle stages</td></tr>
<tr><td colspan="2">Supply chain
Raw material extraction, manufacturing, retail</td><td>Use</td><td colspan="2">End of life</td></tr>
<tr><td>Small-scale entrepreneurs</td><td>Workers</td><td>Users</td><td>Small-scale entrepreneurs</td><td>Workers</td></tr>
<tr><td colspan="5">Local communities</td></tr>
</table>

This update of the methodology

This is the fifth iteration of the Handbook for PSIA. Companies in the Roundtable for Product Social Metrics produced this in a joint effort. In this last iteration better linkages are made with international standards and definitions. The focus of this update is on a revision of the social topics, performance indicators and reference scales, which can now be found in a separate Social Topics Report. A new feature is the provision of many links to datasources, that can be used for the Hotspot identification step.

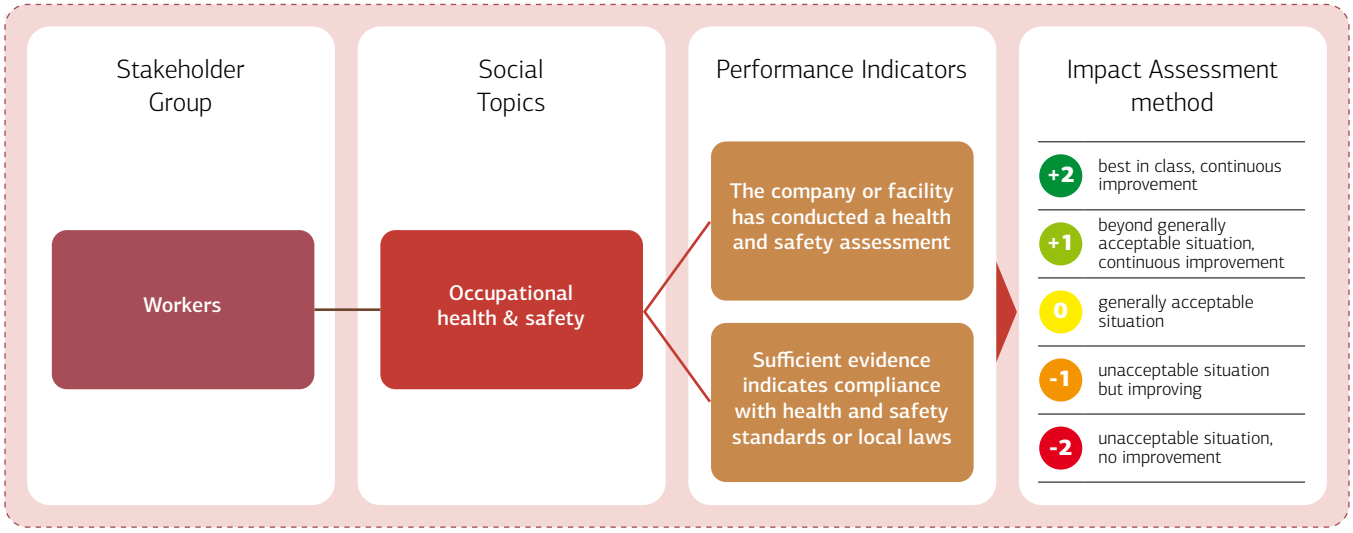
Since the Handbook-2018, the Roundtable has in 2019 published an Implementation Guide, which aims to describe an approach to best implement product social metrics into the organisation, via a four- step approach. Also several case studies have been published by the members, in which the experiences and learnings are described.

Chapter 2: Key elements of the methodology

The PSIA method outlined in this Handbook consists of four key components:

1. Stakeholder groups
2. Social topics
3. Performance indicators
4. Reference scales to assess impact

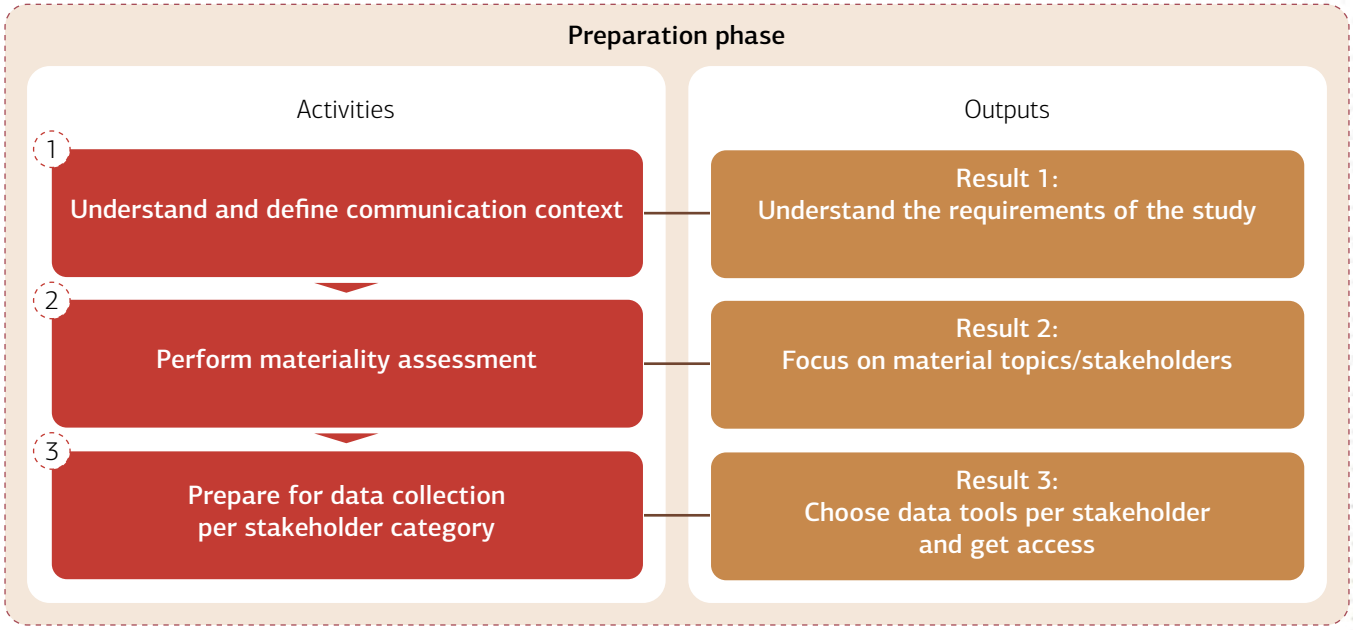
More information is provided in a separate Methodology Report.



Chapter 3: Preparation phase

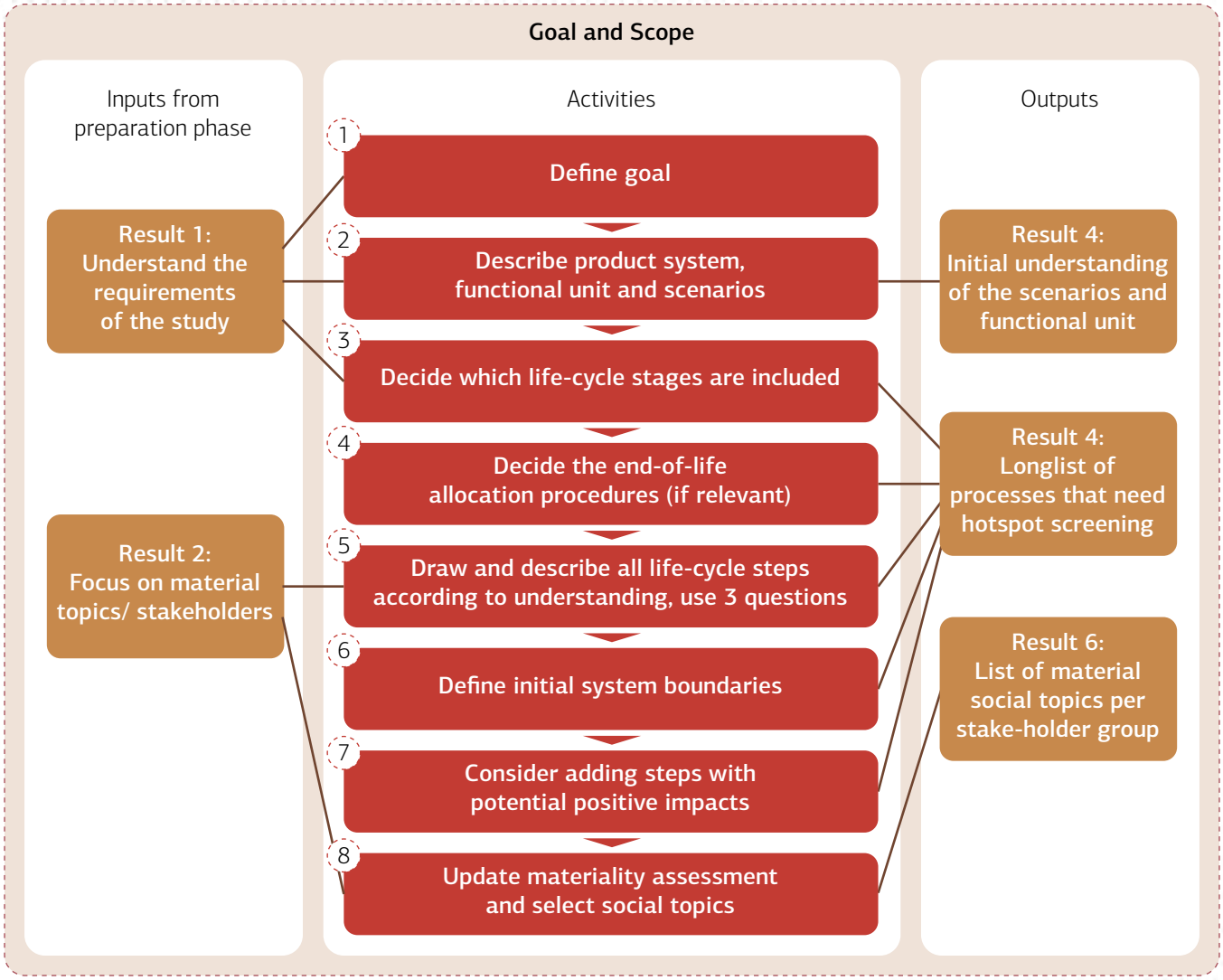
Before each Product Social Impact Assessment (PSIA), a number of preparation steps should be done (see summary in Figure below):

1. Defining the communication context and the required robustness and completeness of the study.
2. Doing a materiality assessment to focus on the most important social topics.
3. Getting access to the appropriate data collection tools.



Chapter 4: Defining Goal and Scope

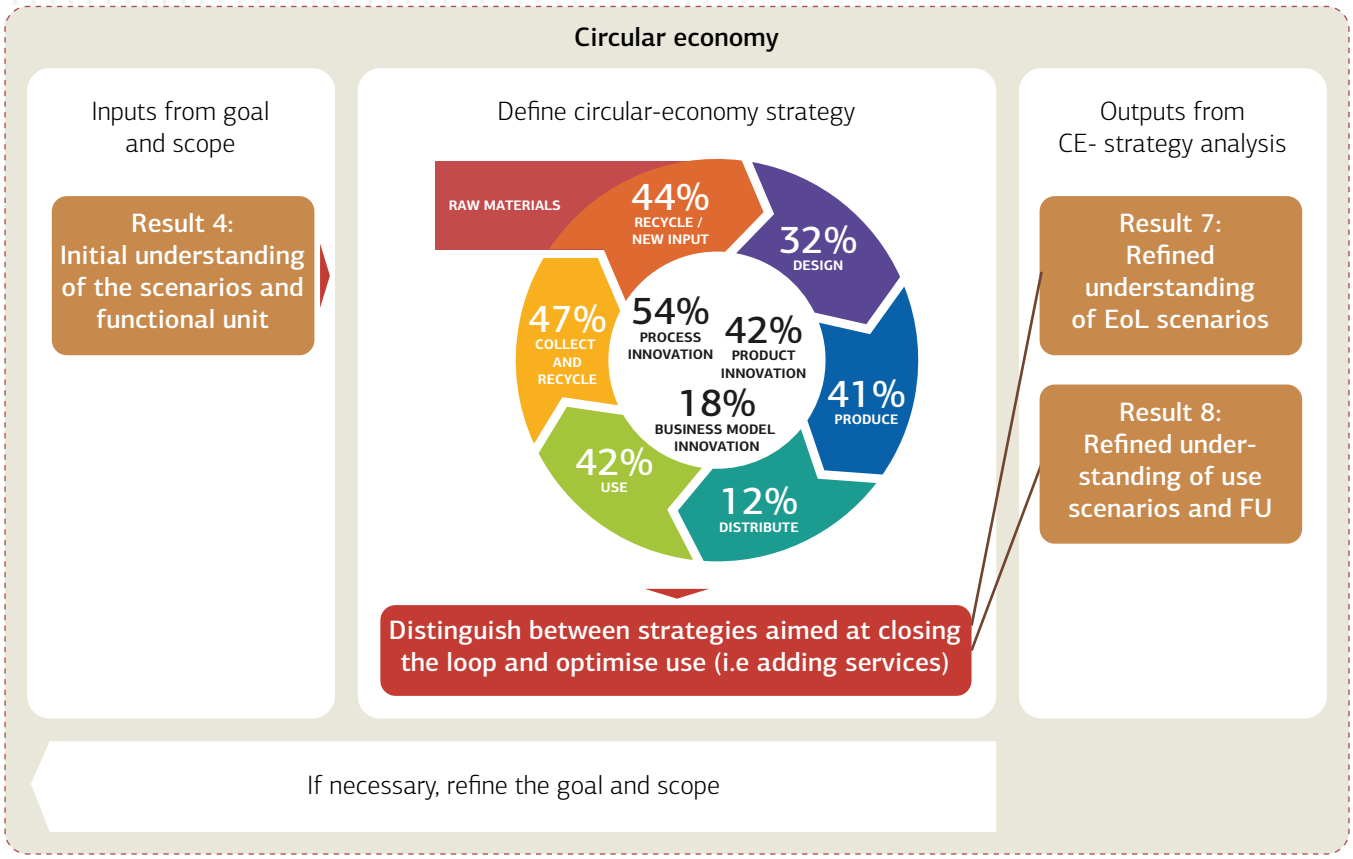
Once the communication context is understood, a general idea of materiality is established, and access to data sources have been arranged, the goal and scope of the PSIA study can be determined. In this activity, the materiality assessment should be reviewed to make it more specific for the particular assessment. The steps are summarised in the figure below.



After the preparation phase and setting the goal and scope several steps can be followed. Not all of them are obligatory for one study.

Chapter 5: Circular economy and social impacts

Circular Economy (CE) is a powerful concept that inspires many companies to rethink the design, marketing and distribution of products. The original focus of CE was to minimise the environmental impacts of products. The Handbook discusses how CE-inspired strategies can have potential positive or negative social impacts on stakeholders along the product value chain. CE analysis is optional, since not all companies use CE-inspired strategies.



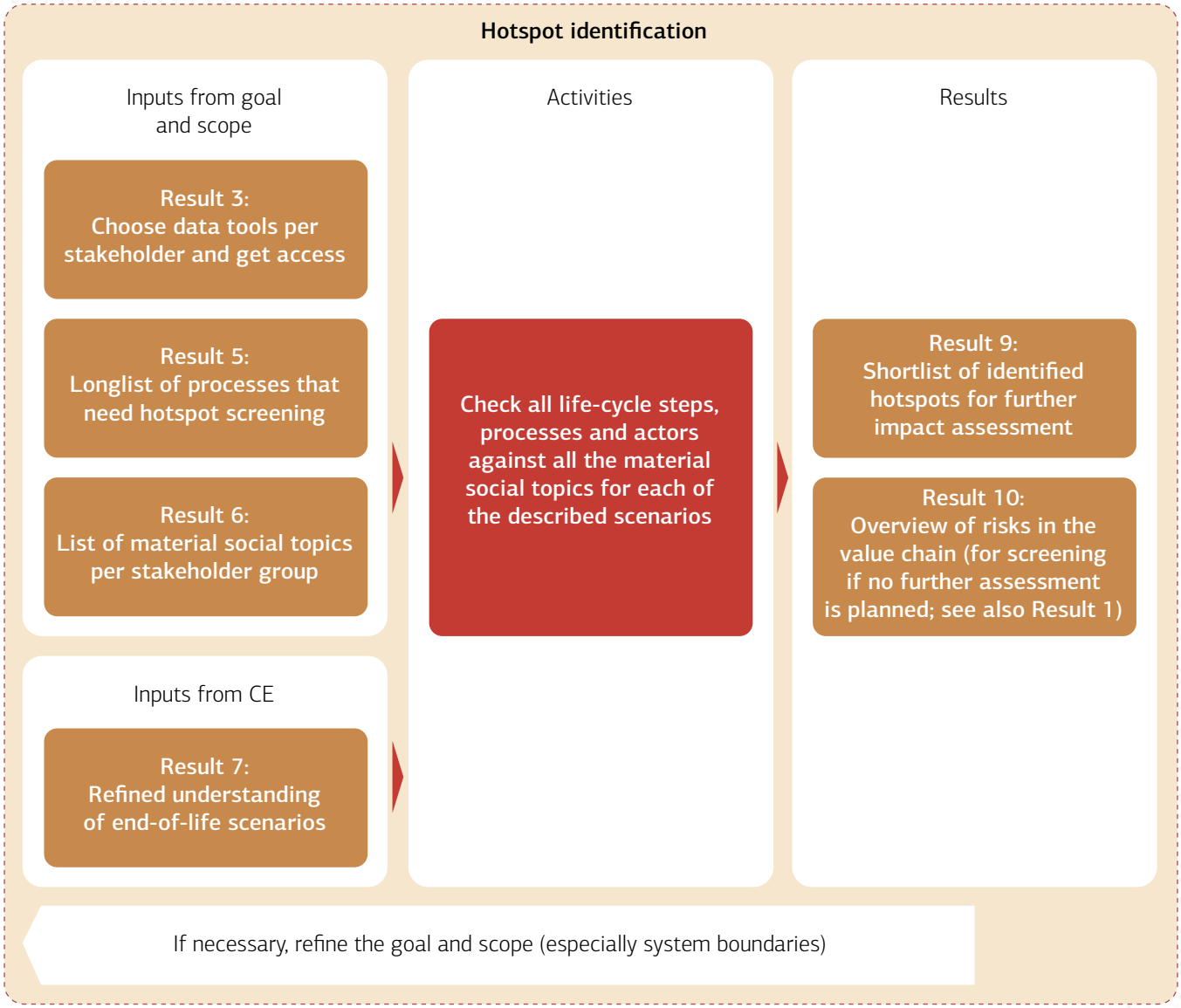
Chapter 6: Hotspot identification

Hotspot identification is a new step in the Handbook. The purpose is to identify which value-chain actors may have significant positive or negative social impacts. This identification can serve two purposes:

1. As end result in a risk identification step in a screening.
2. As a preparatory step for an impact assessment based on the 5-scale approach.

The starting point is the initial longlist derived from the system boundaries in the goal and scope definition. The optional analysis of CE-inspired strategies may provide focus on the end of life, recycling and reuse impacts. Note, that the end-of-life processes are also considered to be part of the supply chain for the next product.

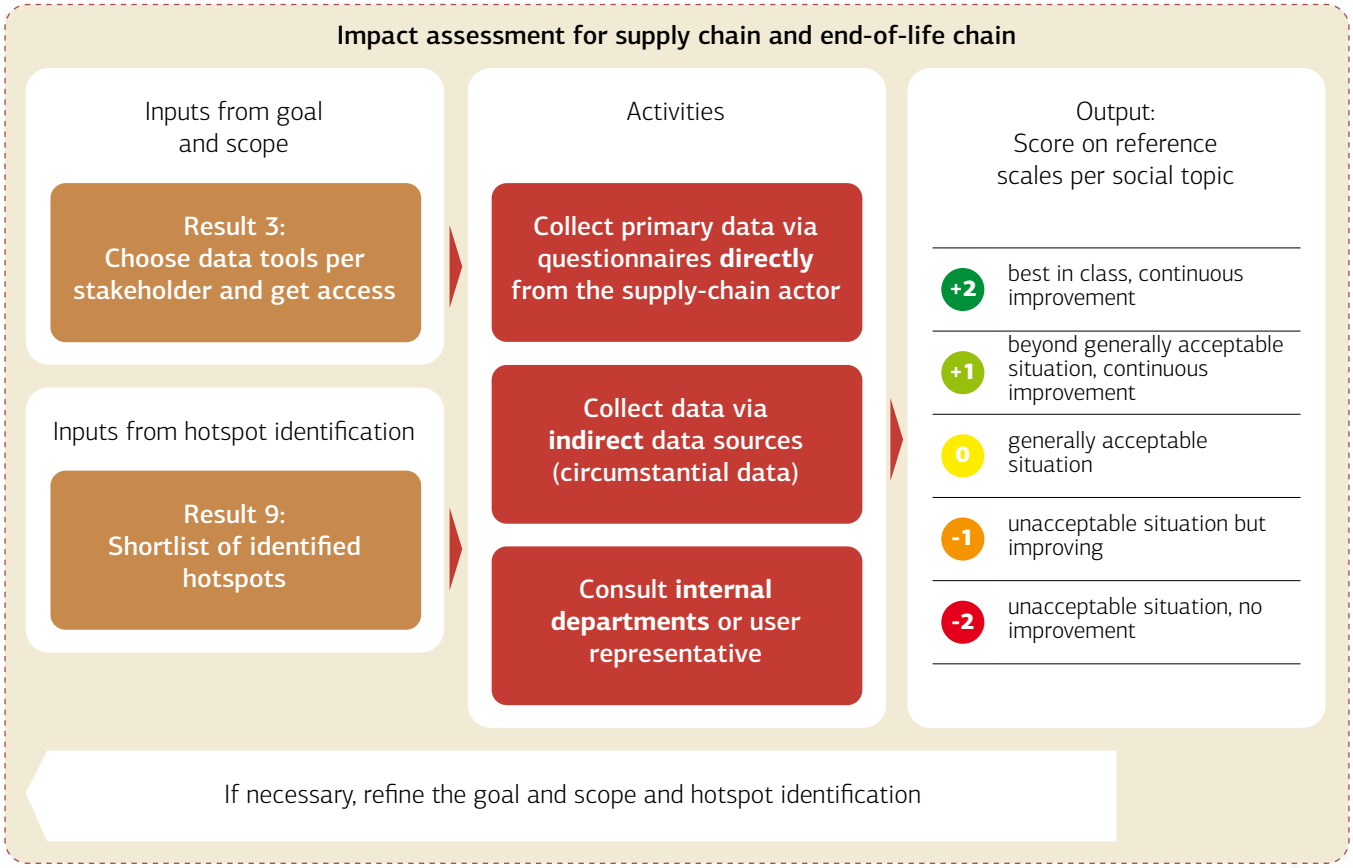
The procedure is to check per material topic which of the supply-chain actors could have significant positive and negative impacts and shortlist these. This step can also show the need to update the goal and scope definition, for instance the initial system boundaries definition, the allocation or materiality assessment.



Chapter 7: Assessing social impact on workers, small-scale entrepreneurs and local communities.

The hotspot identification phase resulted in a shortlist of value-chain actors that require further assessment. The assessment of social impacts for workers, small-scale entrepreneurs and local communities will generally be executed by, or in collaboration with, the purchasing specialists within the company. In many cases, a business unit has one relatively stable supply chain that does not need to be assessed again for every product.

This module provides guidance about how to assess these hotspots using questionnaires or secondary data sources. Each hotspot receives a score between -2 and +2 through assessment with performance indicators and reference scales.



Chapter 8: Assessing social impact on users

Next to the other stakeholder groups in Chapter 7 also an impact assessment can be performed for the users of the product (the use- phase).

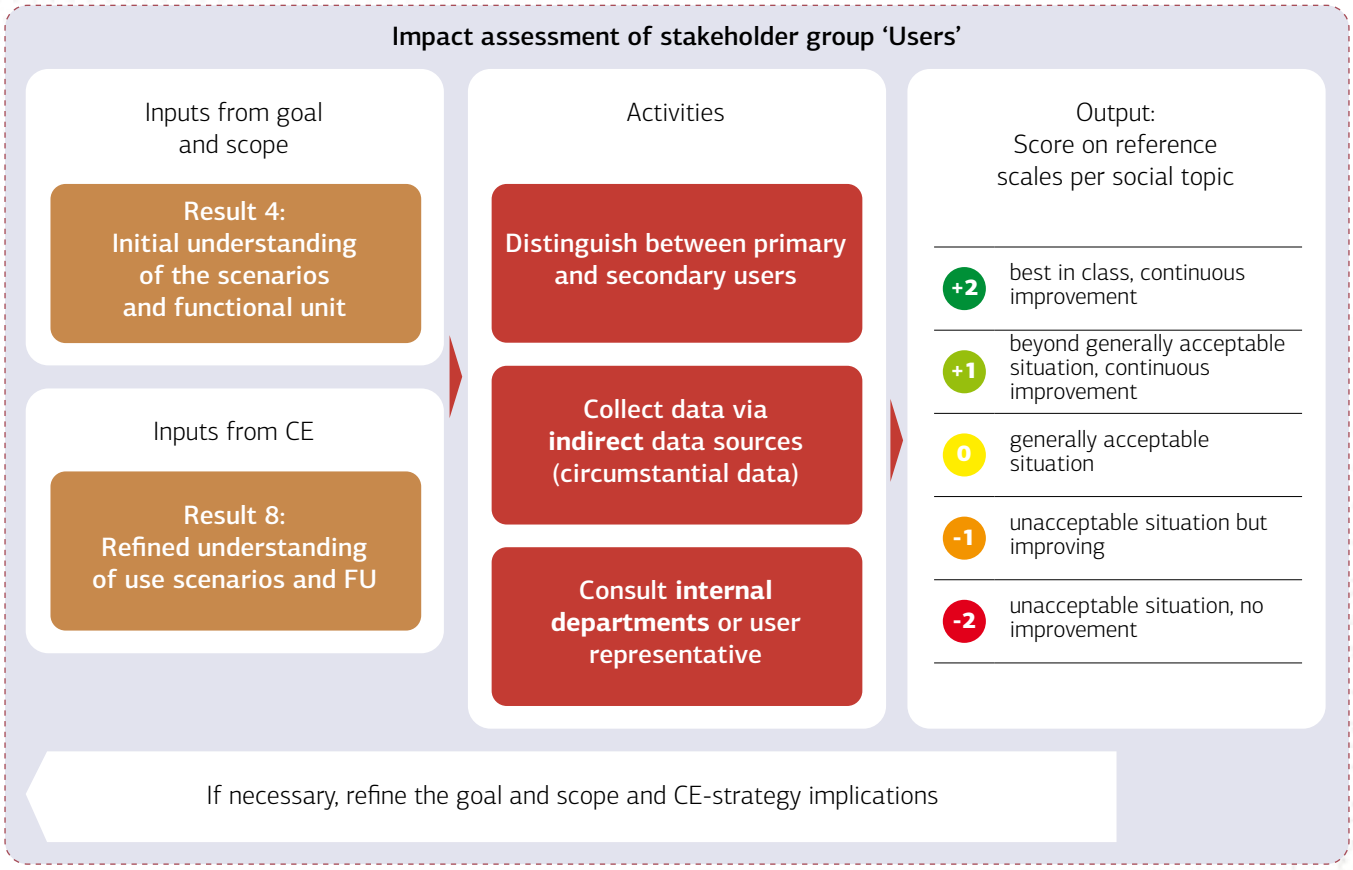
It is important to consider different types of users:

- Professional users (workers or small-scale entrepreneurs) use the product in a professional context. The product affects the working conditions of the user.
- Direct and indirect users of a product. A bus passenger can be seen as the primary user. The bus driver, the cleaner and mechanic are secondary or tertiary users.

Data availability depends on whether a company is responsible for the product design or a supplier of raw materials or components. With this module, each user-related hotspot receives a score between -2 and +2 through assessment with performance indicators and reference scales.

We warn against mixing positive social impacts with plain marketing messages: positive social impacts should only be reported if a product contributes to solving a recognisable social issue.

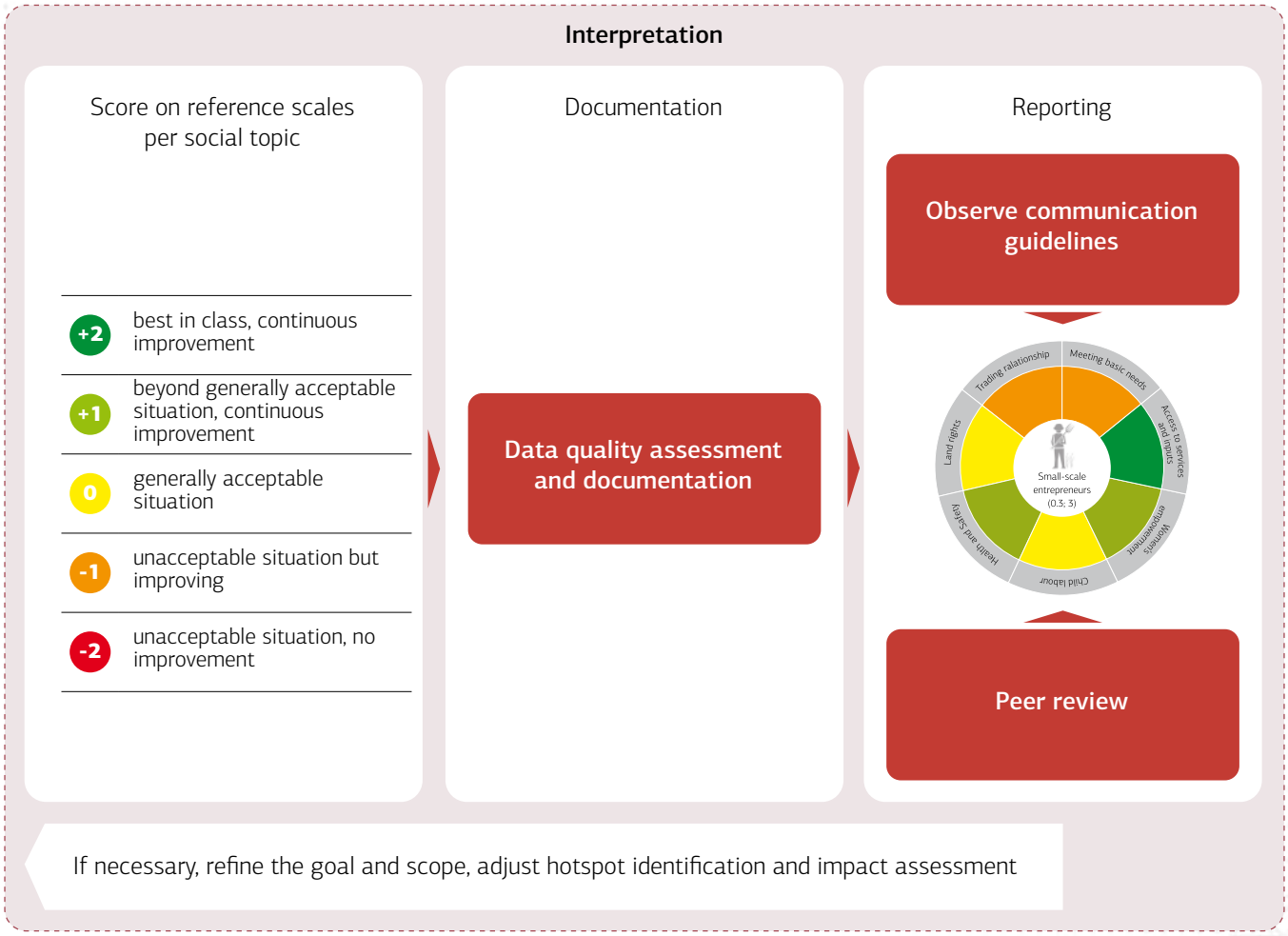
The impacts in the use phase can often be best assessed by the product development experts.



Chapter 9: Interpretation

Studies aimed at external communication need to provide a transparent description of data collection procedures, data quality limitations and data gaps. Study limitations of the study and uncertainties need to be clearly identified and documented.

One issue for which it is hard to find a robust solution is the aggregation of results of multiple value-chain actors. Some examples are provided how this could be done. There is also no description of a weighting procedure, but an example is provided. The module does provide a data quality scoring matrix and a procedure to calculate a data quality score. A short description of an experiment with impact valuation is provided.



Product Social Impact Assessment

Roundtable for Product Social Metrics

CONTENTS

List of Textboxes

The Handbook contains practical examples and experiences by Roundtable members applying the PSIA Framework. The examples are aimed to illustrate how the methodology can be applied and meant to inspire other users.

Glossary

Allocation	Partitioning the input and/or output flows of a process to the product system under study.
Area of Protection (AoP)	A cluster of the underlying themes of concern for the stakeholders that the assessment centres on i.e. Human wellbeing.
Capital	Wealth/stock available in different forms (human, social, natural, financial, physical) that are useful in furthering development of the society (adapted from Meriam Webster dictionary).
Circular Economy (CE)	A circular economy is a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing energy and material loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and closed recycling loops.
Child labour	Child labour is work that deprives children of their childhood, their potential and their dignity, and is harmful to physical and mental development. In its most extreme forms, child labour involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities.
Business to Business (B2B)	Describes the relationship and selling process of goods and services between businesses, for instance, between a manufacturer and ingredient supplier. Most B2B products are purchased by companies to be used in their own manufacturing process, producing goods and services to be sold on.
Business to Consumer (B2C)	Business or transactions conducted directly between a company and the consumers who are the end users of its products or services.
End of life	Last stage of a product or service life cycle when it may be used, recycled or disposed with or without prior treatment.
Financial capital	Can be defined as such assets as income, savings, credit, bank deposits, shares, securities, currency, etc.
Functional unit (FU)	Quantified performance of a product system for use as a reference unit (source: ISO 14040:2006 and 14044:2006).

Guidelines	Set of recommendations that provide guidance on how to develop, implement or conduct an assessment in an effective and appropriate manner.
Hotspot	A life-cycle stage or process which has negative or positive impacts on stakeholder groups along the product's value chain.
Human capital	It includes the knowledge, skills, competencies and attributes embodied in individuals. Human Capital is embodied within individuals – i.e. it is privately owned – and can only be leased to others.
Intended Audience	The people that are expected to read and/or use the results of the assessment.
Life cycle	Consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal (ISO 14044:2006).
Life-cycle assessment (LCA)	Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (ISO 14044:2006).
Local communities	People living in the surroundings of any one of the life-cycle stages of a given product impacted by the company's activities.
Materiality	The quality of being relevant or significant.
Modularity	The degree to which a system's components may be separated and recombined, often with the benefit of flexibility and variety in use.
Natural capital	Can be defined as an economic metaphor for the limited stocks of physical and biological resources found on earth, and of the limited capacity of ecosystems to provide ecosystem services.
Performance indicators (PIs)	Quantitative and qualitative markers of performance for each of the social topics, e.g. number of working hours during weekends, minimum wage paid, etc.
Physical capital	Includes all man-made assets such as infrastructure (manufacturing plant, buildings, roads, dams, etc.), technology (machinery, tools, patents, etc.).
Plan Do Check Act (PDCA) process	Iterative four-step management method used in business for the control and continuous improvement.
Primary data	Data from specific operations in the studied product's life cycle that is measured.
Principles	Guiding rules that have been considered while developing this Handbook or should be considered while conducting PSIA or embedding it as a tool in the company.
Process	Generic term for an activity somewhere in the value chain, without knowing the exact name of the company who performs this activity (see also value chain actor).
Product Social Impact Assessment (PSIA)	Methodology to assess the social impacts of a product or a service on stakeholder groups throughout the life cycle of the product. Although it may be associated with the acronym social LCA, it does not prescribe full alignment with the recommendations of the ISO 14040 norm for life-cycle assessment.
Reference scale	Scale used to measure social performance of each social topic. All scales defined in the report have five levels, from -2 to +2.
Secondary data	Process data that are not from specific processes in the studied product's life cycle.
Service	Intangible commodity equivalent to a product supplied by service industries, such as childcare, construction, entertainment and telecommunications. It does not refer to services such as warranties and service contracts associated with a tangible product.
Small-scale entrepreneurs	Independent persons who mainly rely on family labour to produce food and non-food products on a small scale with limited access to resources. Small-scale entrepreneurs can also refer to artisanal fishers, gardeners, hunters and gatherers, and other small-scale producers.
Social capital	Productive value of social connections, where productive is understood not only in the narrow sense of the production of market goods and services (although this is an essential component) but in terms of the production of a broad range of wellbeing outcomes.
Social impact	The potential positive or negative social impact of the product and some of its immediate effects on various stakeholders along its life cycle (workers, local communities, small-scale entrepreneurs, users).

Social topics	Social areas related to stakeholder groups that should be measured and assessed, for example, working hours, community engagement, child labour, etc.
Stakeholder groups	Groups on which the product has an impact along its life cycle, such as workers, consumers, local communities and small-scale entrepreneurs.
Supply chain	All production processes, logistics, services and marketing related activities up to the point of sale of the product or service. The term Value Chain is used in case also end of life, recycling etc. is included.
Sustainable Development Goals (SDGs)	On September 25th, 2015, countries adopted a set of goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.
Theory of change (ToC)	A causal flow that illustrates how a proposed set of interventions and inputs will result in specific outputs contributing to different outcomes leading to certain impacts.
User	The end users of the final product or service in a personal or professional (Previously referred to as consumer).
Value chain	All production processes, logistics, services and marketing related activities up to the point of sale of the product or service. In line with the CE concept, reverse logistics, refurbishing, and recycling are considered from the moment the product is discarded. The use phase is not considered as part of the value chain.
Value-chain actor	Identifiable company or group of small-scale entrepreneurs with known name and location.
Weighting	Assigning weights or relative values to the different social topics based on their perceived importance or relevance in order to emphasise the most important potential impacts.
Workers	People who are paid to perform work related to the product or service, i.e. in the value chain, manufacturing, retail or end-of-life processes. It includes formal workers (i.e. employees with formal contracts, including temporary and part-time workers), workers employed through agencies or contractors, informal workers (i.e. workers without formal contracts), apprentices and trainees, migrant workers and homeworkers.

Acronyms

AoP	Area of Protection
CE	Circular Economy
CSR	Corporate Social Responsibility
ISEAL	International Social and Environmental Accreditation and Labelling
LCA	Life-Cycle Assessment
GRI	Global Reporting Initiative
NGO	Non-Governmental Organisation
PDCA	Plan Do Check Act
S-LCA	Social Life-Cycle Assessment
UNEP	United Nations Environmental Programme
WBCSD	World Business Council for Sustainable Development
WHO	World Health Organization
SETAC	Society for Environmental Toxicology and Chemistry
ToC	Theory of Change

1 Introduction

1.1 Purpose of the PSIA Handbook

This Handbook contains the fourth iteration of the Handbook for Product Social Impact Assessment. It was produced in a joint effort of the companies in the Roundtable for Product Social Metrics. The purpose of this Handbook is to provide a clear, consensus-based methodology to qualitatively assess social impacts of products and services throughout the life-cycle of creation, use and disposal. This Framework aims to support all people and departments dealing with the design, production and marketing of products and services in making informed decisions and communicating the results in a responsible way.

In the Handbook we will refer to the impact of *products* on stakeholder groups. However, the methodology is also valid for services or combinations such as product/service business models.

Uniquely, the PSIA methodology focuses on assessing social impacts of individual products and services rather than the impact of a company as a whole. The PSIA methodology has strong links with the environmental life-cycle assessment (LCA) methodology. However, there are some fundamental differences between social and environmental life-cycle approaches, as discussed in the next section.

From 2013 to 2020, a group of proactive companies collaborated in a roundtable format to build consensus around the question of how to assess the positive and negative social impacts along the life-cycle of a product or service[1]. This publication is the fifth iteration of the Handbook. Each iteration brings several changes and improvements compated to the previous versions. Roundtable members have gained experience by applying the methodology in case studies and internal procedures. We also learn from and harmonise with other approaches and initiatives working on social metrics. For example, the fruitful collaborations with the WBCSD (Chemical Working Group and Social and Human Protocol) and the Social LC Alliance.

For the member companies, a key reason to develop the PSIA methodology as a joint effort has been, and still is, the generally felt need to develop consensus on the methodology. Companies do not want to compete on methodologies, but on results. This conviction was at the basis of the Product Social Metrics Roundtable. The member companies all contributed their insights to the consensus.

The initial inspiration in 2013 was the UNEP/SETAC document *Guidelines for Social Cycle Assessment of Products* (2009)[2], developed by a group of experts, and other, similar publications.

[1] For more info on the Roundtable for Product Social Metrics see: https://product-social-impact-assessment.com/
[2] https://wedocs.unep.org/handle/20.500.11822/7912

A key difference with the UNEP/SETAC Guidelines is our strong focus on applicability and business relevance. This Roundtable was initiated because the companies recognised the need for a social impact assessment methodology that is relevant for business. The Roundtable focused on cases, shared learnings and experiences, to truly test the feasibility and practicability of the method.

During the fourth year (2016-2017) of the Roundtable, the companies jointly formulated the mission of the group as follows:

To be the leading, cross-sector initiative to give guidance on how to measure social impacts of products and services, in a way that is recognised for its high quality, credibility and business viability. The purpose is to improve the lives of workers, users and local communities by better insights that enable more balanced decision making.

The group also defined the following application areas:
- Steering product portfolios
- Guiding investment decisions
- Steering engagement programmes
- Reporting the impact of companies' activities in the areas of the relevant SDGs

And some basic principles:
- The methodology needs to be in alignment with best-in-class and up-to-date standards for measuring social impacts.
- The methodology creates shared value for all involved stakeholders (economic value and value for society), and takes stakeholder needs into account.
- The methodology continues to be further developed by practising and exchanging experiences.

Next to this Handbook also a Methodology Report and an Implementation Guide have been published. Also several case studies are published on the website by the member companies[3].

1.2 Important differences with environmental assessment

While the Handbook leans on environmental LCA concepts, there are important differences:

1. For environmental impacts, the general assumptions are linearity and less is better. One kg of CO2 is half as bad as two kg, and zero is the reference. These assumptions are not true for social impact assessments. For instance, 24 hours of education and training is not the reference value, nor is 1 hour of education half as bad as 2 hours of education. There is an optimum that depends on the context and the effectiveness with which the education is offered.
2. Data collection is not the same.
    a. Companies may be willing to provide data on CO2 emissions, but they will never report they are non-compliant with international or legal standards.
    b. It is very hard to generalise social impact per commodity, unlike in environmental LCA. There are no detailed background databases for social assessment[4]. Without background databases, social impact assessment can never be complete. It is, therefore, important to first identify the potential hotspots, and then to focus on assessing them.
3. In environmental LCA, we deal with the impact of products on the environment. In social assessment, we deal with the impact of products and services on various stakeholder groups.

[3] Summaries of the case studies can be found on: https://product-social-impact-assessment.com/

[4] The correlation between technology and environmental impact has enabled the creation of background databases with industry averages, which are very useful in environmental LCA. In social assessment, there is weak or no correlation between technology and impacts. Social impacts on workers are mostly determined by the management style of the company. This implies it is difficult to have industry averages, so there is a higher need to collect data per supplier.

1.3 Using the Handbook

This Handbook was primarily written for experts in life-cycle thinking and assessment. Such readers are well positioned to use the Handbook to perform PSIA studies, translate elements of the method to fit the needs of other departments, and help implement and embed PSIA in the organisation.

1.3.1 Performing PSIA studies

The Handbook has been structured as a guide to perform a PSIA study of a product or service. In analogy with a 'full' environmental LCA, this includes reporting, sensitivity checks and, in some cases, a review. The purpose of such PSIA studies is to inform internal and external stakeholders in the best and most reliable way possible. Chapters 5 to 9 are structured around the ISO 14040 standard for environmental LCA, with the aim of reaching the highest level of completeness and reliability.
This PSIA methodology can also be used for screening studies that identify hotspots. Such screening studies are often used for internal assessments, to support decision making when a fast response is required. The requirements for a screening PSIA are much lighter than in a PSIA study that is meant to be used to substantiate marketing claims. In paragraph 3.2, we will describe the application context and the required level of robustness and evidence per application and communication objective.

1.3.2 Implementing PSIA in the organisation

In the Implementation Guide, which was published by the Roundtable in 2019, we further describe how to transition from making ad-hoc case-studies such is described in this Handbook, towards an efficient and effective implementation of product social metrics in an organisation. The companies that participated in the Roundtable have all found their way to apply and implement the methodology in their organisations, internal procedures and communication strategies. Since the method is modular, not all steps have to be done every time. Here are some suggestions how the modules can be linked to the needs of internal stakeholders.

1. Purchasing teams have contact with suppliers and decide which suppliers deliver the best quality, balanced with sustainability requirements. Purchasing teams will be important actors in the data collection process and a main user of data tools (Chapter 3.4). Their first priority will be to find hotspots beyond tier 1 (Chapter 6).
2. Product and application development teams (with product and service designers) will be the experts assessing the use-phase impacts. This is described in Chapter 8. Developers will never become value-chain experts and will likely leave the data collection to purchasing; they are likely to be more interested in screening whether certain materials or the end-of-life treatment and recycling have major impacts. For this purpose, we offer high-level screening tools per sector and per country (Chapter 3.4).
3. Strategic departments are likely to be interested in sustainability performance and may want to do a portfolio analysis. There is no specific tool for this, but the combination of high-level screening and assessing the use phase can give a first level of assessment, after which the really positive and negative product categories can be further investigated with a more in-depth assessment. Another area of interest for product strategy and marketing is in understanding the social impacts of CE-inspired business models. Such models generally have two focus areas: the social impacts in waste treatment and recycling or reuse, and the implications of adding services to the products – this may empower users or have negative effects on them.
4. Sustainability, reporting and strategic departments will also be interested in contributing to the materiality assessment described in Chapter 3.3, to help to find the most material social topics as they have been defined in this Handbook.

Department	Objective	Access to data	See chapter
LCA experts	Own the methodology and organise data access	Depends on role; will often need to work with other departments to get data	All
Purchasing	Have a consistent and agreed framework to screen and assess value-chain actors	Good contacts to tier 1 data providers	Chapter 3.3 on materiality and understanding data sources; Chapter 6 on hotspot identification
HR Department	Understand how the own organisation manages social impacts	Internal systems for HR management, accidents etc.	Impact assessment, chapter 7
Product/Application development	Understand the social impacts of a product to support design and application decisions	Need quick screening of sectors and countries; need to focus on user	Chapter 6 on hotspot identification; Chapter 8 on use phase
Product strategy and marketing	Understand the social impacts of new ways to offer products	Need quick screening of end of life and recycling, need to assess user impacts	Chapter 8 on use phase
Sustainability departments	Make sure that decisions support corporate strategy	Keep an eye on materiality assessment	Chapter 3.3 on materiality

Table 1.1: Some suggestions how different departments may focus on different parts of the methodology

Textbox 1.1 Three-Tiered Approach for Social Impact Assessment at Nestlé

Simplified eco-design has been systematically integrated into the product development process here at Nestlé, and many competitors use similar approaches to optimise environmental performance of future products. However, social impacts are not currently considered in most companies during product design. Nestlé therefore developed a three-tiered approach that can be systematically applied to products in development. The approach starts with a qualitative assessment (first tier), followed by second- and third-tier assessments that are increasingly complex and insightful. The first tier of the approach can be rolled-out globally, while the more complex assessments are applied only to those products that are identified as 'interesting' in the first-tier assessment.

At the first tier, product designers evaluate potential opportunities or issues in light of the company commitments and its materiality assessment. This tier of the assessment is integrated into the Nestlé project management system and is compulsory for any product development project. At the second tier, we use simplified social assessment methods based on input/output financial metrics. Potential hotspots in the supply chain and trade-offs can be identified in a quantitative manner. At the third tier, we use conventional social LCA based on the methodology described in the Handbook for Product Social Impact Assessment. The extension of the handbook for smallholder farmers is a very helpful contribution for food supply chains.

We expect this approach to be systematically used in Nestlé in the future, which will enable us to better identify the role that the R&D teams should play in the improvement of social performance of a multinational food company. We are also currently exploring the use of the same approach outside R&D, for strategy setting and communication/advertising purposes.

1.4 Principles

The following principles have guided our development of the PSIA Framework and are intended to guide users when applying the PSIA Framework and tailoring the methodology to different settings and needs. This list is of principles is aligned with the principles of Social Life-Cycle Metrics for Chemical Products (WBCSD, 2016) and the ISEAL credibility principles.

Relevance

Both when developing the method and when performing the social impact assessment, the most significant social impacts should be identified and reflected as much as possible, chosen from all social impacts of a product or service on all impacted stakeholder groups along the total life cycle of the product or service. Relevant international norms and local laws should be included, and the assessment should serve the business decision-making needs of users, both internal and external to the company.

Impact

The methodology aims to support the higher goal of wellbeing for humans. Therefore, its use should contribute to progress towards intended outcomes (see also Theory of Change). Sharing insights from pilots and case studies helps integrate learning, encourages innovation and development of the methodology, and increases benefits to people.

Robustness

The methodology and assessments are structured to deliver quality outcomes. Using a consistent methodology enables meaningful comparisons of social impacts over time and between companies and products. All changes should be documented transparently.

Data collected to support the assessment should be gathered, recorded, compiled, and (in the event of external verification) disclosed in a way that establishes its quality and relevance. Collected data and the completed impact assessment should be documented in such a way that the assessment can be reproduced within the organisation.

Completeness

The boundaries of the assessment and the limits of the methodology need to be clearly described and communicated. Cut-off criteria should be meaningful, and exclusion should be disclosed and justified.

Accessibility

Guidance for Product Social Impact Assessment focuses on making it possible for companies to use and implement the methodology, to develop it organically, and to improve its performance based on an aligned and transparent methodology. The Handbook is licensed under a Creative Common Licence. This license allows for redistribution and commercial and non-commercial usage of the method. The method can be downloaded for free.

Truthfulness

The method aims to address all relevant issues in a factual and coherent manner, based on a clear trail. All relevant assumptions should be disclosed, and appropriate references should be made to data sources. Claims and communications by actors about the benefits or impacts that derive from the application of this methodology should be verifiable, not be misleading, and enable informed choice for users and other actors.

Efficiency

Impact assessment should make efficient use of human and financial resources (e.g. by applying a limited but effective set of indicators) and should take a realistic approach.
The assessment methodology should be robust but also efficient, as it needs to be used in business. A screening assessment can deliver that efficiency.

1.5 Limitations

Although we think we made significant improvements over the previous Handbook, in terms of consistency and practicality, the results of any product social metrics assessment will be uncertain. It is simply hard and sometimes impossible to find data. Especially challenging is assessment of small companies, where almost no information is available.

We have tried to provide a complete set of topics to cover the most relevant cause/effect mechanisms that can affect a stakeholder, but we do not claim to be complete. There may be significant mechanisms which we did not capture or did not capture well enough.

Working with 5-point scales is a gross over-simplification of the subtleties of real-life situations. A problem with the scales is that -1 and -2 are interpreted as normal integers. The intuitive interpretation is that -2 is twice as bad as -1, which is of course not necessarily the case.

Two products which are very similar and produced along the same value chains may produce highly similar PSIA results. If the intention is to use the results in decision making, it may be especially challenging to produce meaningful results.

2 Key elements of the methodology

2.1 Purpose and overview

A separate Methodology Report describes the scientific backgrounds of the methodology and the main choices that led to a consensus-based list of relevant social topics and performance indicators. The detailed list and performance indicators can be found in the seperate Social Topics Report.

This chapter contains a quick overview of the reasoning behind the development and selection of the topics, to provide some, but not all, insights in the thinking that led to the development of topics.

2.2 Key elements of the methodology

The PSIA method outlined in this Handbook consists of four key components:
1. Stakeholder groups
2. Social topics
3. Performance indicators
4. Reference scales to assess impact

In the PSIA methodology, social impacts are assessed in connection to various stakeholder groups, people who may be directly or indirectly affected throughout the life cycle of products or services. The assessment covers four stakeholder groups: workers, users, local communities and small-scale entrepreneurs.

	Life-cycle stages				
Stakeholders addressed	Supply chain Raw material extraction, manufacturing, retail		Use	End of life	
	Small-scale entrepreneurs	Workers	Users[5]	Small-scale entrepreneurs	Workers
	Local communities				

Table 2.1: Stakeholder groups and life-cycle stages included in PSIA

Each stakeholder group is associated with a number of social topics, such as health and safety, child labour, local employment and responsible communication. These social topics represent the key social issues for these stakeholders. Inventory data for each of the social topics is collected via performance indicators. The PSIA methodology uses a combination of direct and indirect performance indicators to guide the data collection process, clearly indicating the type of information required. This Handbook includes performance indicators that reflect positive and negative impacts of the assessed product or service system. To interpret the collected data, reference scales assess social performance on a 5-point scale. The referencing step is crucial for interpreting the results and supports informed decision making. Figure 2.1 represents the relationship between these elements.

[5] Users may refer to consumers, workers or passive users.

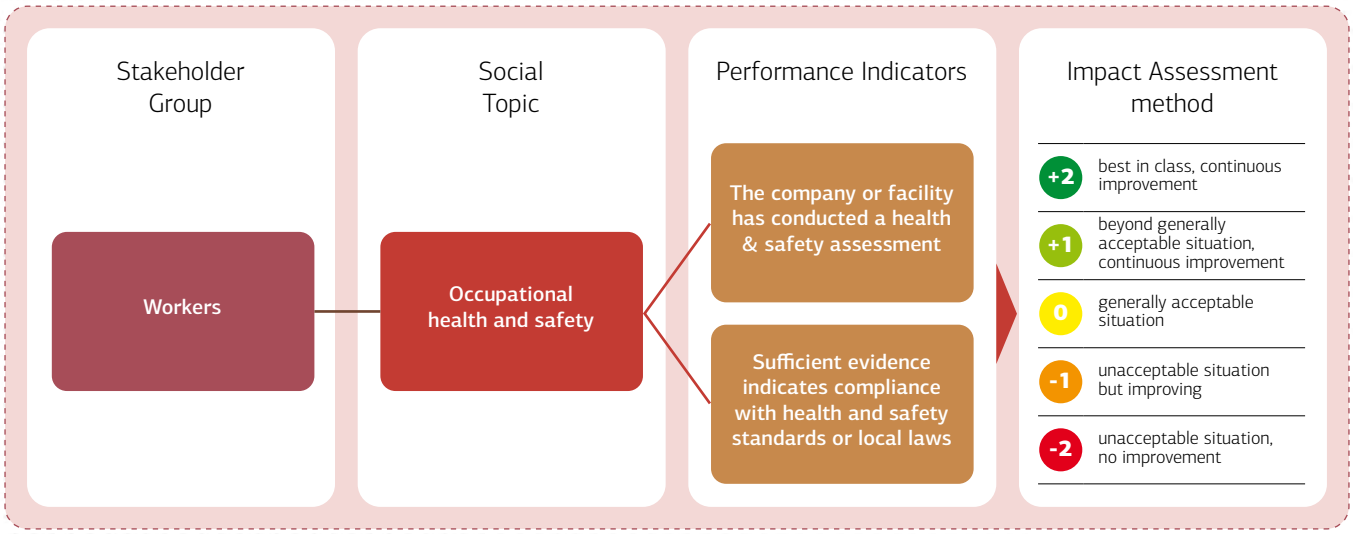


Figure 2.1: How the key components work when looking at health and safety for workers.

2.3 Social topics

Altogether 25 social topics are presented for the four stakeholder groups (Table 2.2.). The Social Topics Report presents performance indicators and reference scales for every social topic.

Social topics for workers	Social topics for local communities
1.1 Occupational health and safety 1.2 Remuneration 1.3 Child labour 1.4 Forced labour 1.5 Discrimination 1.6 Freedom of association and collective bargaining 1.7 Work-life balance	3.1 Health and safety 3.2 Access to material and immaterial resources 3.3 Community engagement 3.4 Skill development 3.5 Contribution to economic development
Social topics for users	**Social topics for small-scale entrepreneurs**
2.1 Health and safety 2.2 Responsible communication 2.3 Privacy 2.4 Affordability 2.5 Accessability 2.6 Effectiveness and comfort	4.1 Meeting basic needs 4.2 Access to services and inputs 4.3 Women's empowerment 4.4 Child labour 4.5 Health and safety 4.6 Land rights 4.7 Fair trading relationships

Table 2.2: Social topics per stakeholder group

The selection of social topics was guided by various concepts such as Area or Protection (AoP), capital approach to human well-being, business dependencies and social impacts.

When selecting social topics, it was useful to consider explicitly what we want to protect and deliver for a stakeholder group. This is often referred to as the Area of Protection (AoP)[6]. In line with the UNEP guidance, the generic Area of Protection is

[6] Existing capital frameworks have served as an inspiration. For example, the capital approach to well-being proposed in 2011 within the OECD framework. It has also been recommended by the United Nations Economic Commission for Europe (UNECE)/Eurostat/OECD Task Force for Measuring Sustainable Development (OECD, 2013). The IIRC provides the 6-capital categories. The capital approach has also been highlighted by the Social and Human Capital Protocol (WBCSD, 2017) & (Social & Human Capital Coalition , 2018) and the GIST Advisory report on the capital of human well-being (Sukhdev, Das, Joshi, & Tripathi, 2018).

defined as 'human wellbeing'. For each stakeholder group, we further determined a more specific identification of the generic concept of human wellbeing:
- Workers: job satisfaction and engagement
- Local communities: healthy communities
- Users: wellbeing
- Small-scale entrepreneurs: livelihood.

The five-capital approach to wellbeing highlights the assets and capabilities needed to facilitate wellbeing. Five types of capital – human, social, physical, economic and natural – represent all resources that matter for the present and future wellbeing of individuals[8]. For each stakeholder group, the detailed AoP was linked – directly or indirectly- to one or more types of capital. See Figure 2.2 for workers as an example.

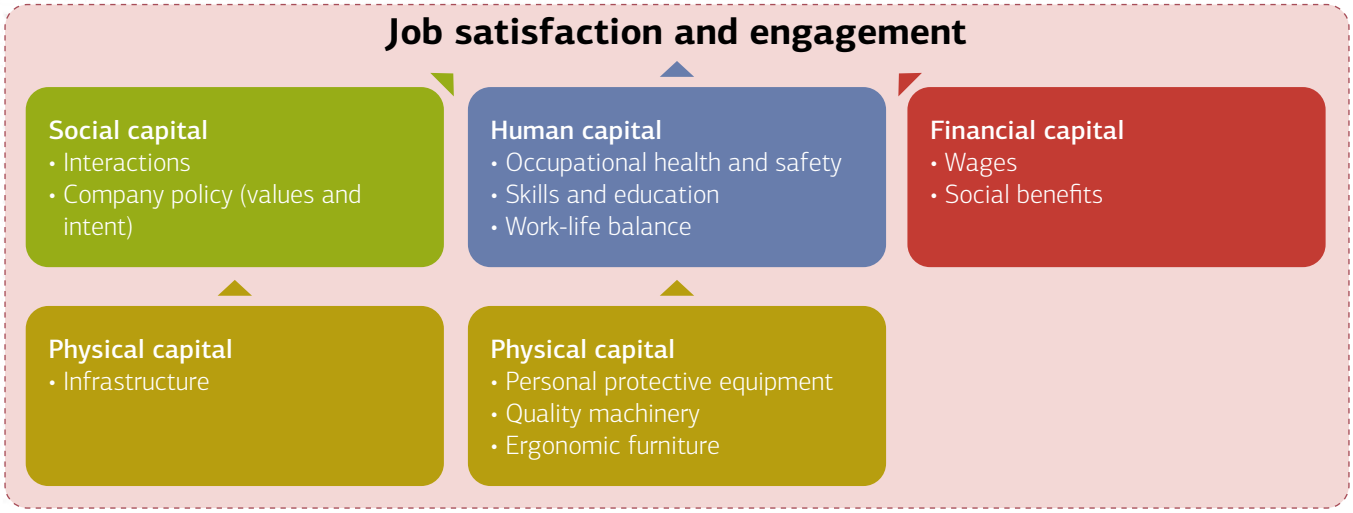


Figure 2.2: Area of Protection and how this links to four of the five types of capital

When selecting social topics, we considered that companies interact with society in two ways:
1. They are dependent on the way society functions (social dependencies)
2. They affect the way society functions (social impacts)

The impacts and dependencies that companies have on stakeholders influences various capitals of human well-being. Companies can build or maintain positive influence on capitals through its daily operations, or the products or services it provides various users.

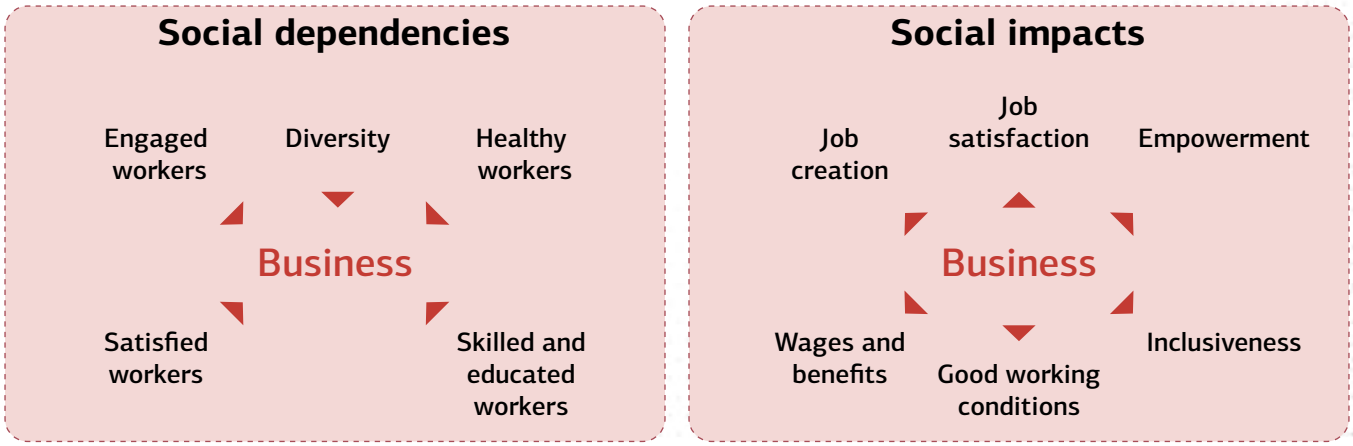


Figure 2.3: Business dependencies and social impacts for workers

2.4 Five-point reference scales

In the PSIA methodology, data about each social topic – as structured by the performance indicators – is interpreted with a scale. The scale allows the users of the Handbook to compare the data to a reference, usually an international standard or convention. If the assessment method is tailored to a specific study, then the reference points could even be set as improvement targets. The referencing step is crucial to interpret the results and support informed decision making. PSIA is designed to consider both positive and negative impacts of the product or service, using a 5-point scale. Each position on the scale is a performance reference point, assigned a score ranging from -2 to +2. A score of -2 is unacceptable performance and +2 is ideal performance. Figure 2.3 shows a generic reference scale, which is adapted for each social topic.

+2	best in class, continuous improvement
+1	beyond generally acceptable situation, continuous improvement
0	generally acceptable situation,
-1	unacceptable situation but improving
-2	unacceptable situation, no improvement

Figure 2.4: Generic scale to assess social performance

The following guiding principles were used to define the levels of the scales and the performance indicators for all stakeholdergroups except users. For users the same principles are applied, but these are more difficult to describe in a general way.

level 0: generally acceptable situation:

Level zero is intended to reflect the situation that a supply chain actor neither has a detrimental nor contributing impact. This reference level is based on internationally agreed conventions and declarations. Examples of performance indicators on this level can be:

- The company adheres to Global Compact Standards (of course only if the standard has relevant criteria for the topic).
- Evidence that the company has an effective policy which requires.... (depending on the topic for instance for child labour: documentation of the age of children upon employment).
- The activities of the company or the small-scale entrepreneurs are certified under a labelling scheme or an NGO standard. This is of course only meaningful if the standard addresses the topic.

Positive scores on the reference scales:

When there is evidence that a supply chain actor has a contributing effect for the stakeholder, we attach a score of +1, when the contribution is recognisable or +2, in the case the performance can be seen as best in class. In both cases the actor is supposed to be in a process of continuous improvement.

Typical performance indicators are:

- On level +1: The company has implemented a management system to continuously improve the situation on this topic and this has resulted in tangible improvements (but does not need to be “best in class”)
- On level +2: The company has committed itself to be best in class regarding the performance on this topic, which has resulted in a very high performance in comparisons with its peers

The principles described above, are based on the thinking applied to establish the smallholder extension, where it was established that each intervention undertaken by the company to promote good practices can be observed and measured at different points along an impact pathway. Thus, we decided to focus on certain points on the impact pathway for each level on the reference scales. That is, interventions undertaken to improve working conditions were linked with the Theory

of Change[6] (ToC). The ToC outlines a causal flow that illustrates how a proposed set of activities and inputs will result in specific outputs contributing to different outcomes leading to certain impacts" (Sustainable Food Lab, 2014). By building an impact pathway for each social topic, we outlined relationship between the company's inputs, activities and impacts on various capital creation or destruction.

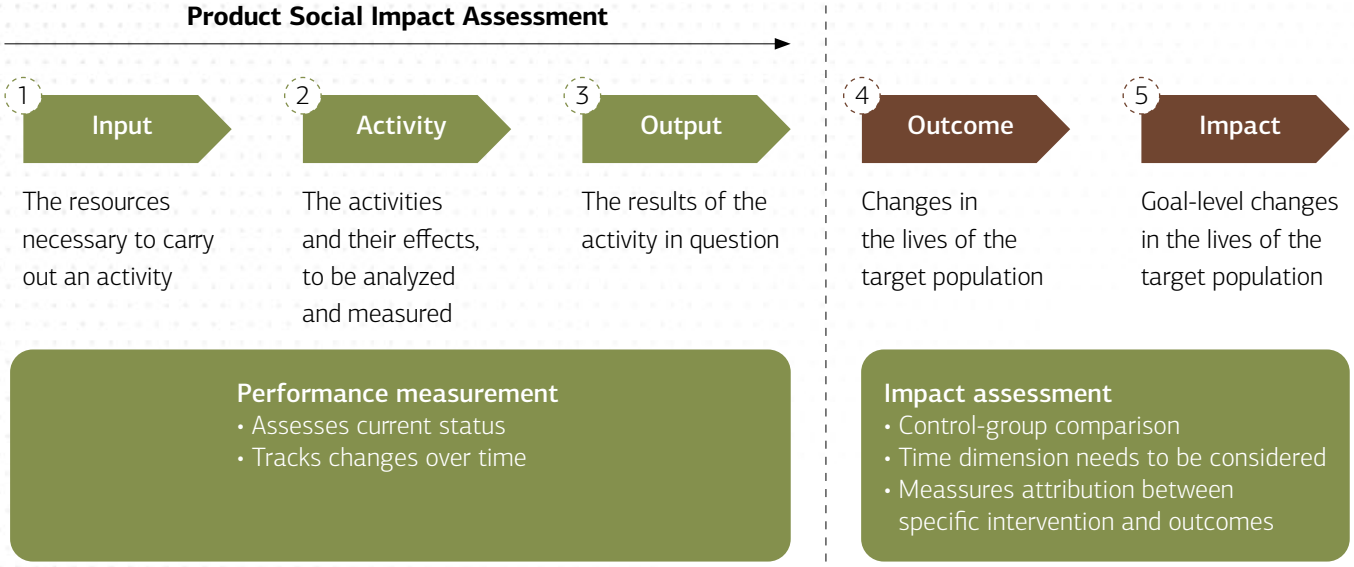


Figure 2.5: Illustration of Theory of Change

For the positive scores we have (tried as much as possible) to define the scale levels and associated performance indicators on the level of outputs. Having just a policy (activity) is not enough. On the level 0 and below we do sometimes refer to policies, and thus activities.

Negative scores on the reference scales:

When a supply chain actor has a detrimental impact on the stakeholder, we distinguish two situations. A level -2 applies if the supply chain actor takes no action to address and remediate this situation, and level -1 applies if the situation is still detrimental, but there is evidence that the supply chain actor takes concrete action to address and improve the situation.

The more or less standard performance indicators are:

- For level -2: Absence of positive information, while the company is in an area where this situation often occurs according to statistics.
- For level -1: While the company is in an area where this situation often occurs according to statistics, there is evidence that the company has started to address the situation with a clearly defined timeline.

In the separate Social Topics Report all the social topics for the four stakeholder groups are described including the performance indicators and the reference scales.

2.5 Further reading

This chapter provides a quick snapshot of the ideas that underlie the methodology and the selection of social topics. Chapter 7 and Chapter 8 explain how the reference scales are used in practice. For further information on the background, please consult the Methodology Report.

[6] Users may refer to consumers, workers or passive users.

3 Preparation phase

3.1 Purpose and overview

Before the PSIA methodology can be applied, practitioners need to do the following:

1. Define the communication context, as it is important to understand the level of evidence, completeness and data quality required. For example, public communication and marketing claims need to be based on a much higher level of robustness than a quick internal study.
2. Do a materiality assessment to identify relevant social topics. Different value chains and different products will have different impacts, and it is not always useful to try to assess all social topics throughout the value chain. The materiality assessment provides guidance on topic selection and prioritisation.
3. Identify data tools and sources. It is important to know the potential data sources and tools available within the company and which level of information is necessary for your application and communication purposes.

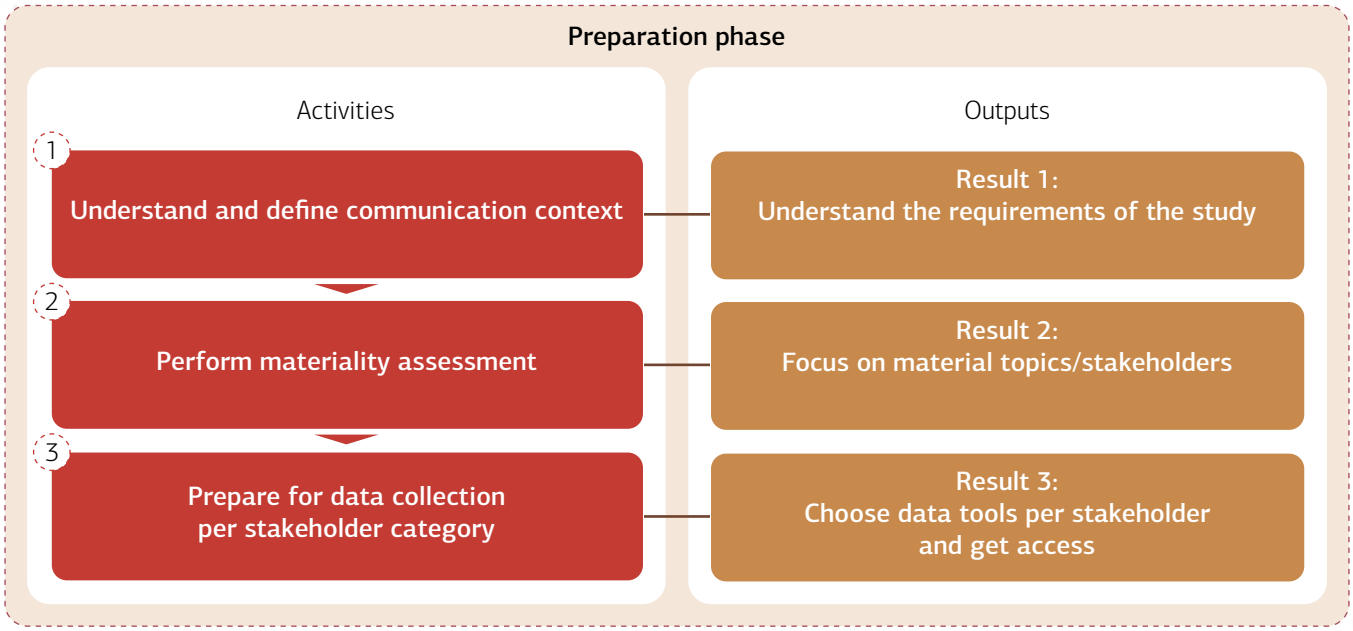


Figure 3.1: Overview of preperation phase

3.2 Communication context determines scope and data requirements

The level of data robustness and the procedures used determines the intended application and communication. We distinguish four different communication contexts (see Table 3.1). The first two contexts are internal, so it is up to the internal team to decide how robust the assessment will be done. In many cases, the hotspot identification step will already give the desired insights. The third communication context is used for business-to-business communication, while communication context four is about communicating to the general public. The table shows the links between the application and communication context and some of the main data quality requirements (see also Chapter 9.2). For the different communication contexts, the following communication guidance is given:

1. Internal product development: Look into potential risks and improvement opportunities of a new product in the initial development phase. This often involves comparing different product options and sometimes comparing with competitors. The most relevant stakeholder group is probably users.
2. Internal assessment of the value chain: Screen the product portfolio or part of it to identify hotspots, risks and improvement opportunities in a value chain, or assess the impacts of a product already on the market for internal assessment and optimisation.
3. Communicating results in a B2B context: Compare a product with an alternative product or solution. The purpose is to inform business partners about product and value-chain characteristics, not to address or convince the general public.
4. Communication of results to general public: Create a general publication including explicit statements about the superiority of a product in comparison with another alternative product.

Communication context	Functional unit plus sensitivity assessment for assumptions	System boundary definition and materiality assessment documented	Hotspot/ PSIA study required?	Required data quality level	Peer review required?
Internal product development	Strongly recommended	Recommended	Hotspot identification may be enough	No specific requirements;	no
Internal assessment of the value chain	Not needed	Recommended	Use partial PSIA on most important actors	No specific requirements;	no
Communicating results in a B2B context	Required	Required and substantiated	PSIA study	Average data quality score must be three or higher	Independent expert
Communication of results to general public	Required	Required and substantiated	PSIA study	As above, user topics must especially be substantiated	Peer review panel as in ISO 14071

Table 3.1: Overview of application examples and typical communication contexts

Especially when communicating to the general public, a peer review by an independent panel of experts is required. See also the guidelines in the ISO 14071 standard. For B2B communication, a single independent expert review may be sufficient.

3.3 Materiality assessment provides focus on relevant topics

The purpose of this step is to pre-select the relevant social topics to be analysed in the PSIA study. Relevance can have two meanings:

1. A topic is more material if a product and its life-cycle is likely to have a high positive or negative impact on the stakeholders and thus the business[7]. For instance, it is well known that recycling of electronics can create very serious health damages to the workers or small-scale entrepreneurs involved in waste processing, so workers' health is a good candidate for a relevant social topic.
2. A topic is more material if the intended audience[8] finds a topic very relevant and desires to have information on it. In Europe, for instance, people are very concerned with women's rights. Whether a particular product has good or bad impacts for women's rights, customers want to see that information.

To estimate the potential impacts, some form of expert judgement is needed. When the PSIA method is applied for the first time, estimating the potential impact of a social topic will not always be easy. It is probably wise to cast a wide net, not to miss important topics. Over time, that knowledge and experience will grow. Many companies already have people with generic experience, for instance in reporting in GRI or other reporting schemes. The main challenge will be to link the topics chosen in other materiality assessments to the topics in this Handbook. We recommend doing an updated materiality assessment for each new PSIA.

Whether an audience considers a social topic important depends of course on which audience the assessment decides to focus on. If the study results are supposed to be used by or (directly or indirectly) reported to the general public, public perception of the topics is important. This perception may be quite different in different regions and cultures; for instance, child labour is seen as a much higher priority in the West than in other cultures. If the study is to be used by a more specifically defined smaller group (for instance, when a product is marketed to very young or very old customers or other specific subsets of society), the perception of this group must be used.

The most widely used way of presenting the result of a materiality assessment to plot the topics on the axes of expected impact and stakeholder interests, as in the figure below:

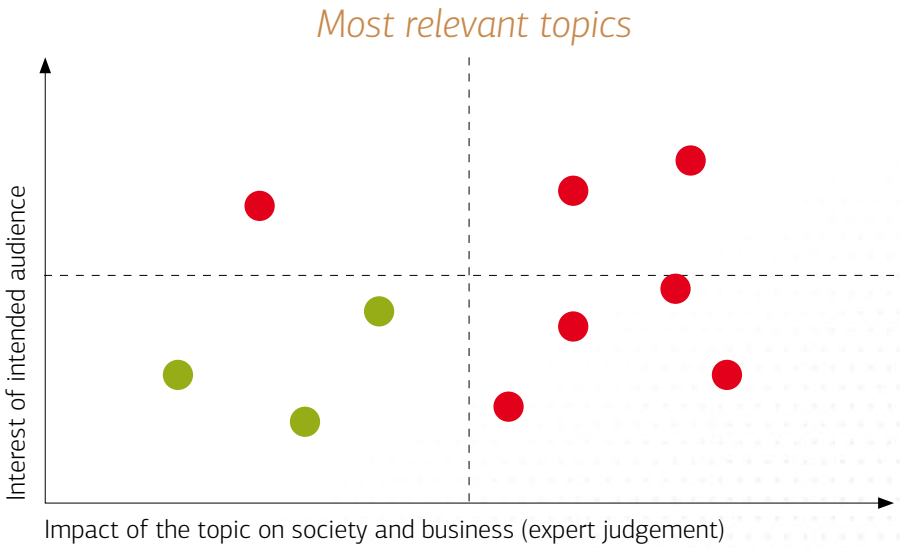


Figure 3.2: Example of how the results of a materiality assessment can be presented.

[7] Here we define the relevance in terms of a balance of impact on stakeholders and interest of stakeholders; in other materiality assessment procedures (found for instance in GRI), it is defined in terms of impact on the business only. Since stakeholders representing society, and the long-term interest of a company should be to protect and strengthen society, it is wise to prioritise impacts on stakeholders (see also Chapter 2).
[8] The intended audience are the people who are informed about the results of the PSIA and those who are expected to use the results.

In Figure 3.2 each dot represents a social topic. The red dots can be considered material (they are above the threshold of at least one criterium). The green circles can be considered non-material (below the threshold for both). The dotted lines represent the chosen cut-off levels.

The benefit of this way of representation is that all topics are assessed at once. A disadvantage might be that an entire stakeholder category might implicitly be regarded as being immaterial, since the horizontal axis holds the viewpoint of all four stakeholder groups (together making up society). An alternative representation is doing the materiality assessment per stakeholder category. For instance, the user-related topics could be assessed by a sample of actual users, while a more generic societal view is developed for the other stakeholder categories.

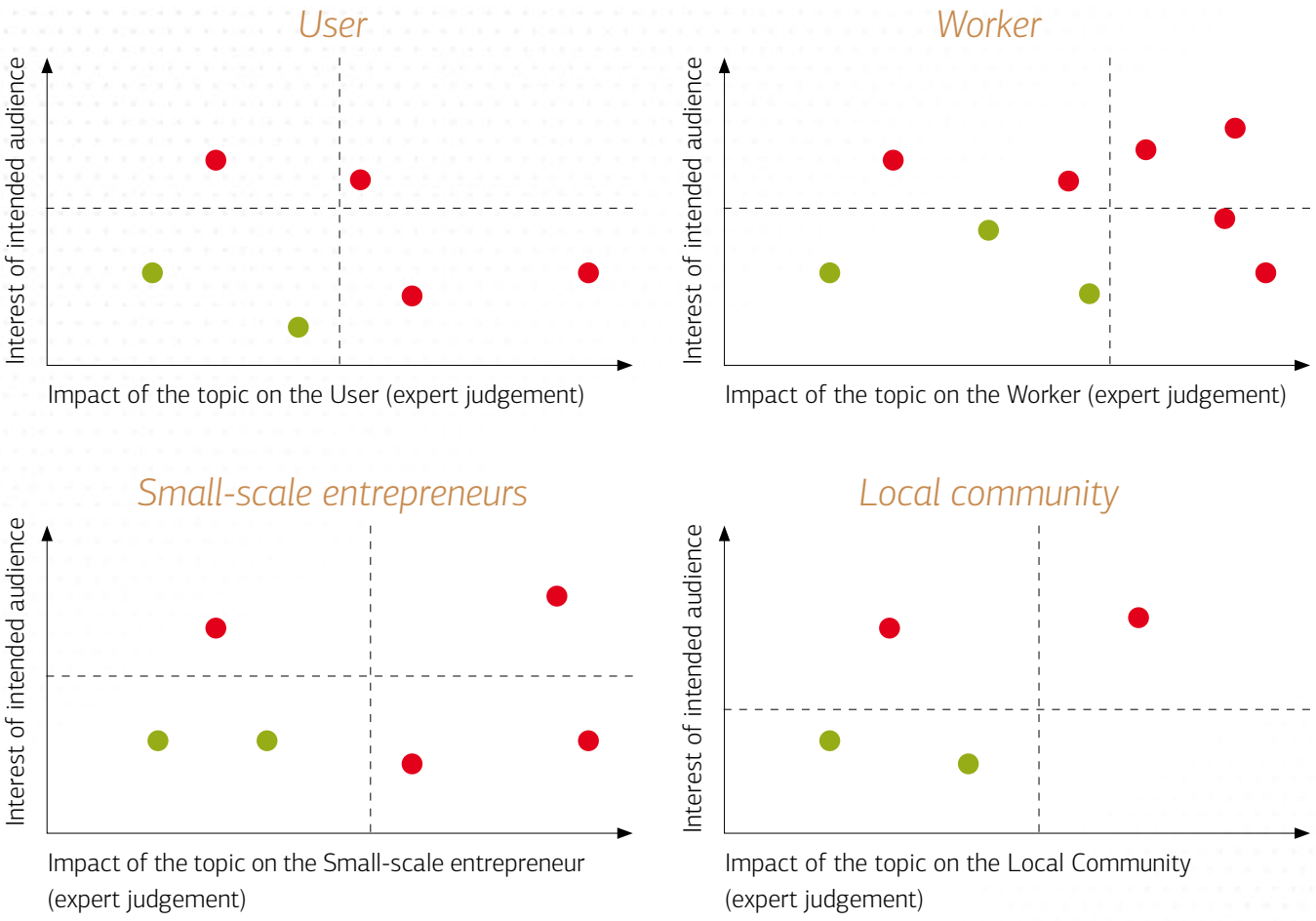


Figure 3.3: Identification of the material social topics for each stakeholder group.

The materiality assessment needs to be reviewed during the PSIA, since the verdict on what is material and what is not may change when more information is gathered. It is important to document and substantiate why a topic was judged immaterial for the purpose of the assessment. This is particularly relevant when the results are used in B2B and B2C communication, as the intended audience may otherwise suspect cherry-picking. In case of doubt, include all topics.

3.4 Data sources

Data collection has presented itself as a major bottleneck in the pilot PSIA studies that were conducted on the basis of earlier versions of this Handbook. Those toolkits assumed that all data from value-chain actors would be collected via questionnaires. Pilot studies revealed that the data collection process was time consuming and really only feasible for reaching tier 1 suppliers. Moreover, there were concerns about data validity: respondents may not answer truthfully on topics such as non-compliance with local laws or international standards. For this version of the Handbook, we added other data sources.

A distinction is made between primary and secondary data sources:

- Primary data is specific for the company and the product and can be collected directly from the source. This often means that the value-chain actor under investigation is known and is likely to respond in a constructive way to a questionnaire or information request.
- Secondary data refers is not collected directly from the source. The value-chain actors are not known or direct access is not feasible. Secondary data also refers to source-specific information that is not collected directly. For example, articles in newspapers about social issues connected to a known supplier.

Experiences has shown that PSIA practitioners will need both primary and secondary data.

3.4.1 Collecting primary data

Examples of primary data sources from value-chain actors are internal company databases on health and safety, environment, operation, human resources, purchasing and so on. Results from supplier audits and certifications can serve as high-quality primary data sources. Impacts on users will often be assessed via internally available primary data such as self-assessments, third-party studies or clinical trials.

It has to be kept in mind that primary data can be collected at different levels within a company: product, site or corporate level. The data used in the PSIA should be as representative as possible of the product or service system. If the product does not mobilise all the company's processes, data for processes specific to the assessed product or service are preferable to company-level data. If data is not available at product level, site- or corporate-level information should be used, preferably allocated to the product or service under assessment.

When collecting primary data, attention should be paid to validity and truthfulness. Ideally, the received data and supporting evidence should be cross-checked with secondary data such as NGO reports. Primary data quality should be carefully documented and described. Unavailable data and data gaps should be addressed when describing the limitations and uncertainties of the performed PSIA study. Quality of all the data used in the study should be assessed according to the data quality principles outlined in Chapter 9.2.

3.4.1.1 Examples of primary data sources

The list presented here is not exhaustive but aims to present different types of potential data sources. The assessment in the table below is not valid to determine which data source is the best. It simply indicates that practitioners should be aware of multiple aspects when selecting primary data sources. There are similarities and differences.

- **Ecovadis** relies both on external data sources and self-assessment questionnaires. Their data monitoring is a combination of one-time and real-time monitoring. Ecovadis provides a risk score per social issue on a company level (mainly tier 1 suppliers).
- **Sedex** relies on self-assessment surveys of suppliers and SMETA audits (third-party supplier audits). The information outlined in Sedex reports identifies risks and describes the situation within the company at the time the assessment was performed.
- **Certification schemes** typically rely on self-assessments and audits and will be a one-time assessment. Certification schemes may outline incidents or can be a good indication of compliance with local laws or international standards.

Typically, supplier assessments address social issues and working conditions for workers only. Nevertheless, some information may also be used for other stakeholder groups.

Parameters	Ecovadis	Sedex	Certification schemes
Type of information			
External sources	X		
Self-assessment surveys	X	X	X
Audits		X	X
Monitoring			
Real-time	X		
One-time	X	X	X
Type of info			
Number of incidents		X	X
Number of mentions (positive & negative)			
Level of risk	X		
Aggregation levels			
Company	X	X	X
Sector per country			

Table 3.2: Overview of some primary data sources

3.4.1.2 Data tools used to collect primary data

If no existing data is available within the company, primary data can often be collected directly from the value-chain actors using a questionnaire. Historically, questionnaires were often sent out as excel spreadsheets. Today, various tools can improve data collection and follow-up procedures.

- **SupplyShift:** a cloud-based platform that facilitates collection of data from value-chain actors, built for compliance verification and management of continuous improvements in any sector. Cascading questionnaires can be forwarded to every tier in the value chain, to facilitate data collection beyond tier 1. SupplyShift supports field audits through an offline mobile application. Custom scoring can be used to instantly show supplier ranking according to the PSIA methodology.
- **Stacksdata** (previously known as Peer Aspect): software that facilitates data collection from value-chain actors. The software allows users to send a reminder to recipients who have not started responding, share data with colleagues and send personalised messages to respondents.

Textbox 3.1: Learnings and recommendations from applying SupplyShift by Steelcase and Covestro

The case study performed by Steelcase and Covestro was intended to test the PSIA methodology developed by the Roundtable for Product Social Metrics and to try out a new tool for more convenient data gathering. The case was conducted during the 4th phase of the Roundtable. The idea was to test whether the methodology could differentiate between the social impacts of a solvent-borne and a waterborne furniture coating.

Application of the methodology

The most material social topics relevant for this case were identified and only those topics were assessed. Covestro internally checked for available data on the chosen topics. All necessary data was available and retrievable within the company. Experts from the reporting department were able to fill in the questionnaire with a reasonable time effort (2-3 hours). Supporting the answers with suitable proof documents required much more effort and time, as experts from various functions needed to be involved (e.g. Human Resources/Procurement/Health, Safety and Environment). Due to the extensive reporting requirements for public companies, publicly available documents such as the annual report or the GRI report are a good information source on many topics addressed in the questionnaire.
An internal assessment by Covestro of the questionnaire revealed that it was not set up to easily enable a comparison between the solvent-borne and a waterborne system. Many questions refer to company- or plant-level data. The scope of the questions was therefore not granular enough to make a distinction between the two technology systems. Adapting the questions to this specific case was a suitable possibility. The Roundtable questionnaire could serve as a good foundation.

Testing a new tool for data gathering

One outcome of previous pilot cases conducted by Roundtable members was the high effort of data gathering, especially for smaller, private companies. The Roundtable members were therefore searching for more efficient ways to collect the necessary primary data. In this pilot case, we tested the SupplyShift.
SupplyShift enables the company conducting the survey to create and upload questionnaires to an online platform and send them out to the survey participants. The participants can log in to the platform and answer the questions. The surveying company gets immediate feedback on the answers. It is also possible for the participants to forward questionnaires to other companies in the supply chain (multi-tier functionality). Numerous statistical and visualization tools exist within the platform to support the interpretation of the collected data. Compared to the current Excel tool, the online solution showed some advantages. Overall, the usage is more convenient for the participating companies and for the company conducting the survey. It is also a more professional way to approach the responding companies. The solution has the potential to reduce the number of mistakes during the fill-in process of the questionnaire and supports the data management process. On the other hand, a standardized tool comes with less flexibility than a self-developed Excel tool. When using the multi-tier function, some confidentiality topics still need to be solved. The Roundtable members are currently in discussion with SupplyShift on how to adapt the tool for a perfect fit of the Roundtable needs.

Overall learnings

The Roundtable's PSIA methodology is published in a freely available handbook and was tested in numerous case studies by the participants. Overall, the Handbook provides valuable guidance to identify and address the most material social topics. In our opinion, the questionnaire is comprehensive and covers all relevant areas. For specific cases (e.g. comparing waterborne to solvent-borne coatings) some social topics are not directly captured or too generic to differentiate on the product level (e.g. lost working days).

Recommendations

The identified need for a more structured and more convenient data gathering approach is crucial. A tool such as the one tested in this case can be valuable in establishing a more efficient way of data collection. To increase the acceptance among the potential survey participants, some questions can already be answered in advance by consulting third-party assured public sources such as annual reports or GRI reports. This helps to reduce the actual number of questions to be sent out to the survey participants. This approach also addresses another challenge. By just relying on self-statements from the value chain actors, a verification of the answers is difficult. Adding sources like externally assured documents or information from arty databases can increase the reliability of the study.

3.4.2 Collecting secondary data

When performing a less detailed PSIA assessment or if practitioners do not have a direct link to the value-chain actors, the assessment can be based on:

- Company-specific secondary data available in commercial ESG data tools
- Circumstantial evidence such technical literature, results of site- or industry-specific studies published in the literature, industry-average data published by associations or other proxy data.

Use of secondary data provides challenges, such as use of different definitions of social topics and performance indicators. When collecting secondary data, practitioners need to carefully consider the choices, assumptions, quality and methodology underlying these datasets. Allocation approaches, cut-off levels and data gaps should all be described. The principles in Chapter 9.4 will help assess the quality of all data used in the PSIA study.

3.4.2.1 Examples of secondary data sources

This chapter provides some useful data sources. Our aim is not to be exhaustive. A list of new tools, updates, suggestions and experiences will be made available on the website of the Roundtable for Product Social Metrics as they become available.

The secondary data sources can roughly be divided into three categories:

- Social-data extended input-output databases, where data is generally aggregated per economic sector and country. Examples of such databases are the Social Hotspot Database (SHDB) and the Product Social Impact Life-Cycle Assessment database (PSILCA).
- Commercial services that collect and structure data found on the internet. Typically, the data is available per company or aggregated per sector, country or region. Examples of such services are Datamaran, RepRisk and MapleCroft.
- Desktop research for data available in reports, on the internet, statistics, personal contacts, etc.

When collecting data from any of the generic data sources, special attention has to paid to the quality and methodology underlying these datasets. It is crucial that practitioners carefully document and describe the data sources and their underlying assumptions and data gaps. Table 3.3 presents a brief overview of the type of data collected within these datasets.

- Social-data extended input/output (I/O) databases such as PSILCA[9] and SHDB[10] utilise external data sources such as WHO datasets that are not monitored in real time. In both databases, data is presented as a level of risk for each social issue per country and sector. These databases provide an indication of the average social risk per country and sector. While this is very useful for orienting oneself, setting system boundaries and assessing risk within the value chain, it does not describe the specific impacts of the suppliers in your value chain. These databases are also available in some LCA software packages, see chapter 3.6.
- Commercial data services such as RepRisk and Datamaran collect information on a company level, from external sources such as NGO reports, internal sources such as annual reports and even news, blogs and social media. Both services monitor the data in real time and are updated on a daily basis. The data presented in RepRisk covers risks and non-compliance with local laws and international standards. Datamaran lists all the positive or negative mentions related to a specific social issue.

[9] PSILCA, based on the multi-regional input/output model of the Eora database covers a total of 14,838 sectors for almost 189 countries. The current, first version of the database contains information on 54 qualitative and quantitative social aspects in 18 subcategories. These subcategories relate to four main stakeholder groups: workers, value-chain actors, local communities and society. The database is available at cost in the SimaPro and openLCA software, see www.psilca.net. Its main application is visualising the value-chain actors and screening for the most relevant impacts in supply chains.

[10] SHDB is modelled on the GTAP framework. It specifies 140 countries and regions and 57 sectors of the economy. The SHDB includes information on five main social impact categories: labour rights, decent work, human rights, local community and governance. There is an online risk mapping tool and there is a version that can be run in SimaPro and openLCA software at cost, see www.socialhotspot.org. Its main application, similar to PSILCA, is in visualising the value-chain actors and screening for the most relevant impacts in supply chains.

- MapleCroft utilises information available in external data sources to present a level of risk per social issue on country and sector level. The datasets are updated quarterly.

It should be noted that the majority of these datasets are aimed at assessing the level of risk associated with the social issues or compliance with local laws or international standards. With the exception of Datamaran, which pinpoints both positive and negative mentions of the social issues on a company level, these data sources are not useful for identifying positive hotspots. Therefore, identification of positive impacts should be carried out by further research.

Parameters	SHDB	PSILCA	RepRisk	Datamaran	MapleCroft
Type of data					
External sources	X	X	X	X	X
Self-assessment surveys					
News/blogs, etc.			X	X	
Social media			X	X	
Soft & hard laws				X	
Monitoring					
Real-time			X	X	
One-time	X	X			
Quarterly					X
Type of info					
Number of incidents		X	X		
Number of mentions (positive & negative)		X		X	
Level of risk	X	X	X		X
Data collection level					
Company			X	X	
Sector per country	X	X	X		X
Customisation			X	X	
Links with SDGs				X	

Table 3.3: Overview of the type of information available in the generic data sets

Desktop research cannot be easily characterised. It utilises information available in external data sources to identify indications for risks on country, region, sector, company and community level. The information and evidence generated by deep-dive desktop research needs to be further linked to social topics by interpretation, since it does not come preselected per social topic. Desktop research is suitable for handling large quantities of data in a structured or unstructured manner but can take a significant time.

3.4.2.2 Information per life-cycle stage & stakeholder group

It is important to note that not all secondary information sources are equally suitable for all the stakeholder groups. Datasets are mainly focused on assessing value-chain risks that affect workers and local communities. Limited information is available on small-scale entrepreneurs. Those data sources can also be used to identify impact hotspots involving workers, small-scale entrepreneurs and local communities in the end-of-life stage. However, limited screening data is available to identify hotspots in the use stage. Internal company data should therefore be used where needed.

3.4.2.3 Availability of data per social topic

It is also important to note that not all data sources address the same social issues or use the same terminology and performance indicators. The tables below present an overview of the social issues covered in some well-known datasets per stakeholder group.

All social topics proposed for **workers** as a stakeholder group are well covered within the datasets. The available information typically addresses compliance or risk level.

For **local communities**, information on social topics is accessible in input-output databases, RepRisk, Datamaran and MapleCroft. However, supplier-specific assessment does not address the impact on local communities. An overview can be seen in Table 3.4.

Limited data is available about **small-scale entrepreneurs**. Data on basic needs such as access to water, sanitation and food security can be found in multiple datasets. Information that is accessible on children out of school in certain countries and sectors can be used as proxy data to gauge the risk of child labour. However, these datasets do not provide information on women's empowerment, the health and safety of small-scale entrepreneurs or trading relationships. Thus, additional information should be obtained from the internet or other sources.

To assess the impact on **users**, more data than is produced by the company may be needed on the impact of products and services. Secondary information about on health and safety can be found in datasets. Company-specified data on products can be considered primary data and will be available internally from product developers and other departments, consumer studies, clinical trials or other relevant data sources.

	Social topic	SHDB	PSILCA	RepRisk	Datamaran	MapleCroft	
Workers	Occupational health and safety	X	X	X	X	X	
	Remuneration	X	X	X	X	X	
	Child labour	X	X	X	X	X	
	Forced labour	X	X	X	X	X	
	Discrimination	X	X	X	X	X	
	Freedom of association and CB	X	X	X	X	X	
	Work-life balance	X	X	X	X	X	
	Social topic	**SHDB**	**PSILCA**	**RepRisk**	**Datamaran**	**MapleCroft**	**User protection agencies**
Users	Health and safety		X	X	X	X	X
	Responsible communication				X	X	X
	Privacy				X	X	X
	Affordability						
	Accessability						
	Effectiveness & Comfort						

	Social topic	SHDB	PSILCA	RepRisk	Datamaran	MapleCroft	
Local communities	Health and safety	X	X	X	X	X	
	Access to material and immaterial resources	X	X	X	X	X	
	Community engagement			X	X	X	
	Skill development	X	X		X	X	
	Contribution to economic development	X	X		X	X	
	Social topic	SHDB	PSILCA	RepRisk	Datamaran	MapleCroft	
Small-scale entrepreneurs	Meeting basic needs	X	X			X	
	Access to services and inputs	/				X	
	Women's empowerment						
	Child labour	X	X		X		
	Health and safety						
	Land rights				X	X	
	Trading relationship					/	

Table 3.4: Availability of data per social topic; / means partially

Text Box 3.2 Case study by Corbion on data collection for workers

Introduction

Corbion explored primary data collection tools to perform the PSIA of the workers involved in the supply chain of two products. The goal of this study was to investigate if it is possible to perform the assessment using readily available data, minimizing the use of specific questionnaires.

Data collection

Conducting a hotspot analysis, as described in the Handbook, helps identify the relevant and material topics and reduces the amount of primary data that needs to be collected for the PSIA. For our study, the preferred data source to score the workers in the value chain are the SMETA (SEDEX members ethical trade audit) reports. SMETA audits are conducted by external auditors and the reports are available within the platform . These reports are site specific and frequently updated. For suppliers which are not part of the platform additional data sources are used including company documents such as annual reports, CSR reports, policy documents, code of conducts and press releases.

Learnings

The SMETA reports are a good starting point for scoring the social topics for workers. To a large extent they cover the data required to assess the performance indicators (PIs) in the Handbook. The reports are particularly useful for identifying compliance and non-compliances areas, required to score at zero level or below in the 5-point reference scale. In some cases, SMETA audits may also provide "good examples" and these could be used as positive evidence for the PSIA scoring. However, when the goal of the study is to identify social benefits, additional evidence for positive scores may be needed. Examples of positive actions can be found in company documents or may retrieved via specific questionnaires.

Obtaining primary data for Tier 2 or Tier 3 suppliers was more challenging than for Tier 1 suppliers because it requires that these suppliers are in the platform, which is often not the case for Corbion raw materials. When suppliers are not in the SEDEX platform, company documents were used to find evidence for the PIs. Alternatively, the use of secondary data sources to fill data gaps may be considered.

The two supply chains analyzed in the study were similar resulting in very small differences in the PSIA. This also means that, for future cases, the scoring of the value chain may be re-used, reducing the effort required in terms of data collection.

4 Defining goal and scope

4.1 Purpose and overview

The concept of goal and scope definition is well described in the ISO 14040 and 14044 standards on environmental LCA. It is useful to apply the same thinking here, even though there are some essential differences between environmental and social LCA. The ISO standard focuses on the substantiation required for writing a report for publication.

The definition of a clear goal and scope will provide guidance for the following steps of PSIA and needs to contain a good overview of choices, assumptions and limitations. Reporting the goal and scope provides transparency to the reader. The goal and scope definition is designed to deliver three outputs:

1. A good understanding of the product system, the assumptions about its use and end of life, and the functional unit. This result will further be used in Chapter 5.
2. A longlist of processes or value-chain actors that need to be investigated in the hotspot identification as described in Chapter 6.
3. An updated list of topics that are considered material topics (see Chapter 3.3), to be used in the hotspot identification (Chapter 6) and the PSIA (Chapter 7 and 8).

It is important to note that the initial goal and scope only a starting point for the assessment. They are subject to becoming more clearly and realistically defined during the data collection process. Only when data is being collected does it becomes clear how realistic the scope was, and what needs to be adapted.

In the ISO standard, the goal and scope definition is expected to be used for a single study. In this Handbook, we suggest that goal and scope elements can also be used when embedding procedures in an organisation, as referred to in paragraph 1.3.2 and in the Implementation Guide[11].

[11] See website: https://product-social-impact-assessment.com/

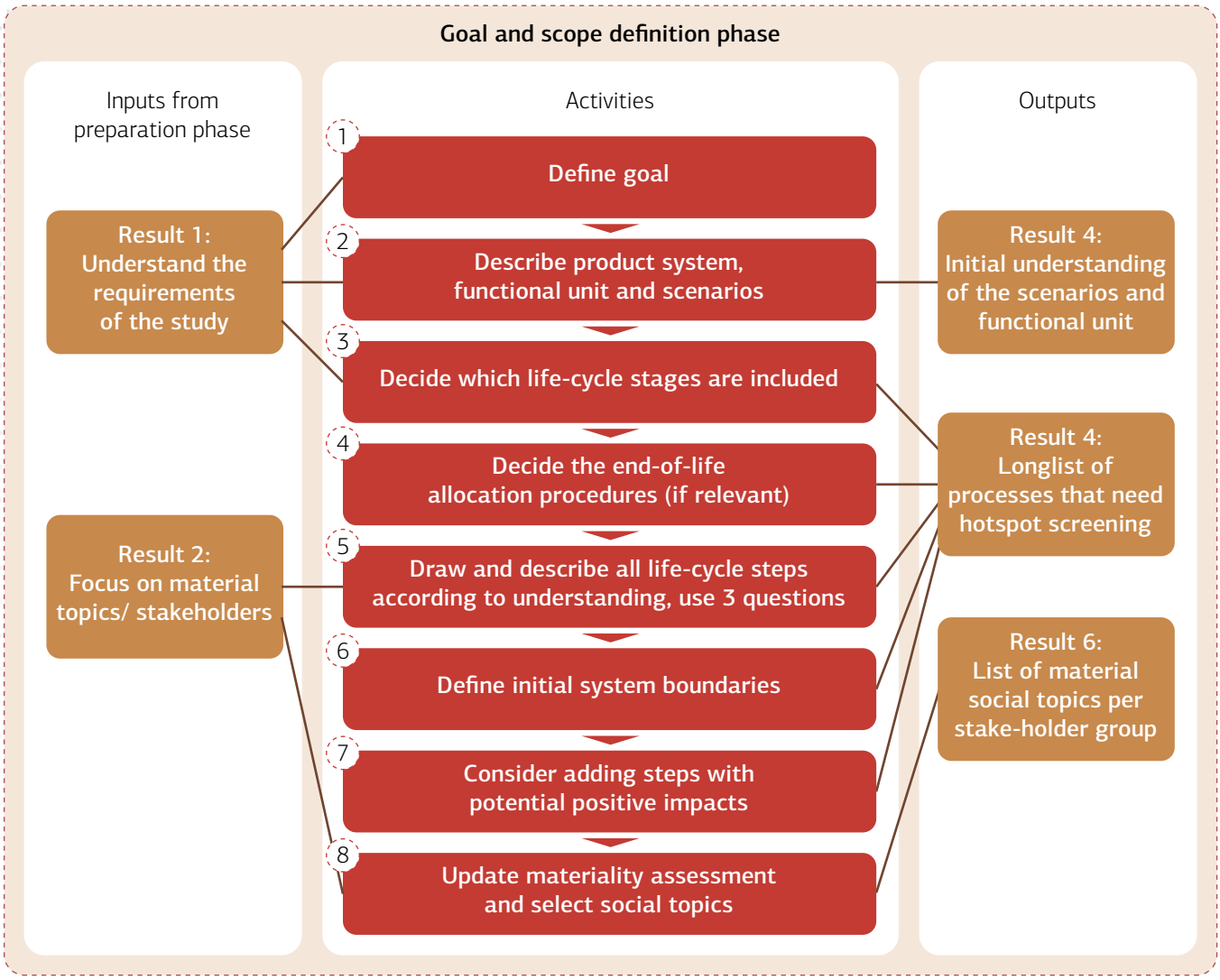


Figure 4.1: Overview of the goal and scope definition phase

4.2 Defining the goal

According to ISO 14040 (2006), 'The goal of an LCA states the intended **application**, the **reasons** for carrying out the study, the intended **audience**, and whether the results are intended to be used in **comparative assertions to be disclosed to the public**.' For a PSIA study, the goal's description must at least include these elements and the context in which the product or service is used.

Examples:

- Identification of social impacts for the total annual soybean production in Brazil on farms of at least 100.000 ha size in the Cerrado region for the year 2018 compared to 2014, with the aim to inform the business clients.
- Determining and substantiating the annual social impacts on workers who use a light-weight Dyneema®-based chain, compared to the impacts of using a steel chain with the same lifting capacity. The aim is to develop a sound scientific basis for marketing claims, and in some cases show the report to a business client (not to consumers).
- Provide product development team insight into a comparison of the social impact over a product lifetime of 10 years of:
  a. An office chair that is sold in the traditional way.
  b. An office chair that comes with a product-service system that includes a maintenance plus takeback service and an instruction session with an expert who helps adjust the chair to get an optimal seating position.

  The aim is to inform designers and product management (internal).

4.3 Defining the scope

The scope of a PSIA study should be defined before doing the rest of the analysis. This ensures that the effort of the PSIA study is targeted appropriately and produces fit-for purpose results. The scope should contain the following: a description of the product system, its main function and the functional unit. Additionally, the scope should describe the phases of the life cycle under assessment.

4.3.1 The product system, its main function and the functional unit

At the beginning of a PSIA study, it is important to describe the product system that is going to be assessed. The description can range from simple to complex, describing the context in which the product system is used and how it interacts with services and other product systems.

A key part of the description is the identification of the main function of the product or service. For example, the function of the assessed product is to package one litre of milk, or to cover a floor, or to support a person sitting behind a desk in an office. These examples show the importance of context. The last example is not just a chair, but a chair in an office.

The description of function is even more important in comparative studies, as it not fair or useful to compare products with different functions. A good comparison is based on a well-understood functional unit, which derives from the function. For instance, different packaging systems can be evaluated by looking at how they package 1000 litres of milk. One could compare 1000 disposable packaging solutions with 40 reusable bottles, if they are indeed reused 25 times.

For many products, it is not at all trivial how to describe the function and functional unit. For instance, how can we describe the function of ice cream? It is especially challenging to define the functional unit of product-service systems and complex circular-economy-inspired product-service offerings (see Chapter 5). How can we compare being a member of a car sharing system to owning a car? They are both about having access to a car and being able to drive, but one uses a shared car in a different context. The consumption of car transport will be different if you invest in a car and have it available, or if you need to book in advance and pay by the hour. On a societal level, car sharing will reduce demand for parking space. Looking through the lenses of the product social assessment, the way we describe the context can affect social topics such as accessibility, privacy and health.

4.3.2 Full or partial life cycle

There can be pragmatic reasons not to perform a full life-cycle assessment. For instance, if a company produces a product that is a raw material for other products, it is very difficult to describe the use and disposal phase. It might be justified to just assess the production up to the factory gate. The options for setting the boundary are:

- Cradle to grave: includes the whole value chain, from raw material extraction to manufacturing, retail, consumption and end of life.
- Cradle to gate: includes part of the supply chain, from raw material extraction to a particular life-cycle stage in the supply chain.
- Gate to gate: includes part of the supply chain, from direct suppliers to a particular life-cycle stage in the supply chain.

If only a part of the life cycle is covered, this must be clearly stated when the results are presented.

Textbox 4.1: Setting goal and scope – a case study by Corbion

Goal

The goal of this study was to increase the credibility of marketing claims related to the social benefits of using our meat preservatives. The assessment covers the supply chain, manufacturing and use phase in order to provide a holistic assessment of potential social risks and benefits over the product value chain.

Product

Opti.Form Ace P37 is a liquid blend of potassium lactate, potassium acetate and sodium diacetate. This product is a proven inhibitor for Listeria growth, improving safety and extending shelf-life of meat. Opti.Form Ace P37 can be used at levels up to 1.78% of the finished product, which allows for up to 120 days shelf-life. Above that, the level of sodium diacetate exceeds the regulatory use level. It has a minor impact on sodium levels in the end product, compared to traditional Listeria inhibitors. Opti. Form Ace P37 was designed to provide protection against Listeria growth at a reduced cost thereby enabling users to maintain food safety levels while reducing the cost of meat preservatives up to 50%.

Scope

The product is applied by manufacturers of cooked meat products in the USA. The assessment focuses on the supply chain, manufacturing and use phase. Five topics from the Corbion materiality matrix were linked to social topics from the PSIA Handbook 2018, resulting in the selection of the following social topics per stakeholder group:

- Workers: Health and safety, Renumeration, Child labour, Forced labour, Discrimination Freedom of association and collective bargaining;
- Users: Health, Inclusiveness, Product safety and Responsible communication.

4.3.3 Understanding the life cycle

It is good practice in any life-cycle approach is to start making a schematic drawing of the life cycle, as this helps to get an overview of the data that may be needed in the assessment.

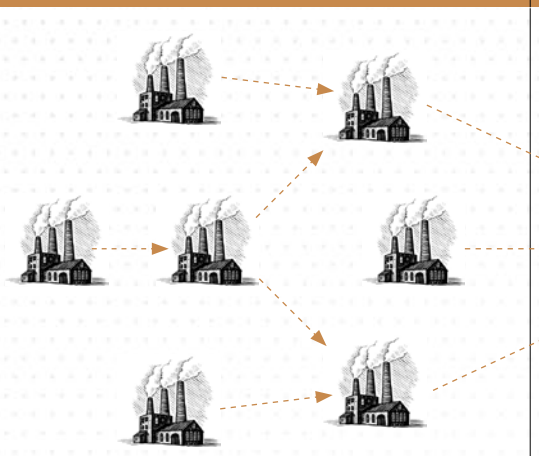
Supply chain	Manufacturing	Use phase	End of life
			
Product component:			
Sector:			
Country:			

Figure 4.2: Example of a sketch of the life cycle

Inspired by the WBCSD Social Life-Cycle Metrics for Chemical Products Guideline (2016), we offer a number of questions that can help understand the social significance of a process or value-chain actor:

1. Does the process occur in a country with known international human right violations or social risks? For instance, vanilla production in Madagascar.
2. Is the process known to present social risks to stakeholders due to the nature of the activity in this step? For instance, informal waste collection systems (waste pickers = small-scale entrepreneurs) have inherent health and safety risks.
3. Are there specific risks resulting from a supply-chain actor company's structure or organisation? For instance, if there are many small subcontractors involved, there could be risks.

While creating this diagram[12] and trying to answer these questions, practitioners will usually notice that some blocks in the life-cycle diagram refer to known and specific companies, while others refer to suppliers or groups of suppliers that are not (yet) known. We introduce the following terminology to identify this difference:

1. The term *value-chain actor* refers to an identifiable company, or an identifiable and well-organised community of small-scale entrepreneurs. The value chain also includes end-of-life processing; recycling and waste treatment can be seen as an input for the next supply chain.

[12] An idea is also to consult an environmental life-cycle assessment report or software. They can generally display the structure of a value chain in great detail. Also, technical handbooks and encyclopaedias often provide overviews of production processes. Process databases and IO databases can both be useful.

2. The term *process* is used for a generic description of a group of companies or a large group of stakeholders. For instance, the injection moulding of a plastic part or the mining of a tonne of iron ore could be processes in the production process. The production of a tonne of coffee from an unknown community of small-scale entrepreneurs can also be considered a process. The socially extended IO databases contain information about activities in an economic sector. We also refer to those with the term *process*.

4.3.4 Setting initial boundaries

Product systems are highly interconnected, and it is important to understand how to define boundaries around the system that is being assessed. Without clear boundaries, making a full assessment would literally take forever. Setting boundaries requires making compromises between completeness and practicability.

For example, when assessing the social impacts of a small farmer, one may find that the farmer uses a plough made by the local smith. This smith may not send his children to school, as they have to work in the smithy. Looking further, the truck driver who delivers the steel to the smith may not be earning a living wage. The steel comes from a factory where the working conditions may be unsafe. One step, further we realise that the factory workers eat food produced by smallholders, and these smallholders use ploughs, etc.

The question arises if it is relevant or even possible to trace and report all these potential impacts. If we want to do this, there is no end to the data collection. We need to somehow set an initial system boundary and have some sort of criterion for what to consider inside the system boundary and what to keep outside. It is important to stress the word 'initial' – some things that may seem not relevant to trace are in fact very relevant, while others turn out to be irrelevant. System boundaries needs to be reviewed when new insights are gained, for instance in the hotspot identification stage in chapter 6.

While there are fundamental differences between social and environmental assessment, we can take some inspiration from the well-established environmental LCA practice:

1. Make a rough estimate of the social impacts, for instance by using the three questions from the previous section, or use one of the socially extended IO databases (Chapter 3.4).
2. Consider mass or another physical parameter as a basis for the initial boundaries. The mass argument can be used to justify leaving out the plough from the assessment of the smallholder. If the plough weighs 50 kg and is used for 25 years, only 2 kg of that plough can be allocated to an annual production that can be hundreds of kilos if not more.
3. Consider the economic value as a basis for initial boundaries. The depreciation of the smallholder's plough is likely to be low. This could be another rational basis for leaving this out.
4. In the case of workers, an estimate of the number of hours worked could be a basis for setting initial boundaries. Some of the socially extended IO databases have information on working hours.

The first option is the preferred option, as that gives the best basis for not overlooking relevant impacts. If mass, value or working hours are used, there is a risk of overlooking very significant impacts. For instance, the mass of coltan in a mobile phone may be small but the impacts could be extraordinarily high in terms of both social and environmental impacts. There is also the inverse risk of including too much. One company reported that, when they used a socially extended IO database for assessing dairy, working conditions in Madagascar pop up as significant: some dairy is mixed with vanilla from that region. The problem is the truncation.

The result of the system boundary setting is an improved drawing of the life cycle and an initial longlist of potentially relevant processes and actors that must be analysed further. It is important not feel constrained by the three questions. Complement the list based on intuition, ad-hoc knowledge or earlier experiences or studies. It can also be relevant to add processes or actors that may have a significant positive impact on workers, small-scale entrepreneurs or local communities, as the procedure based on the three questions will often only signal negative impacts.

4.3.5 Allocation in multi-output processes

Almost all processes create two or more economic outputs. For instance, a cow produces milk, meat, leather and bones. In a study on the social impact of a leather product, to what extent do we consider the farming stages that are needed to feed and take care of the cow?

In environmental LCA, several approaches are available to find a proper quantifiable allocation parameter. As PSIA is a qualitative approach, it is not necessary to have an exact allocation parameter. We recommend analysing situations, like in the leather example, and making a clear decision whether leather is an economic output or a waste product. If it is considered a by-product, the social impacts on the farm may need to be included. If it is considered a waste product from slaughtering, this is not needed. The latter may be the case is the farmer does not raise cows for leather, but for milk and meat. However, leather does produce 5 to 10% of the value of the cow, so it is also defendable to include the farming stage in the assessment.

4.3.6 Allocation at the end of life for recycling and reuse

When a product is recycled, or a product uses recycled materials, this recycling process has some distinct benefits and burdens from a social assessment point of view. Who gets the burden or benefit from recycling, the product that is being recycled at the end of life, or the product that uses the secondary material? A choice must be made how the burden and benefit of recycling and reuse are allocated to the first and the second product system.

Based on our experiences in environmental LCA and more specifically the Product Environmental Footprint pilot of the EU[13], we propose to base the allocation on the question if recycling or reuse is limited by supply or demand. The idea is that in a circular economy, we need to look which of the two product systems actually determine the recycling rate. Offering more material on a market where there is no demand, does not increase the recycling and demanding material that is short in supply does not do that either. For this reason, we propose:

- If there is high demand for recycled metals, a product system that contributes to the supply is rewarded by not having to count the usually social impact of the recycling process. That impact is allocated to the product that uses this material.
- If there is a high supply of materials and a low demand, the discounting should go to the product system using the materials – that product system should not be burdened with the social impacts of recycling and waste handling. Instead, the impact of recycling should be allocated to the product system that is responsible for creating the supply. An example is textile and mixed plastics – there is too much of that to go around.
- If supply and demand are more or less in balance, both product systems should be burdened with half the impacts of recycling.

Of course, if the recycling impacts are allocated to the product that uses the material, they get to discount the impacts of the equivalent virgin production of that material they avoid. Similarly, if a product system is burdened with the impacts of end-of-life recycling, it avoids the social impacts of the equivalent in waste handling.

Example using an office chair in a circular economy context:

- A chair is made from A% recycled steel. Recycled steel is always in high demand, so the social impacts of recycling from that A% should be allocated to the chair's total impact. If A is less than 100, the other (100-A)% is made from virgin steel, so the social impact of that much virgin steel production should also be included.
- The chair is designed for recycling, and there is evidence that B% of the steel from the chair is indeed being recycled. Since recycled steel is in high demand, the chair's life cycle should be rewarded by not having to take the recycling impacts for this B% into account. That impact is allocated to the product that uses the metal. If B is lower than 100% and the rest is landfilled, the social impact of that amount of landfilling does needs to be accounted for.
- If C% of the textile is made of recycled or reused foam that reduces some of the oversupply of used foam. As a reward, the impacts of the recycling process do not have to be allocated to this chair. Of course, the social impacts of the remaining virgin foam should be included.

[13] http://ec.europa.eu/environment/eussd/smgp/ef_pilots.htm

- If D% of the foam is recycled at the end of life, this is not likely to stimulate recycling, since the demand is low if not absent. This means the recycling process should be allocated to the chair. Of course, the chair's life cycle does avoid social impact of landfilling for this D% of the materials.

4.4 Reviewing the materiality assessment

Although a generic materiality assessment may already have been developed in a company, we recommend checking its appropriateness for the specific product or service under study. If no materiality assessment is available, we recommend applying the principles described in Chapter 3.3.

4.5 Substantiating and documenting the goal and scope

The most tangible outcomes of this process of setting the goal and scope are:
1. A longlist of actors and processes that need to be assessed in the hotspot identification.
2. A list of material topics.
3. A description of the functional unit and the scenarios in the use phase.

It is very important to document these choices and substantiate them if they are likely to have a significant effect on the outcome. This documentation should be updated as the study progresses, as new findings can cause changes in the initial choices.

5 Circular economy and social impacts

5.1 Purpose and overview

Circular economy (CE) is a powerful concept that inspires many companies to rethink the design, marketing and distribution of products. Its original focus was to minimise the environmental impacts of products, but as this chapter shows, CE-inspired strategies can also create or reduce social impacts. For the purpose of doing a PSIA, practitioners for companies that do not have a deliberate CE-inspired policy can skip this chapter.

This module links CE-inspired strategies to two categories of potential social impacts[14]:

1. Impacts related to strategies aimed at closing material loops through recycling, refurbishment and reuse. These strategies will usually not influence users, but can have significant impacts on workers and small-scale entrepreneurs in the recycling, refurbishing and waste handling processes.
2. Impacts related to strategies that give rise to additional services and strategies that focus on making the use phase more efficient, which can have a direct impact on users.

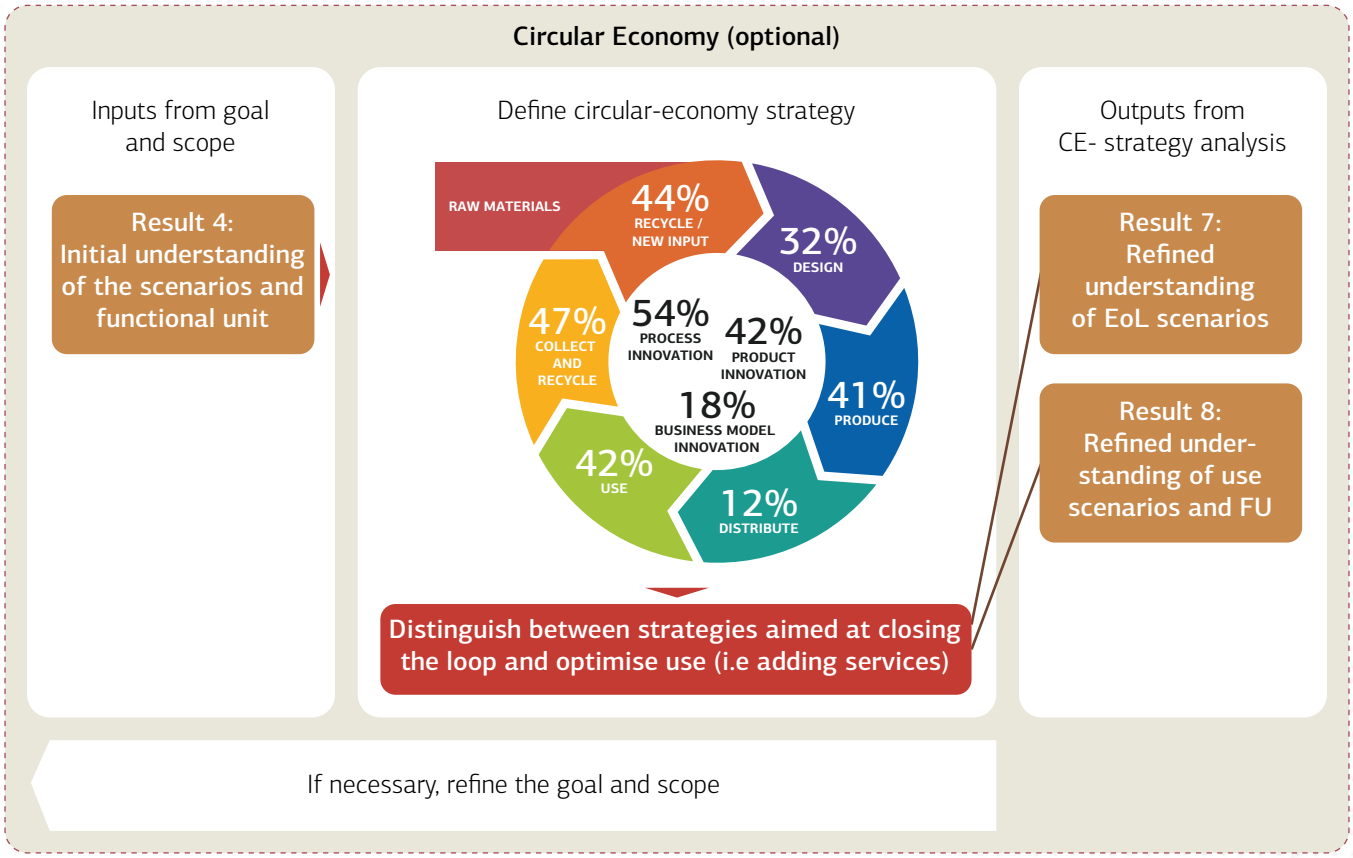


Figure 5.1: Overview of an assessment of a Circular Economy strategy and its impact

[14] These categories do not exclude the possibility that these strategies can overlap or be combined, but are introduced for conceptual clarity.

5.2 The concept of circular economy

The Ellen MacArthur Foundation promoted the concept of CE as an almost all-encompassing framework to develop sustainable product strategies, which can have a significant impact on the product system and the assessment scenario design. The definition of a circular economy is:

'A regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing energy and material loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and closed recycling loops. This is in contrast to a linear economy which is a 'take, make, dispose' model of production.'

The definition of CE is broad, mainly developed to reduce the environmental impact of products. Relatively little attention has been paid to the social impact of CE strategies. To explore this, we use a classification of CE-inspired strategies as described by the WBCSD and Boston Consultancy Group (2018). In that study, companies were interviewed to explain where in the product life cycle they applied CE-related strategies. Figure 5.2 provides an overview of the findings. It is clear that companies are still in a pilot phase with many of these activities, exploring the breadth of opportunities across the value chain.

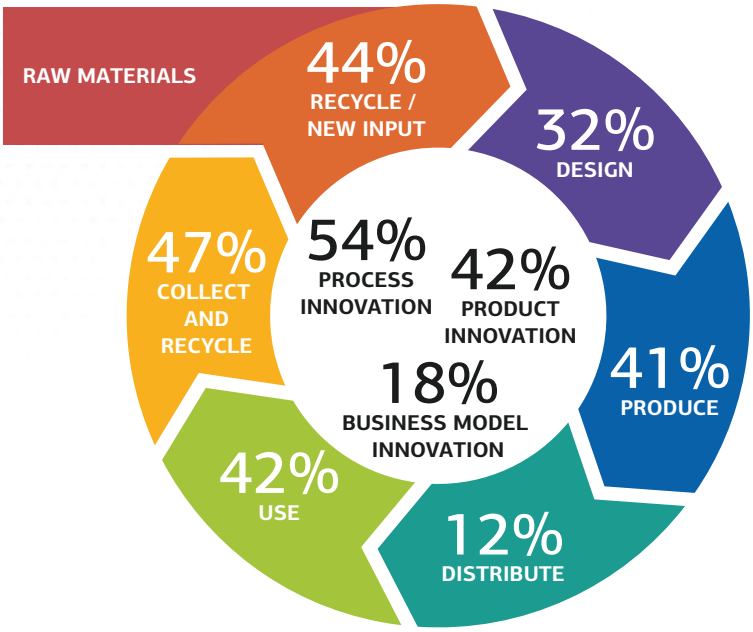


Figure 5.2: Graphical representation, indicating which activities are undertaken into each phase of the lifecycle, when developing and implementing a CE strategy. The percentages show the share of surveyed companies, that are active and successful in these activities (based on a visualisation in the New Big Circle Report, WBCSD and BCG).

5.3 How CE-inspired strategies can affect social impacts

Through discussion with Roundtable members, we outlined multiple social impacts that can be associated with the six CE-inspired strategies described in Figure 5.2. We distinguish between potential social impacts based on the affected stakeholder groups.

- Potential impacts on stakeholders (workers, small-scale entrepreneurs and local communities) in the product value chain.
- Potential impacts on users of products and services.

CE strategies can roughly be divided into two groups:

- CE as an incentive to close material loops; focus on 1-4 in Table 5.1.
- CE as an incentive to use products more efficiently; focus on 5 and 6 in Table 5.1.

Focus	Potential impact of workers and entrepreneurs and local communities	Potential impact on direct and indirect users
1 Buy materials that are regenerative or recycled	More impact on recycling workers, less on waste handling and mining	Probably no significant impact
2 Design products that are recyclable and reusable	More impact on recycling and refurbishment workers, less on waste handling and mining	Reuse could potentially lower cost and increase affordability
3 Collect and recycle and the end of the product lifetime	More impact on recycling workers, less on waste handling and mining	Probably no significant impact
4 Make products waste free and as resource efficient as possible	Implies more efficient production technologies, and thus different working conditions	Potential for lower cost and increased affordability
5 Sell access rather than ownership; lease or share or subscribe to products	May imply fewer jobs in production and more in services	May increase affordability, could impact privacy
6 Incentivise use of the product in a responsible and efficient way	Depends on the solution	Could have a wide range of user impacts; depends on the solution

Table 5.1: Overview of possible social impacts of the six CE-inspired strategies.

5.3.1 Potential social impacts resulting from CE as an incentive to close material loops

Increasing recycling, reuse and refurbishing can create new jobs, avoid the need to produce new material and the need to handle waste, but can also create difficult or unhealthy working conditions. These impacts fall on workers and sometimes on independent small-scale entrepreneurs (such as waste pickers). The impact on the user may be low, assuming that the product has the same functionality, the same price and is sold in the same way. If the reuse, recycling or increased efficiency in production results in a lower price, this may increase affordability.

In an environmental assessment, recycling almost always reduces the environmental impact. This may not be the case when looking at social impacts. In some cases, the working conditions for workers and small-scale entrepreneurs are very bad. Famous examples are shipbreaking, electronics 'recycling' and waste picking in general. Often, such activities take place in small companies about which not much information is available, and the assessment generally comes from secondary sources such as studies, reports from NGOs, etc.

While the recycling itself may have negative or positive impacts, it also lowers the need for virgin materials and thus can reduce impacts of mining and material processing. At the same time, there is less of a need for waste treatment, and this will affect workers in this sector. The PSIA method does not quantify the materials used, recycled or disposed of, so the reduction in virgin material production and waste handling can at best be described qualitatively.

In Chapter 4.3.6, the question was to what extent recycling should be included in the assessment. In line with environmental assessments, the allocation of recycling impacts depends on the market situation.

- If there is enough of a market for a secondary material, the system that supplies the material will not get any potential impacts form the recycling system.
- If there is a high supply of a material, so the system that uses the material should not get any potential impacts of recycling.

In a product is reused, there is no allocation problem: reuse just extends a product life cycle and does not affect other life cycles. Reusing a product means there is less of a need to produce new products, so there will be less waste handing. Data on the impact of reuse is potentially easier to obtain, but should also be handled as data in the production chain.

5.3.2 CE as an incentive to use a product more efficiently

Sharing, pay-per-use and other business model innovations can have positive and negative direct impacts for users. A product-service combination might increase affordability, to mention a positive example, but it might also affect privacy, as the producer gets more information about the user.

The concepts behind this thinking are often referred to as product-service system thinking. The idea is that, by adding services, product use can become more efficient or less products need to be produced. There are various approaches to this.

- Services in addition to a product, such as user-focused training courses, maintenance contracts, extended guarantees, etc. A better-maintained product can be more efficient and have a longer lifetime. For instance, office chairs are sometimes sold with a service to adjust the chair to the perfect posture of the worker. This can impact the health and comfort of the user.
- Services that change the ownership of the product, such as leasing, sharing and renting. This can mean that more people make use of the same product. A famous example is Xerox, who do not sell machines but copies. This allows them to supply refurbished machines: the customer does not mind whether the machine is used or new, as long as Xerox guarantees good quality at a fixed price per copy. This strategy of course changes how users and products interact.
- Selling a service instead of a product. For example, companies that used to sell pesticides now sell 'pest-free crops'. The company takes responsibility of the result. They can then, for instance, use much more biological pest control, as this is cheaper and more effective than the use of pesticide. The company has the skilled staff to apply such pest control, while most farmers are not trained to do this.

Of course, there are many other ways to add services, optimise product use or combine these strategies with recycling and reuse.

5.4 Outputs

As CE is a very broadly defined concept, the results of assessing social impact of CE-inspired strategies can be diverse. One can expect two types of outputs:

- A better description of the recycling, reuse and refurbishing processes that can be the result of some strategies. This can be extra input to the hotspot identification process in Chapter 6.
- A better understanding of the direct impacts on users when adding services or other options to make the use of a product more efficient. This can give additional impact to the impact assessment on users, see Chapter 8.

6 Hotspot identification

6.1 Purpose and overview

The hotspot identification module uses the PSIA social topics as a check-list to understand whether there are risks within the value chain and what type of risks they are. This allows practitioners to gain a good overview of the key social issues associated with each stakeholder category. Hotspot identification can be used for many application areas, such as product development and improvement or strategic planning. The results can also serve as input for a PSIA study. Identification of hotspots within the use phase is typically only possible for products already on the market that are compared to similar products.

In the hotspot identification phase, the aim is to flag the social risks along the product value chain. Evaluate the risks or hotspots on a five-point scale is not part of this step, that comes in the assessment step (see Chapter 7 and 8).

What can hotspot identification do?	What does hotspot identification not do?
- Identify social risks per social topic along the product value chain - Identify hotspots for further evaluation - Compare social risks of various alternatives or products - Provide inputs in decision making, e.g. product design, choice of strategy, choice of value chains, investment decisions, stakeholder dialogue, trade-offs along the product value chain	- Evaluate hotspots on a five-point scale - Support external communication and customer support

6.2 How to perform a hotspot identification step

Hotspot identification aims to screen the potential risks within the product value chain. The goal and scope and system boundary setting already provided an initial idea of which life-cycle steps and actors or processes in the value chain are potentially relevant and which can be left out. During the hotspot identification phase, practitioners revisit the longlist of processes and life-cycle stages by looking at the material social topics for each of the stakeholder groups (see 3.3).

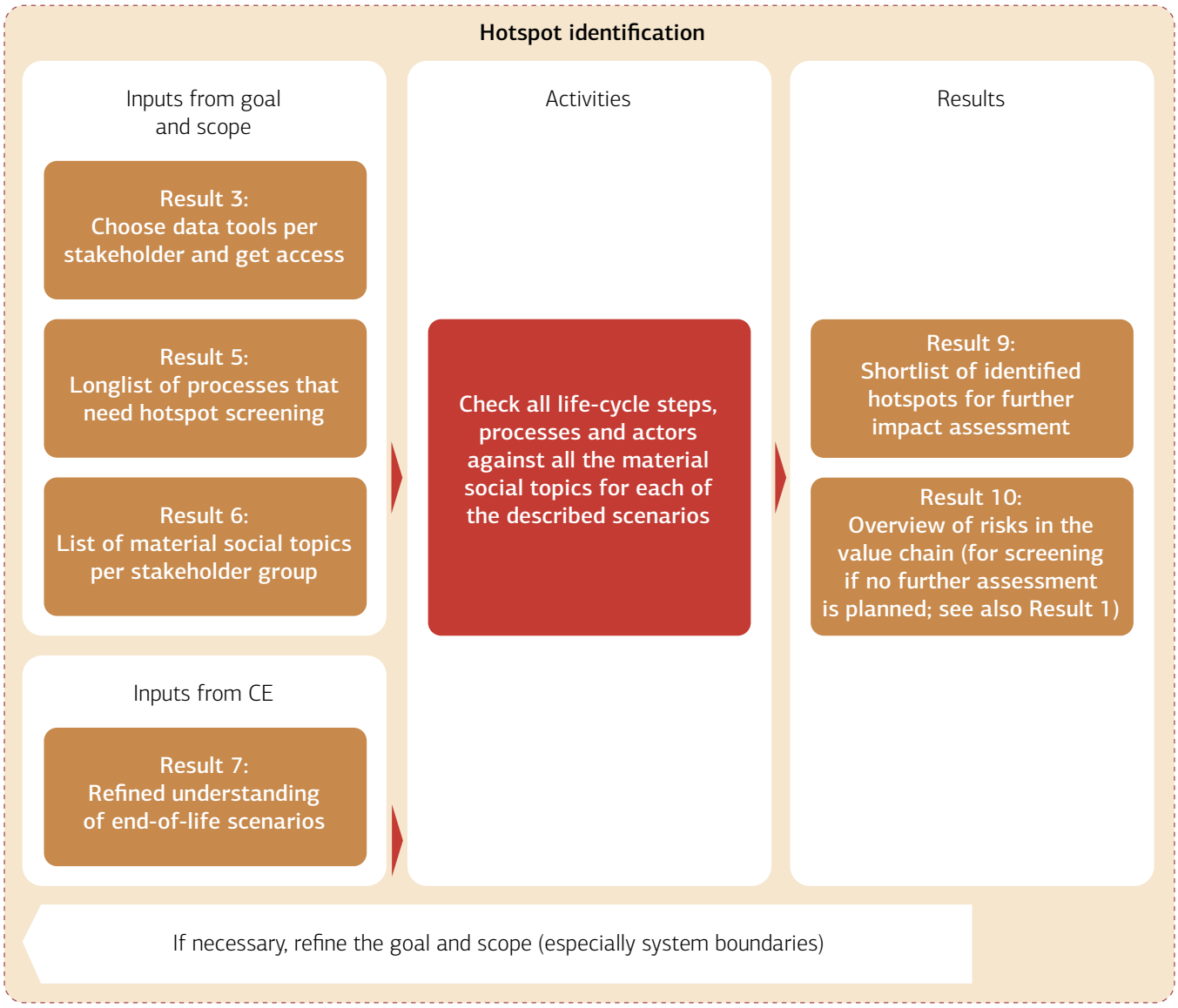


Figure 6.1: Hotspot identification

When conducting hotspot identification, practitioners will mainly use secondary data sources (see Chapter 3.4 for examples and analyses of sources), unless the value-chain actors are known and primary data is available within the company. Depending on the quality of the secondary data sources, it is possible to gain a good understanding of potential risks within a product's value chain. The best secondary data about social issues is available for workers. Evaluation of risks for other stakeholder groups can be more challenging.

The steps are:

1. Prepare
   a. Take the long list of relevant processes, developed in Chapter 4 (and perhaps extended in Chapter 5 for the recycling and refurbishing if relevant). If possible link names of potential suppliers or if that is not possible than determine sourcing regions or countries.
   b. Determine the list of material social topics.
   c. Ensure access to at least some of the tools as mentioned in Chapter 3.

2. Take the most relevant stakeholder group and a material social topic and check with the tools what is known about the likelihood of negative impacts (risks) or positive impacts (opportunities):
   a. Per sourcing region country and sector from which a material or service is likely to be sourced
   b. If a concrete company is known, check what is known about this specific company
3. Repeat this for all material social topics.
4. Repeat this for other stakeholder groups.
5. Review the longlist, eliminate the processes for which it is unlikely that there are relevant positive or negative impacts and document. Also, document data gaps.

The outputs of hotspot identification will differ depending on the intended application. Sometimes, an overview of risks and potential issues may be sufficient, for example, in the initial product development stages. If a further evaluation of the most relevant negative and positive hotspots is planned, a shortlist of hotspots can be used as input for a PSIA study.

The SEEbalance® method, developed by BASF, is similar to the hotspot identification module, also enabling practitioners to evalute social risks (see textbox 6.1).

6.3 Substantiating and documenting the hotspot identification

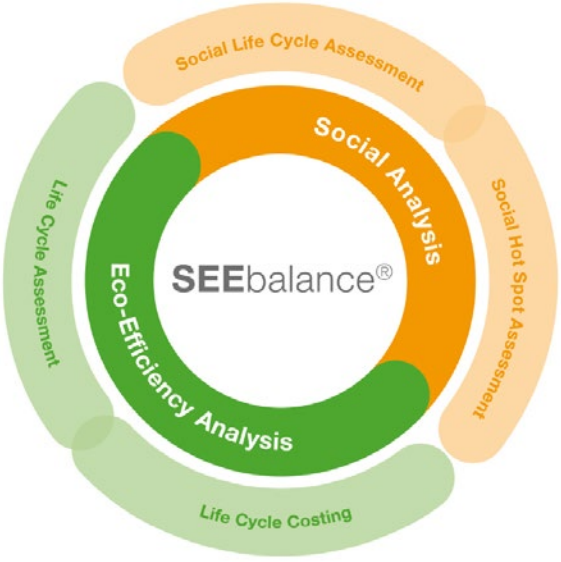
Hotspot identification transforms the initial longlist from the goal and scope phases into a shortlist of hotspots along the product value chain. Depending on the communication context, as described in Chapter 3.2, the hotspot identification may be an endpoint of the assessment or an input for further evaluation.

Regardless, the hotspot identification process should be documented for later review and transparency, and important choices should be substantiated. Depending on the communication context, the required amount of certainty, transparency and documentation may differ. Internally used hotpot identification assessment may require less extensive documentation and sophistication. However, important choices should still be substantiated.

Textbox 6.1: SEEbalance® assessment method developed by BASF

SEEbalance® is BASF's comprehensive approach to assessing the social, environmental and economic aspects of products or processes, covering the entire life cycle. Depending on the question, the four modules of SEEbalance® can be applied individually or in combination. SEEbalance® supports decision makers in identifying the sustainability benefits and trade-offs along the value chain of products or processes. The method does not relate the results to product mass flows because of the lack of quantitative data and to avoid discussions on 'quantitative amount of child labor' for a product.

Figure 6.2 shows how Social Analysis (one of several independent modules) works with other modules togenerate results on all aspects of sustainability.



The **Social Analysis**:
- Follows the **life cycle approach**
- Identifies **social hot spots** in the value chain
- Allows a **comparative assessment** of different alternatives
- Provides transparency on social risks and **supports decision-making** processes
- Use a scale-based approach for the risk assessment with **four risk categories** analog to databases or other initiatives

Low risk	Medium risk
High risk	Very high risk

- Links Hot Spot Assessment results to UN Sustainability Development Goals **(SDGs)**

Figure 6.2: The Social Analysis module for the assessment of social impacts along the whole value chain, linked with the Eco-Efficiency Analysis module

The Social Life Cycle Assessment covers:
- Identifying social risk (based on data from credible commercial data providers).
- Considering important impact categories such as fair wages, forced labor, health and safety.
- Focusing on stakeholder groups like workers, communities and consumers.

For the assessment, different levels of data collection can be done. It is a staggered process, starting with an assessment of availability of information. First in the hierarchy is the information about companies. If companies are known in the supply chain, the company-level information is assessed with EcoVadis. If this information is not available, e.g. for smaller companies, RepRisk can be used as a basis for the assessment. Based on this first information collection step, it is determined whether additional information is needed. That can be collected by desktop research or through direct contact with companies.

Textbox 6.1: Continued from the previous page.

SEEbalance® can give four levels of output (low risk, medium risk, high risk and very high risk). To reach the green (low risk) assessment level, practitioners need to affirm that there are measures in place dealing with:

- **Governance and policy**: e.g. supporting human rights.
- **Implementation**: positions and guidelines are implemented in transparent targets, etc.
- **Performance practices**: measures are applied to improve unsatisfactory situations or performances on social standards.
- **Remedies and grievance mechanisms**: company accurately evaluates whether it complies with the internationally recognized labor and social standards etc.

If company- specific data are not available, country or sector scores can be used from Verisk Maplecroft™ is used. The impact indicators are selected in such a way that EcoVadis, RepRisk and Verisk Maplecroft™ indicators fit well together and can be used in both directions of the assessments. They can easily be linked in the whole system and follow the Handbook guidance, with some exceptions where no good equivalent data exists. Data for companies and regions can be aggregated with statistics reflecting production in the sectors to provide averages. In short, four categories of data assessments can be used: Company data (C), Company averages (CA), Regional data (R), Regional average (RA).

The aggregation of the results from these different inputs are expressed in a colour scale from green to red and a numeric scale from 1 to 10. After a few interpretation steps, this results in a ranking of alternatives that are assessed in the social LCA (Figure 6.3).

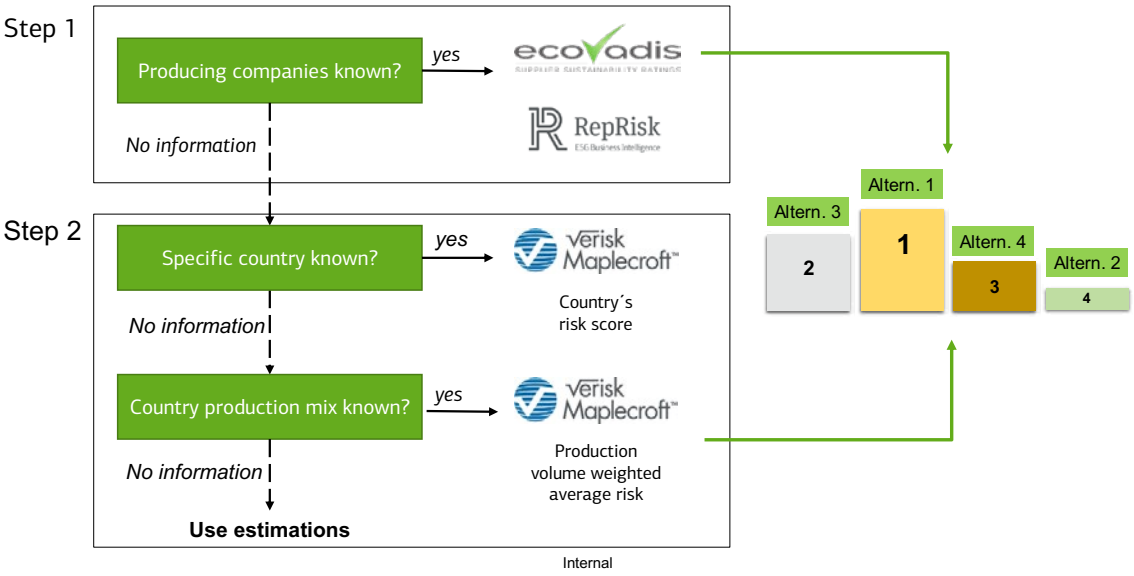


Figure 6.3: Two-step approach to assess risk, depending on data availability

Figure 6.4 illustrates findings in the value chain of two alternatives analysed with the Social Life-cycle Assessment module of the SEEbalance® method. The whole value chain can be displayed in an easy-to-understand color code, supported in the background with details and figures for further interpretation. The overview of the supply chain supports the identification and assessment of hotspots as well. This basic identification of relevant life cycle steps is the starting point for an in-depth analysis of hotspots.

Please note that BASF terminology is different. What we call hotspot identification, BASF refers to as LC assessment.

Textbox 6.1: Continued from the previous page.

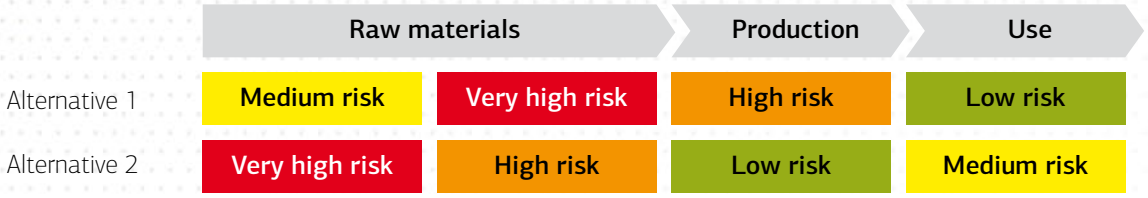


Figure 6.4: Identification of life cycle steps for hotspot assessment

The Social Hotspot Assessment covers:

- Deep dive into social hotspot(s) of the value chain.
- Expert evaluation of relevant topics and linking them to the SDGs.
- Identification of main social focus topics discussed by stakeholders.
- Product, industry and region-specific analysis of social hotspots.

The process of the social Hotspot Assessment starts with a free desktop research on all social topics that can be found on the internet, literature, social media. A filtering and identification process then extracts the most relevant aspects. The SDGs can be used to support the search process and as a basis for identifying impacts. In this example, we preferred the risk-oriented assessment instead of identifying improvements in line with the SDGs, since those were very difficult to verify (Figure 6.5).

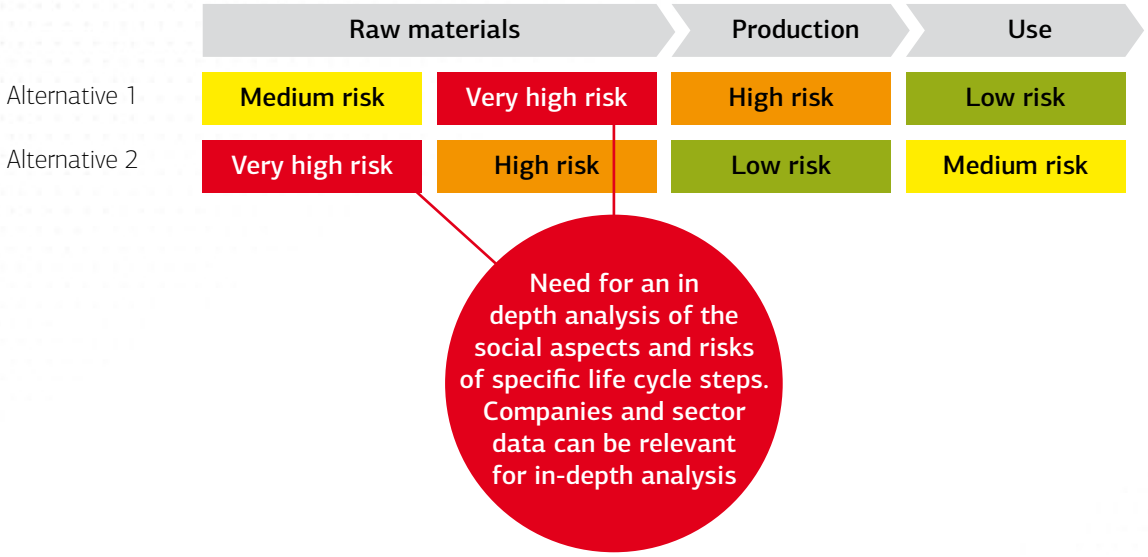


Figure 6.5: Identification of life cycle steps for hotspot assessment

Figure 6.6 describes how findings can be linked to SDGs and expressed in an overview sheet. It was decided that all findings have the same importance. If one main goal or sub-goal is identified that has impacts on an SDG, the whole SDG will be identified as impacted by that alternative scenario. The single results can be aggregated in an overall figure. This figure is the basis of discussions and identifications of improvement potentials.

Textbox 6.1: Continued from the previous page.

Finding(s)	Phrase(s)	Effected SDG
The literacy rate is 7 percent below the national average Low learning levels, high absenteeism in the state with 21% of the countries child population No significant improvements in education rates in the last 10 years	4.1. Eliminate gender disparities in education and ensure equal access to all levels of education ...	8 DECENT WORK AND ECONOMIC GROWTH
Sources information: Very specific for the region under investigation Several sources show the same findings Official statistics show the same information NGO reported analogous information on this issue	4.2. all girls and boys have access to quality early childhood development, ... primary education	SUSTAINABLE DEVELOPMENT GOALS

Figure 6.6: Assessments of impacts linked to SDG in the Hotspot Assessment

Figure 6.7 shows how the findings can be summarized and introduced in an identification, interpretation, concept and action funnel. This can be the basis for further improvements of sustainability for the alternatives in the study. In a Plan-Do-Check-Act mode, improvements can be implemented along a timeline, which helps decision makers to decide on implementing and establishing project plans.

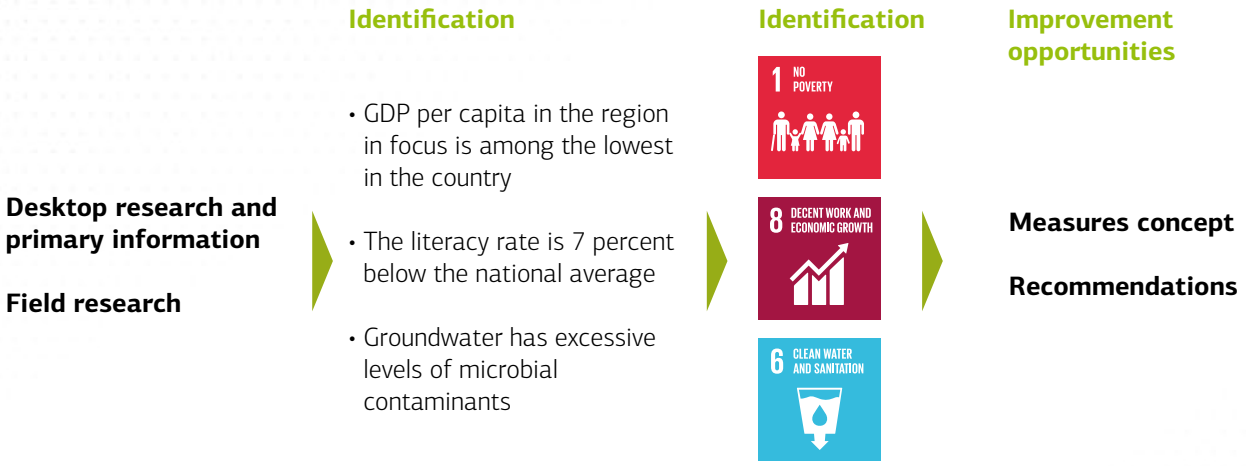


Figure 6.7: Summary of impacts linked to SDGs in the Hotspot Assessment; collection, overview and definition of measures

7 Assessing social impact on workers, small-scale entrepreneurs and local communities

This chapter provides guidelines on doing a Product Social Impact Assessment (PSIA) on workers, small-scale entrepreneurs and local communities (see Figure 7.1). You can find the guidelines for PSIA on users in Chapter 8.

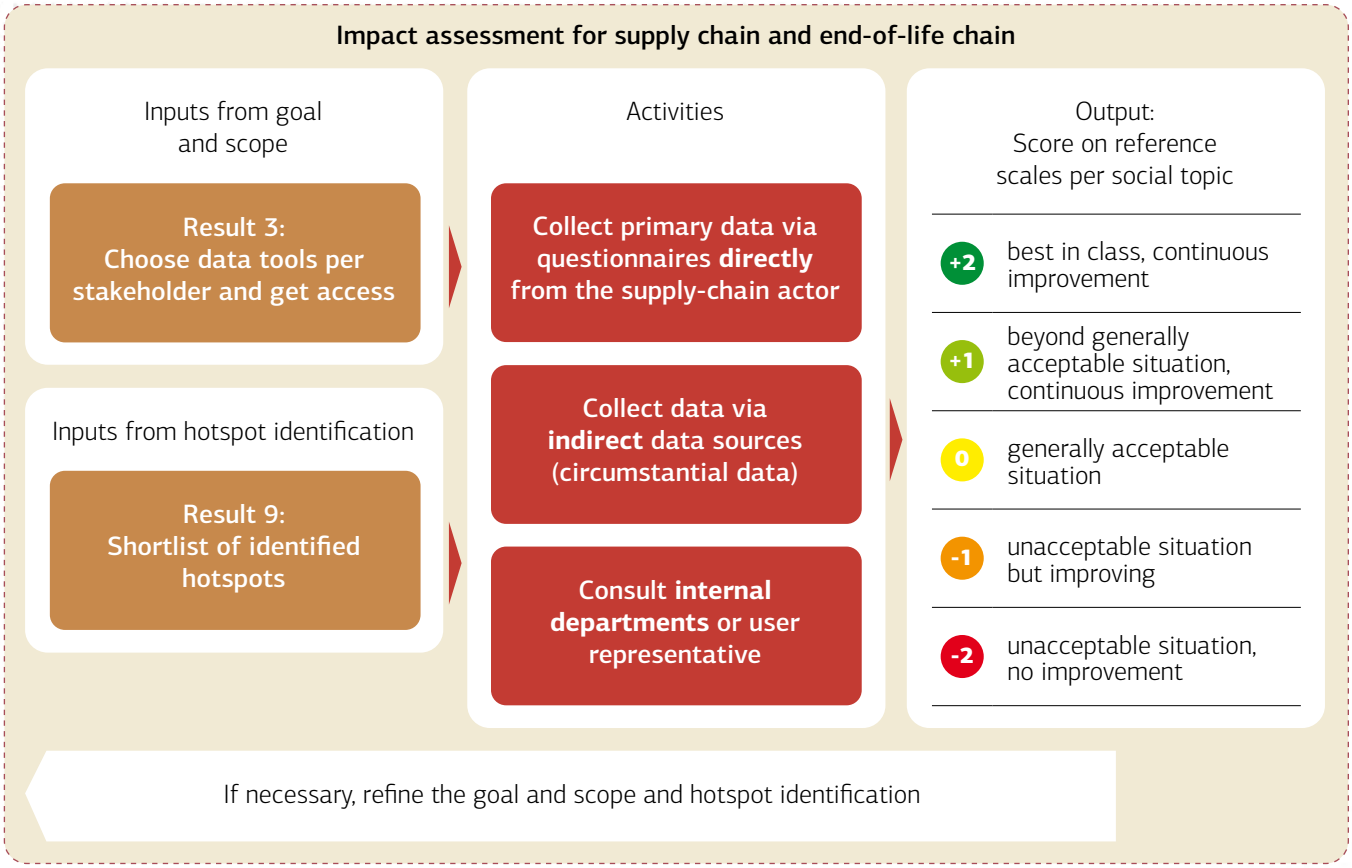


Figure 7.1: Illustration of PSIA process

7.1 Purpose of this step and desired outputs

The aim of the impact assessment is to evaluate the product or service system with the 5-point reference scales. The result is a score for each of the social topics per stakeholder group. The assessment utilises both company-specific data and statistical or secondary data. An impact assessment study will typically cover fewer life-cycle actors and processes than a hotspot identification study. Hotspot identification is a wider-reaching assessment that aims to identify the hotspots or social risks along the entire product value chain. Impact assessment strives to evaluate the shortlisted hotspots in more depth. The assessments are complementary; together, they can generate a complete picture.

Capabilities of PSIA	Drawbacks of PSIA
- Identify social impact along the product value chain per social topic and evaluate it on a 5-point scale - Support external communication - Compare social risks of various alternatives or products - Provide inputs in decision making about product design, strategy, value chains, investments, stakeholder dialogue, customer support and trade-offs along the product value chain	- The methodology does not support aggregation and weighting - Not very suitable for quick screening

7.2 Inputs and data collection

The social topic scales are meant to be used after the hotspot identification phase. This hotspot identification is meant to reveal the most important potential negative and positive performance in the value chain over the lifecycle. If the Hotspot identification pointed towards a negative contribution of a value chain actor, it is wise to check the -2 level first, and move upwards, when data collected from the supplier provides sufficient evidence to determine if a performance indicator can be confirmed as being "True" or "False". If "True" check if the next level also has a performance indicator that can be assessed to be "True", repeat this until the level is reached where a "True" cannot be established on any of the performance indicators, which means the performance indicator is either "False" or undecided. This procedure implies that a certain level on the scale can only be reached if the lower levels have at least one performance indicator with the value "True". In principle it is sufficient to have evidence that one of the Performance indicators on a level is "True".

To illustrate the mechanism, we use the example of Occupational Health and Safety for workers as defined in the separate Social Topics report. Each social topic is based on a description of a definition and rationale. In the example of Occupational Health and Safety we discuss various definitions and then choose the following from a joined ILO/WHO report:
The main focus in occupational health is on three different objectives: (i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertakings. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking." Source: —Joint ILO/WHO Committee on Occupational Health[15]

[15] http://www.ilo.org/safework/info/publications/WCMS_110478/lang--en/index.htm

Reference scale for Occupational Health and Safety (OHS)

	Definition of the scale level	Performance Indicators
+2	The company is best in class compared to its peers on OHS performance	• Credible statistics show the OHS performance is best in class compared to its peers in the same sector and region, and this performance has improved over at least 3 years • Credible statements from NGOs, unions and workers that confirm this
+1	The company has a management system in place to pro-actively and continuously improve the working culture, beyond an acceptable level and can show tangible results of these efforts.	• Documents that provide a credible description of management system to promote continuous improvement of health and safety and the results of these efforts • Credible statements from NGOs, unions and workers that confirm this
0	Working conditions and working culture are adequately protecting occupational health and safety, which includes that equipment, the use of personal protection equipment, the prevention of harassment are conforming to the state of the art regarding safety and exposure.	• Documents like audits that show compliance with National standards, see Global ILO LEGOSH database • Documents that show certification schemes/standards on health and safety, audits.
-1	There has been a neglect in the working conditions (culture) regarding the maintenance and promotion of occupational health and safety, which results in high accident rates and deteriorating health conditions of workers, but the company or facility has developed a corrective action plan with clear timeline for completion.	• While the company is in an area where this situation often occurs according to statistics, there is evidence that the company has started to address the situation with a clearly defined timeline. • There are incidents of complaints, lawsuits and other signals but they have been significantly reduced during the last 3 years
-2	There is a neglect in the working conditions (culture) regarding the maintenance and promotion of occupational health and safety, which results in high accident rates and deteriorating health conditions of workers.	• Complaints, lawsuits and other signals • Absence of positive information, while the company is in an area, where the risk of bad occupational health and safety situations often occurs according to generic statistics.

Fictional example:

A supplier produces cotton in India. The hotspot identification phase reveals potential risks regarding OHS. When the company is approached it can send an audited report, showing the efforts of the company to improve this, while secondary data shows (e.g., ILOSTAT) the situation is not on a generally acceptable level. Without such data this supplier would score -2, if the data is provided and deemed to be credible evidence, it can be scored -1. If the company can show that it has achieved an acceptable OHS performance or is accepted by a credible certification standard that covers the OHS performance, it can be scored a level 0. Further evidence may show even better performance, which could merit a score of +1 or even +2.

So, the fact that the company is based in a sector or region where OHS is far from being guaranteed can provide a starting point of the search for actual performance data of the specific supplier.

[16] Inspired by UNICEF workbook *Children are everyone's business*, Part II: Integrating children's rights into core business practices (UNICEF, 2013)

The Social Topic report also provides examples of generic databases that can help to identify the situation in a region or sector, such as is presented in the table below:

Source
ILOSTAT explorer: dataset SDG indicator 8.8.1 – Non-fatal occupational injuries per 100'000 workers – annual. This source provides non-fatal occupational injuries per 100.000 workers and specified by migration status and gender. See: https://www.ilo.org/shinyapps/bulkexplorer13/?lang=en&segment=indicator&id=SDG_N881_SEX_MIG_RT_A
World policy center. This source provides information on the extend of the protection of human health in the constitutions per country. See: https://www.worldpolicycenter.org/topics/health/constitutional-protections-of-health/policies
Global ILO LEGOSH database with National Occupational Health and Safety standards can be found on https://www.ilo.org/dyn/legosh/en/f?p=14100:1000:0::NO: Database covering all national OSH frameworks for almost all countries.
European Agency for Safety and Health at work: EU-OSHA collects, analyses and disseminates information related to occupational safety and health across the EU. https://osha.europa.eu/en/publications: several datasets on risks in European countries.

Textbox 7.1: Case study by Mahindra

Introduction

Mahindra Sanyo Special Steel Pvt. Ltd. has been a member of the PSIA Roundtable since Phase 3 (2015-2016), when we conducted a pilot study in collaboration with the BMW Group to verify the methodology and indicators that were part of the Handbook for Product Social Impact Assessment Version 3.0. For this current case study, we used the updated 2018 Handbook to strengthen our Sustainable Supply Chain Management initiative. The case study was cradle-to-gate and utilised the updated framework to rework the existing supplier benchmarking tool for Social Sustainability.

Application of the methodology

For this case study we assessed impacts on three stakeholder groups: workers, local communities and small-scale entrepreneurs. We implemented the new qualitative, scales based approach by converting the performance indicators into questions that could be answered in the Yes/ No format. The resulting survey questions were divided into the following categories:

1. **Survey questions that could be answered internally** – these questions could be answered through audit reports and benchmarking done for current Sustainable Supply Chain Management (SSCM) activities. These questions were mainly about social topics that affect workers.
2. **Survey questions that could be answered through external data sources** – by perusing our suppliers' websites, annual reports or news items. These questions were mainly about topics affecting workers and local communities.
3. **Survey questions that were not relevant to us** – mainly about topics affecting small-scale entrepreneurs (including our SME suppliers).

The remaining questions were turned into a questionnaire with relevant details and clarifications where necessary. We did this pre-sorting so the final questionnaire, which was sent to our value-chain actors, would be short and not too intimidating and to avoid audit fatigue. As some of the questions were already a part of our existing supplier audit and benchmarking process, it made sense to not resend them to the relevant companies.

Added value

Mahindra Sanyo is strongly invested in developing a comprehensive sustainability assessment methodology. As the first Indian and first steel company globally to have its Science-Based Targets approved and placed, we have committed to reducing our Specific Scope 3 emissions by 35% compared to base year 2016. We also intend to address our Scope 3 emissions: indirect emissions that include those from the extraction and production of purchased materials, transportation of goods, and production of fuel and energy. Therefore, we see the benefits of integrating both environmental and social sustainability in our approach to address our upstream value-chain actors.

Going forward, we wish to utilise the social sustainability framework to address intersections between our climate and social activities in our supply chain, within the larger framework of the Sustainable Development Goals. Through this approach, we will support better decision making, product development and value creation.

8 Assessing social impact on users

8.1 Purpose and overview

The assessment of social impacts on workers, small-scale entrepreneurs and local communities will generally be executed by, or in collaboration with the company's purchasing specialists. The impacts in the use phase can often be best assessed by the product development experts.

This chapter has been written especially for these product development and marketing experts, as they may want to assess the impacts of a new product while assuming the impact on the supply chain may not change. In many cases, a business unit has a relatively stable supply chain that does not need to be assessed for every product. Of course, this does not hold true if a product requires a new material or service or involves a new recycling or refurbishment process. If that is the case, these new elements in the supply chain or new end-of-life scenarios may need to be assessed by the product developer and the purchasing staff.

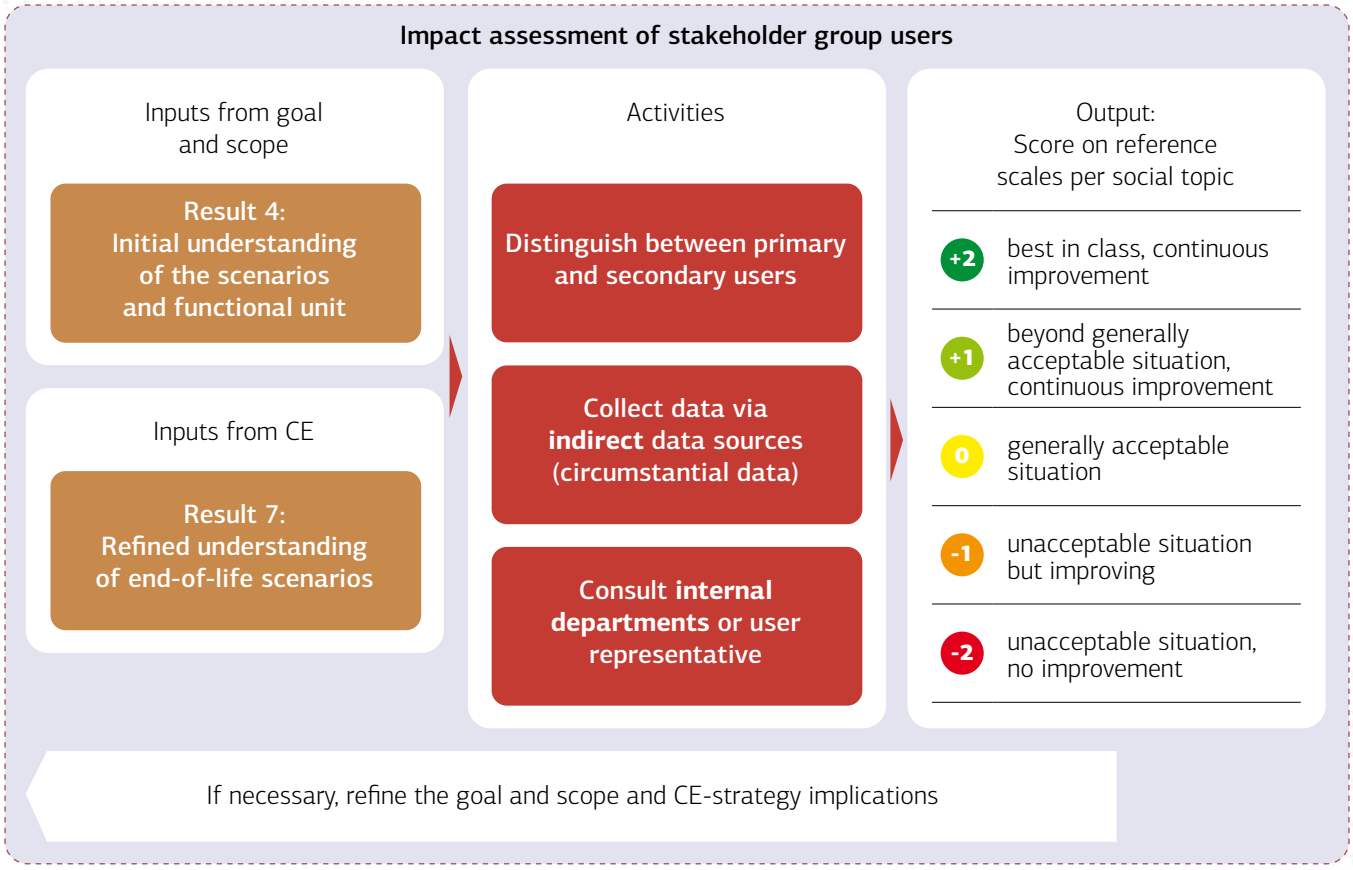


Figure 8.1: Overview of impact assessment for users

8.2 How to understand users as a stakeholder group

In environmental LCA, the use phase is designed to assess the impacts of the product's use on the environment. The users themselves are not considered, although it is necessary to understand the intensity with which the product is used, because users are not considered part of the environment[17]. Social LCA, in contrast, does assess the impact on users. This opens up the need to understand who these users are, and to distinguish multiple user types.

8.2.1 Differentiating between consumers and users

A distinction can be made between products developed for consumers and products developed for workers (professional users). Some products are developed to cover both audiences, for instance paint. Some consumers will put the paint on the wall themselves, while other will have a painter do it for them. Paints not produced for home painting will generally be applied by professionals and often with machines. In this example, users may be consumers, workers or both, and the way the paint is applied may have impacts on the wellbeing of the consumer and the painter or worker whose work is impacted by the product characteristics.

8.2.2 Primary, secondary and passive users

In some cases, a product is used by a professional user to serve a consumer. Some examples:

1. A public transport bus has the consumer as its primary user. But the driver, the person who cleans the bus and the mechanic who maintains the bus can also be seen as secondary users: professionals who work to deliver the function of the product to the primary user. A well-designed bus makes the work of the driver, the cleaner and the mechanic more comfortable, healthier and safer. In addition, people who do not use, drive or maintain the bus may also be impacted, by exposure to potential noise and congestion. Or perhaps the presence of the bus will result in less congestion, since more people can take the bus instead of their cars. We refer to this last group of stakeholders as the passive users.
2. Medical equipment is used by professional staff, but the patient is the beneficiary.

When products are used by professionals, this also influences them in their role as workers, so one could suspect a double count. However, in the example of the paint, the workers producing the paint are not painters applying the paint in a professional setting. The worker who produces the bus is not the bus driver, etc. In most cases it is best to consider the professional user as a primary or secondary user and not as a worker, as this allocation allows for an in-depth assessment of how the product impacts that type of user. Including impacts on passive users in an assessment can add much complexity and should only be done if there are truly significant impacts. Which users to take into account and how to address them in a PSIA study should be clearly documented in the goal and scope.

The textbox below discusses the end users of Steelcase products, workers in a company that buys Steelcase office furniture. Steelcase aims to contribute to the health and wellbeing of these end users/professional users and aims to assess the impact by six dimensions of wellbeing. More information on this can be found on the website of Steelcase[18].

[17] There is some discussion about this, for instance, if a product releases harmful substances to the user through skin contact or inhalation of air. Some LCA practitioners include those in environmental LCA as human toxicity. In this Handbook, we consider them examples of social impacts, specifically health.

[18] https://www.steelcase.com/content/uploads/2014/05/360Magazine-Issue67.pdf

Textbox 8.1 Wellbeing in the workplace by Steelcase

The complexity that organizations face today and the demand for innovation is driving the need for new skills and behaviors that simply are not possible if workers are unhealthy, overloaded and overstressed. More than ever, the quality of a business depends on the health of workers, their wellbeing. At Steelcase, we define wellbeing as sustaining a healthy physical and emotional state over time, in a supportive material and social environment. The better off employees are in terms of their personal wellbeing, the better off the company can be in terms of fiscal fitness, agility, and capabilities for innovation and growth .

Steelcases specifies six dimensions of wellbeing in the workplace: First, **optimism**, which is about fostering creativity and innovation. **Mindfulness** is about being fully engaged. **Authenticity** is being yourself. **Belonging** means being connected to others. **Meaning** is about having a sense of purpose. The sixth and last dimension is **vitality**, which entails a healthy lifestyle and physical condition.

By addressing wellbeing in the workplace, Steelcase's research has found that the return is high for forward-thinking organizations that invest in the physical, cognitive and psychological wellbeing of their people by thinking about it holistically and incorporating it as part of their business strategy. The result is highly engaged employees.

8.2.3 Access to information about impacts on users

When a company designs a product and associated services, it generally has good insights into the social impacts the product has in the use phase, both in a business-to-business context or in a business-to-consumer context. If a company produces base materials that are used in products produced by others, it is not always easy to access data on user impacts. This also applies to situations where the user impacts are to be compared with impacts from competing products.

When there is no direct insight into the use-phase impact, data on the use stage and the users will often need to be collected from third-party studies, clinical trials, by researching the internet, consumer panels etc.

8.2.4 Reporting the impact on different user types

When a product has primary, secondary and perhaps even tertiary or passive users, these should be assessed individually. The results should preferably be reported separately, at least as long as the role of a secondary or tertiary user is deemed to be material.

8.3 Separating the assessment of user impacts from plain marketing

The results of a product social assessment of user impacts can be used in marketing communication if the requirements in this section are met. The social topics defined for the user, such as comfort, health and safety, are also an important element in regular marketing.

This Handbook has been developed to assess if and in which way a product contributes to the wellbeing of all stakeholder groups (further specified in the Methodology Report). While buying an expensive car may improve one's wellbeing more than a simpler car, this is not what the PSIA intends to measure. The purpose of this Handbook is to highlight products that solve relevant problems for users. If a person is a driver, behind the wheel all day long, the level of comfort of the car may have a positive impact. For a normal consumer, additional comfort does not solve a significant problem. It should also be kept in mind that a product social impact assessment registers really serious problems, such as forced labour in the supply chain. This should not be 'compensated', either in the assessment results or in a company's marketing materials, with luxury improvements in the use phase. The user assessment topics have been developed with this in mind.

It is, of course, completely up to the company how to market a product. A requirement for referring to this Handbook or the PSIA method in marketing materials, however, is that the claims should be well documented and focus on solving a real problem, not a luxury problem. If not, a reference to this Handbook cannot be made.

In textbox 8.2, DSM describes how the social benefits of a synthetic link chain were assessed and communicated.

Textbox 8.2: A case study by DSM – communicating the social benefits of synthetic link chains with Dyneema®

This study was performed by DSM to determine and substantiate the social benefits of using synthetic link chains with Dyneema® compared to the use of conventional steel link chains. As synthetic link chains with Dyneema® are 8 times lighter than comparable steel link chain alternatives, they are easier to handle and significantly quieter during use, thus reducing the risk of injuries and accidents, and improving user comfort and wellbeing.
While the reduction of the risk of injuries and accidents through improved ergonomic design is well established, it is more challenging to provide substantiation for improved user comfort and wellbeing. To validate this claim, DSM took two actions. The first was to test the Human Noise Disturbance Factor (HNDF). The results show that synthetic link chains with Dyneema® have a HNDF 67 times lower than that for steel link chains, which contributes directly to increased user comfort and wellbeing through lower noise pollution. Secondly, end users of the synthetic link chains with Dyneema® were interviewed and gave testimonials supporting the view that the lighter weight and quieter use improved their energy levels at the end of the working day, contributed to a less noisy, more pleasant working environment and improved safety as accidents due to noise-related miscommunication were prevented.

With these substantiating measures in place, DSM are able to confidently communicate the social benefits of synthetic link chains with Dyneema® in marketing material with customers and on their Dyneema® website.

9 Interpretation

9.1 Purpose and overview

The results of the PSIA study must be interpreted according to the set goal and scope of the study. This interpretation should include a data quality assessment and a sensitivity check of the significant inputs, outputs and methodological choices in order to understand the uncertainty of the results.

Depending on whether the study is aimed at external communication (see communication contexts in Chapter 3.2), a transparent description of data collection procedures, data quality limitations and data gaps is needed. Moreover, the limitations of the study and its uncertainties must be clearly identified and documented.

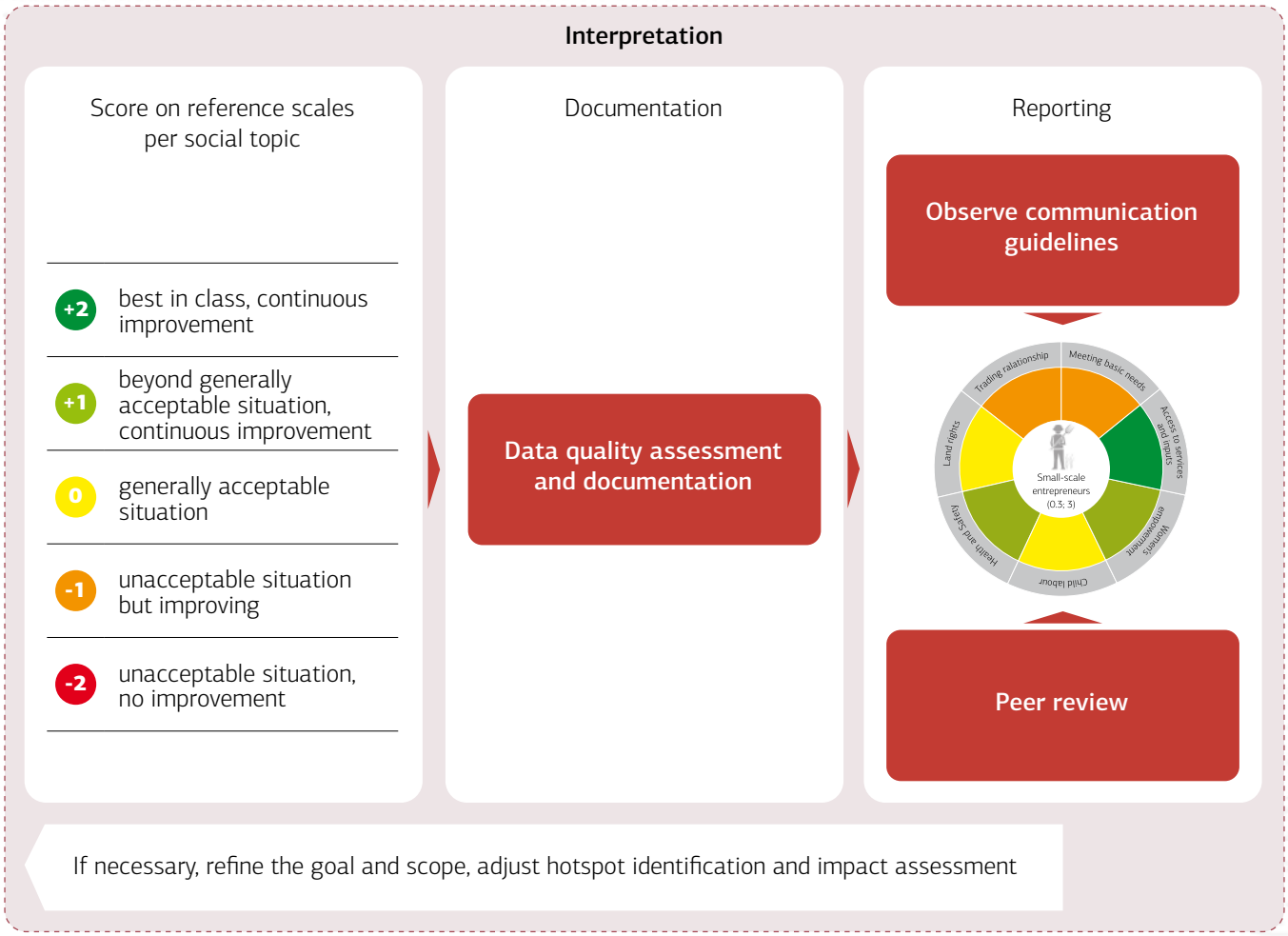


Figure 9.1: The interpretation step

9.2 Data quality assessment

Poor data compromises the quality and the reliability of the assessment and leads to uncertainty about the results. Since a complete and perfect life-cycle dataset does not exist, practitioners need to assess and document the quality of the data that relate to the most critical life-cycle stages. To determine the quality of the data, practitioners need to assess it for reliability and robustness by using a data quality matrix, such as the one in Table 9.1. Data quality matrices are a concept taken from environmental LCA (Weidema et al.).

There are three main criteria for judging data quality:

1. The accuracy, integrity and validity of the source: whether the data is reviewed, well documented, etc. Primary and secondary data sources have different characteristics.
2. The timeliness or age of the data.
3. The correlation and representativeness of the data. Sometimes, data is available from one or two companies, but not the companies the materials are sourced from. Other times, the available data from one or two companies represents just a small part of the total group of companies or small-scale entrepreneurs, etc.

The five rows in the matrix indicate the different data quality levels. Level 1 represents the best possible quality level, and level 5 represents the lowest quality level.

The data assessment procedure is as follows:

1) Check for each actor and process for each topic what the data quality score is on the three criteria. This results in three numbers, for example:
   a) For a primary data source, a score of 1,3,2 indicates that data was independently reviewed, is two years old, but actually does not come from the company under assessment but from another company in that region, so it may not be completely representative.
   b) For a secondary data source, a score of 4,2,4 indicates that the data is based on claims that are a year old, found on the internet about actors in the region.
2) Calculate the average score. For the first example this is (1+3+2)/3=2 and for the second example this is (4+2+4)/3=3.33. This means the aggregated data quality score is 2 in the first case and 3 in the second.

For studies in a certain communication context (see Chapter 3.2), the data quality may not be below 3 on any of the three main criteria. In other cases, the average data quality may not be below 3.

Criteria		Accuracy, integrity and validity		Timeliness[19]	Correlation, representativeness
Score		Primary data	Secondary data		
1	Data on hotspots Must always score 3 or higher on all criteria	Independent third-party verified data	Reports from more than one well-established independent organisation	Data from current reporting period	Data from specific site under study
2		Non-verified internal data with documentation or verified data partly based on assumptions	Report from a well-established independent organisation	Data from previous reporting period	Data from other sites of the company in the same region
3		Non-verified data partly based on assumptions or data based on grey scientific report	Independent but similar claims made by various sources	Data from 2 years before reporting period	Data from relevant sites of the company in other regions
4	Acceptable for internal use only	Qualified estimate (e.g. by expert) or data based on non-scientific report	Unverifiable and incidental claims found on websites, news outlets and twitter	Data from 3 years before reporting period	Data from other companies in same region with similar production conditions
5		Non-qualified estimate or unknown source	Non-qualified estimate or unknown source	Data from more than 3 years before reporting period or unknown age of data	Average sector or country data from public or third-party database provider

Table 9.1: Data quality matrix

9.3 Peer review

Especially when communicating to the general public, a peer review by an independent panel of experts is required. The guidelines in the ISO 14071 standard provide good guidance. In B2B communication, a review by a single independent expert may be sufficient.

9.4 Communication guidelines

Practitioners have to be cautious when communicating the results of an PSIA study and inform the readers of the potential limits of these results. The study's communication context (Chapter 3.2) and the ISO 14044 standard's General Requirements and Considerations for Reporting (Chapter 5.1) should be taken into account:

'The results and conclusions of the LCA shall be completely and accurately reported without bias to the intended audience. The results, data, methods, assumptions and limitations shall be transparent and presented in sufficient detail to allow the reader to comprehend the complexities and trade-offs inherent in the LCA. The report shall also allow the results and interpretation to be used in a manner consistent with the goals of the study.'

[19] This is not applicable for communication referring to the user stakeholdergroup

9.5 Aggregation of results

In previous versions of this Handbook, our quantitative assessment method resulted in a simple aggregation of social topic values per stakeholder group and a simple average score of all the social topics. However, this quantitative assessment approach had some severe drawbacks when used on social topics (see the introduction of the Methodology report). The core idea in the previous Handbook is that the scores are simply added and subtracted per topic over all actors and processes in the value chain. This makes the assumption that a score of minus 2 is twice as bad as a score of minus 1, and that plus two is twice as good as plus 1, which is of course somewhat artificial and potentially misleading.

A potentially very promising approach has been explored with the support of the roundtable members Nestlé, Solvay and ArcelorMittal, and the CIRAIG[20] to link the 5 point scores with an impact valuation approach, as this would combine the relative ease of data collection (in comparison to fully quantified data collection) with the ability to inform management on the societal costs of a decision.

The full report of this research can be found on the Roundtable website, and a summary is provided in textbox 9.1. From the onset it was clear that this research should be seen as an experiment and that more work would be needed in this area.

Textbox 9.1: Example of impact valuation

The exercise carried out in connection with the potential impacts associated with the activities of a palm oil producer in Papua New Guinea is a good illustration of the proposed method. The application illustrated in this textbox concerns the social topic Meeting Basic Needs (4.1) of the Small-Scale Entrepreneurs' (SSE) stakeholder. The figure below illustrates the Theory of Change associated with the case study.

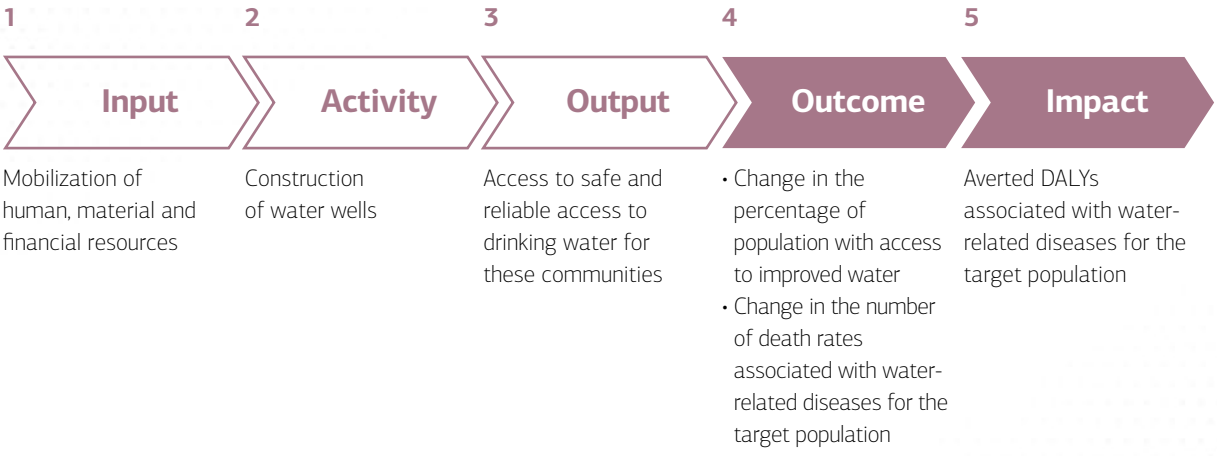


Figure 9.2: Theory of Change applied to the illustrated case study

[20] www.ciraig.org

The logic to follow the approach developed by this experiment is divided into three generic steps which can be consulted in the table below.

Step 1
Formalize the impact pathways and determine the performance indicators with the greatest potential for documenting a statistical correlation and monetization factor on the basis of existing data in international databases.
Step 2
Identify these three key elements: • The variable that will serve as a qualitative descriptive for the reference scale of the concerned social topic based on the performance indicators already defined in the handbook; • A monetizable variable which is significantly correlated with the performance indicator used to build the reference scale; • The placement of the levels of the reference scale on the basis of the documented data for the selected indicator (quintile approach).
Step 3
Analyze the performance of your organization compared to the reference (regional or sectoral) of the reference scale.

Table 9.2: Generic steps of the approach

The figure below illustrates step one for the application to our case study. This exercise has made it possible to glimpse the variables—or proxies if needed—that could be selected to align with a performance indicator which contributes to the social impacts of the organization.

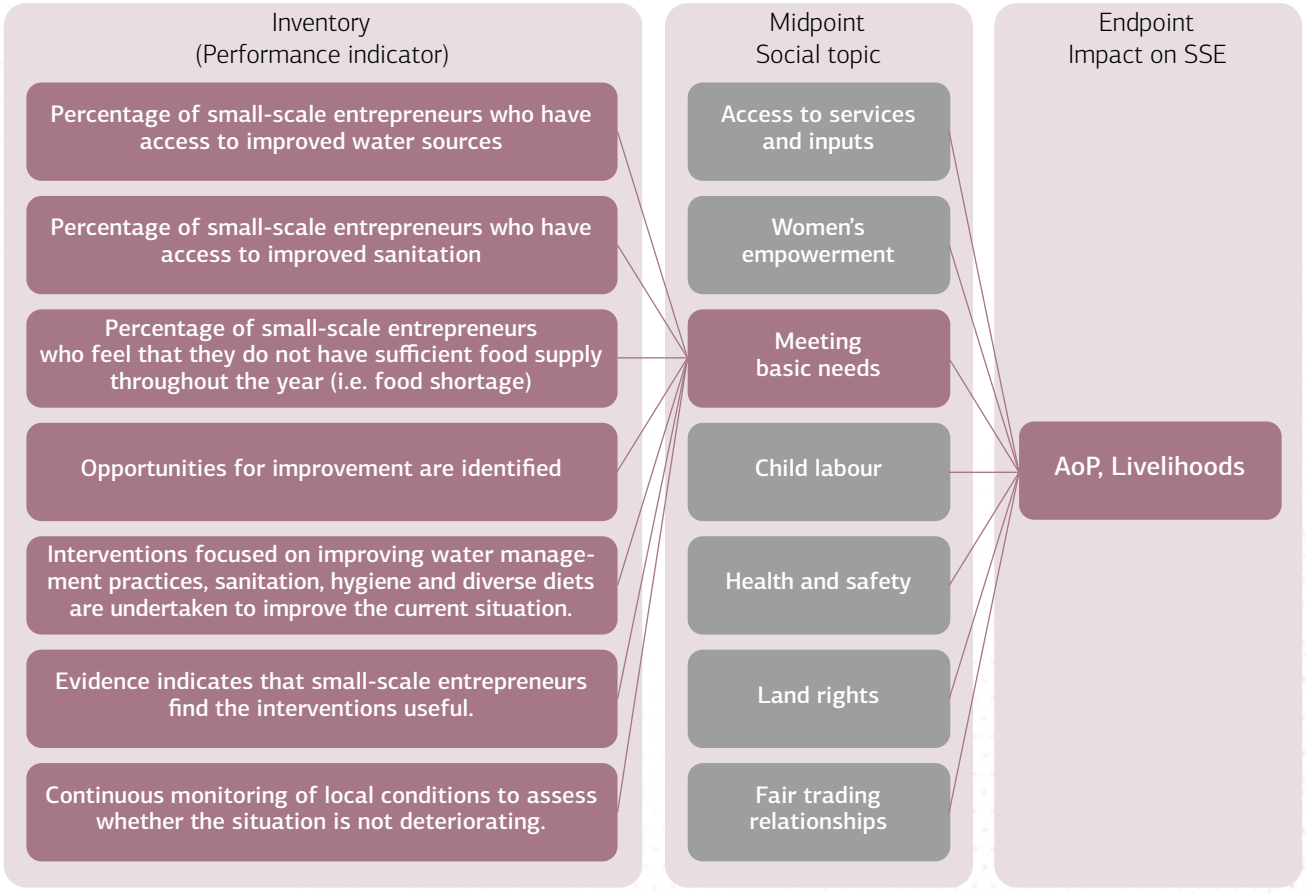


Figure 9.3: Handbook's Impact Pathway Model for the social topic of Meeting Basic Needs (4.1)

The application to our case study, throughout step two (in Table 9.2), allowed us to set the **percentage of small-scale entrepreneurs who have access to improved water sources** as the qualitative descriptive that would help build the reference scale. Then, generic data obtained via the WHO / UNICEF Joint Monitoring Program for Water Supply (limiting us to the percentage of access to improved water) made it possible to construct the following reference scale, aligned as far as possible on the one proposed in the Handbook (2018 version).

Scale levels	Level discription
+2	99% or more of the regions' SSE has access to improved water sources
+1	Between 97% and 99% of the regions' SSE has access to improved water sources
0	Between 95% and 97% of the regions' SSE has access to improved water sources
-1	Between 60% and 95% of the regions' SSE has access to improved water sources
-2	<than 60% of the regions' SSE has access to improved water sources

Table 9.3: Reference scale on the qualitative descriptive variable

In regard to the monetizable variable for which the literature and our data showed a significant correlation we have retained "number of deaths associated to water related diseases per capita (per 100,000 inhabitants)". In 2017, deaths associated to water related diseases in Papua New Guinea resulted 4 509 DALY per year (IHME,2020).
All the sub-steps constituting the generic step three (in Table 9.2) were then carried out. For this example occurring in Papua New Guinea, the current average country performance was taken as the baseline performance level (percentage of access to improved water is 41.3% (WHO and UNICEF, 2015)). This is associated with a performance level of -2 (minus two). The palm oil production company has carried out activities to improve the access to drinking water for the small-scale entrepreneurs with whom it does business. This has increased the percentage of access to improved water source to 95% for the small-scale entrepreneurs (SSE) of the region where the initiative takes place. This places NBPOL's performance at level 0 on the reference scale.

Linking the ranks of the reference scale to the monetizable unit (DALYs associated to water related diseases), we build a new scale which assigns the mean value performance in DALY from each quintile of our generic dataset to each of the scale's rank (Level -2 to +2). The result obtained is presented in the table below.

Level +2	Level +1	Level 0	Level -1	Level -2
339	728	781	4097	11,417

Table 9.4: Reference scale levels by mean rates of DALYs associated to water related diseases

It was therefore possible to determine the difference between the region's average performance and the measured performance for the palm oil production company, which is measured by the equation below:

$$4510\ (measured\ performance) - 781\ (Level\ 0\ mean\ rateperformance) = 3729\ (amount\ of\ averted\ DALYs)$$

The rate of DALYs per capita is measured by the equation below:

$$\frac{(3729\ (amount\ of\ averted\ DALYs)}{(100\ 000\ (inhabitants))} = 0.03729$$

The palm oil production company does business with 19,614 small-scale entrepreneurs who could potentially be affected by the organisation's initiative. The amount of averted DALYs per year for these entrepreneurs is represented in the equation below:

$$19{,}614\ (SSE\ affected) * 0.03729\ (rate\ of\ DALYs\ per\ capita) = 731.40\ (potentially\ averted\ DALYS\ per\ year)$$

The previous potentially averted DALYs sum can then be converted into a financial value using a basic rule of thumb stating that the value of an averted DALY equals one third of the GDP per capita. Using the 2018 World GDP per capita in current USD which is 16,975.92 USD, we end with a value of a DALY of 5,658.64 USD. The equation below would represent the potential annual monetized value of the initiative:

$$731.40\ (potentially\ averted\ DALYs) * 5658.64\ USD\ (value\ of\ a\ DALY) = 4\ 138\ 725.64\ USD$$

While much more work will be needed in this area we have not yet found a better solution, other then suggesting some visualisation methods. In textbox 9.2, BASF describes how they do aggregation.

Textbox 9.2: Example of aggregation of risk scores with the BASF Seebalance® method

The SEEbalance® method is a good example of how aggregation of scores can be done within an assessment. First, risk scores are assigned for each of the impact categories (chosen from the social topics in the Handbook), which are then used to calculate the overall average result for a country. In cases when the process step takes place in more than one country, a production-weighted average score all the relevant country risk profiles is calculated. For an example of the various types of social profiles that can be found in a SEEbalance® assessment, see Figure 9.3. When the process step is done in multiple countries or companies, the results are displayed as a spread in the four risk categories. The results indicate the percentage of risks that fall within each category. The results also highlight the countries or companies that present the main risks along the product supply chain.

Social Life Cycle Assessment

Step 1 – Company level

Type "**C**" – single company

Process step 1	C
Company 1	low risk
7,6	

Type "**CA**" – companies average

Process step 2			CA
Several companies			medium risk
5,5			
18%	33%	32%	18%
Company K	Company D	Company A	

Step 2 – Industry/country level

Type "**R**" – single country

Process step 3	R
Country 1	very high risk
2,3	

Type "**RA**" – countries/industry average

Process step 4			RA
Several countries			high risk
4,1			
5%	13%	71%	11%
Country G	Country P	Country D	

All types of social profiles (C, CA, R, RA)
Line 1 Name of Process step and Type of social profile
Line 2 Name of Company, Country or Industry and Risk category
Line 3 Risk score or average risk score - color code

Types of average social profiles (CA, RA)
Line 4 Spread of companies or countries in the four risk categories
Line 5 Main risk companies or countries (company or country score is below average)

Figure 9.4: Example of different risk profiles assessed with the SEEbalance® method

Textbox 9.2: Continuing from previous page

In the following example, the Social LCA method was applied to compare two different processes to produce chemicals used in different premixes as materials for feed production. In general, it is possible to compare the fermentation and an extraction processes. The basis for the assessment is the system boundary definition for each process. Every single life-cycle step is described in textbox 6. All single results were expressed in colour codes that show were the main social risks are. This overview is a good basis for a hotspot assessment.

Life-cycle steps can be highlighted and discussed in detail. For example, the step 'Sugar world', where sugar production statistics of countries are linked with Verisk Maplecroft™ results. The single results are aggregated to a final numeric result, a colour code and an overview that splits contributions of countries into four risk classifications. That allows decision makers to get a good overview and helps assess the level of risk in general for this life-cycle step (Figure 9.5).

Sugar world

includes countries upto rank				10		
country	production volume	unit	share	rank	country average risk	weighted rank
sum	1.558.000,0	TNT				
Country 1	740.000,0	TMT	47,4%	1	3,6	
Country 2	340.000,0	TNT	21,9%	2	3,0	1
Country 3	125.000,0	TNT	8,0%	3	2,6	2
Country 4	100.000,0	TNT	6,4%	4	3,7	
Country 5	63.000,0	TNT	4,0%	5	2,1	3
Country 6	61.000,0	TNT	3,9%	6	4,1	
Country 7	35.000,0	TNT	2,2%	7	4,3	
Country 8	34.000,0	TNT	2,2%	8	3,5	
Country 9	32.000,0	TNT	2,1%	9	4,3	
Country 10	28.000,0	TNT	1,8%	10	5,7	

Sugar	high risk 3,4		
0%	2%	94%	4%
Sugar world			RA
Country 2, country 3, country 5			

Figure 9.5: Example assessment of regional averages (RA) and transfer to overview results

For companies where no Ecovadis results are available, an assessment based on the Reprisk information and additional in-depth research based on information and publications of the company can be displayed in an overview graph, aggregated to a result for the company (Figure 9.6).

stakeholder group	impact categroy	selection of indices	Incident		Incident		In case of no incident			
							Transparent management process			
			yes	no	confirmed	unconfirmed	policy	implement ation	practices	grievance
worker	health & safety	Occupational Health and Safety Issues		1			1	1	1	1
worker	fair wages	Poor Employment Conditions		1			1	1	1	
worker	no child labour	Child Labor		1						
worker	appropriate working hours	Poor Employment Conditions	1		1					
worker	no forced labour	Forced labour		1						
worker	freedom of association	Freedom of Association and Collective Bargaining		1						
worker	no discrimination	Discrimination in Employment		1			1	1	1	1
local communities	healthy & safe living conditions	Impacts on Communities		1			1	1	1	
local communities	security & conflict	Human Rights Abuses, Corporate Complicity		1						
local communities	land & property rights	Local Participation Issues		1						
consumer	healthy & safe products	Products (Health and Environmental Issues)		1			1	1	1	

Company C	medium risk 6,9
Company C	C

Figure 9.6: Example assessment of a company (C) and transfer to overview results

Textbox 9.2: Continuing from previous page

All single results are aggregated in an overview sheet, showing the results for all single life-cycle steps. Figures 9.7 and 9.8 show the results of the two different process alternatives.

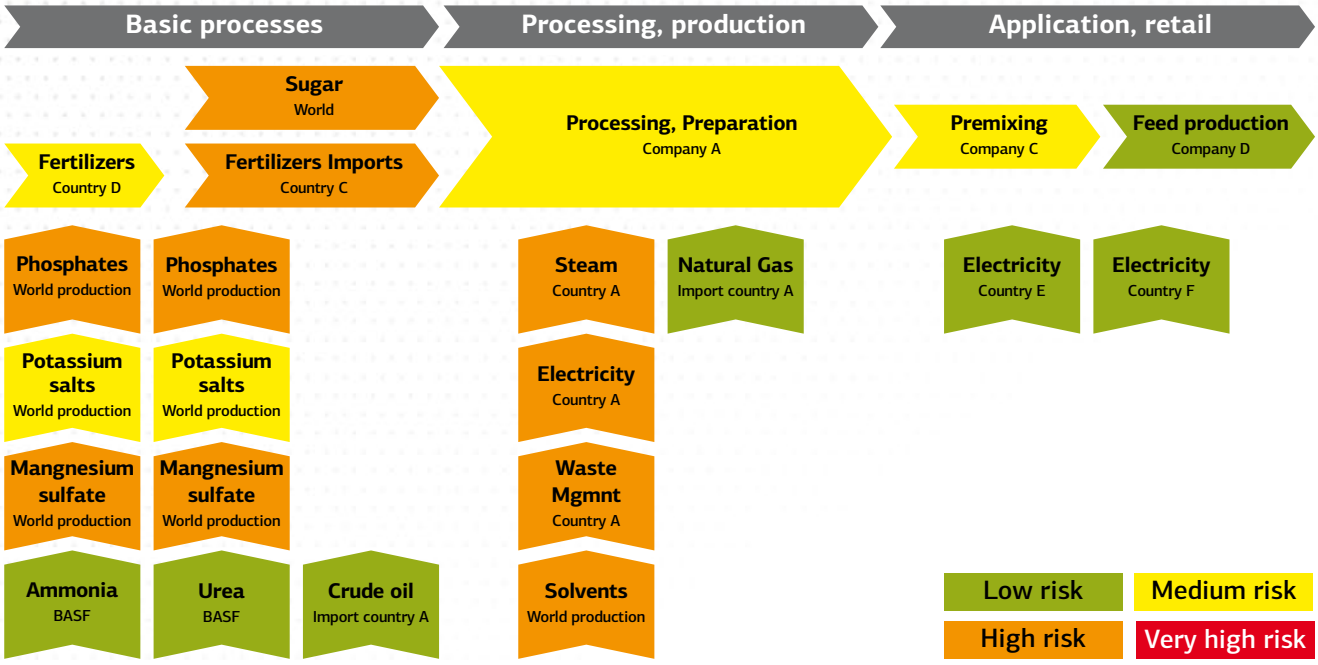


Figure 9.7: Social LCA for an illustrative fermentation process

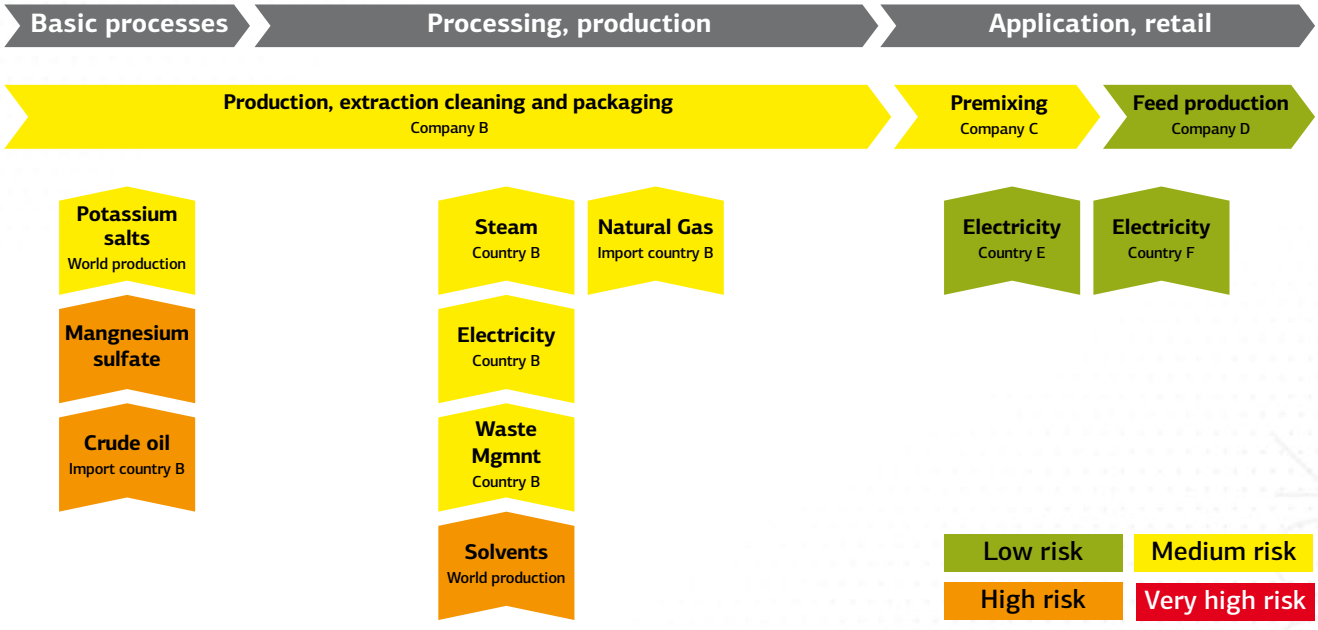


Figure 9.8: Social LCA for an illustrative extraction process

9.6 Visualising the results

In this paragraph several examples are given how resultst of PSIA can be visualized. Most of the illustrations show results with the social topics as they were defined in the Handbook 2018. Figure 9.9 presents fictional results for the social topics of each of the stakeholder groups – workers, users, small-scale entrepreneurs and local communities. The illustration format also shows an average score for the stakeholder group and a data quality score. For example, the average social score for users is 0.5 with a data quality score of 1, shown in the illustration as (0.5;1). Data quality assessment is discussed in Chapter 9.2.

These figures are presented only to suggest one way of how to communicate the result of PSIA studies. The figures provide a brief overview of the results for each of the stakeholder groups. The different widths of the social topics in different figures do not reflect their importance but result from the number of social topics considered for each stakeholder group.

+2	best in class, continuous improvement
+1	beyond generally acceptable situation, continuous improvement
0	generally acceptable situation
-1	unacceptable situation but improving
-2	unacceptable situation, no improvement

Figure 9.9: Illustrated fictional results for each of the stakeholder groups

Illustration of the results along a product's value chain can be complex. To maintain the transparency of the results and keep a high level of detail, we suggest to display illustrations for each of the life-cycle steps and assessed stakeholder groups.

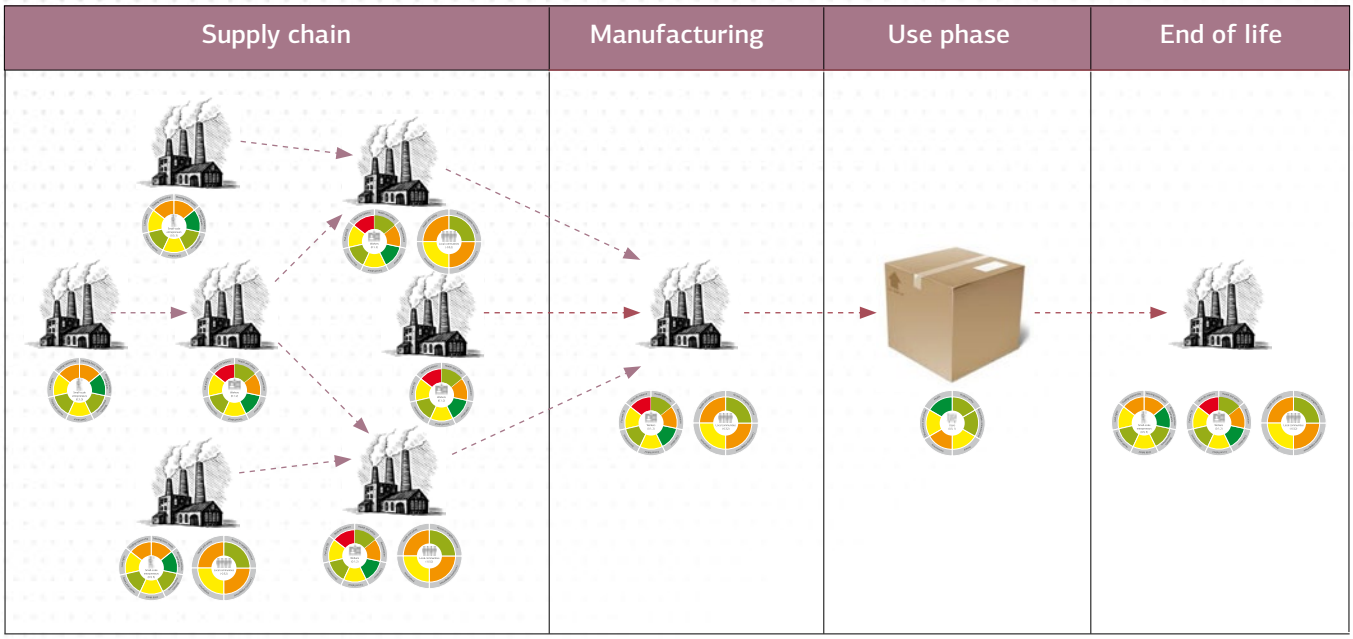


Figure 9.10: Illustrated fictional results for each of the assessed stakeholder groups

Figure 9.10 presents another way of presenting the results of an assessment. The (fictional) results show the performance levels for two different scenario's for the social topics that were in scope for the stakeholder groups local communities and workers. Another approach for the comparison of alternative process routes is described in textbox 9.3 by BASF.

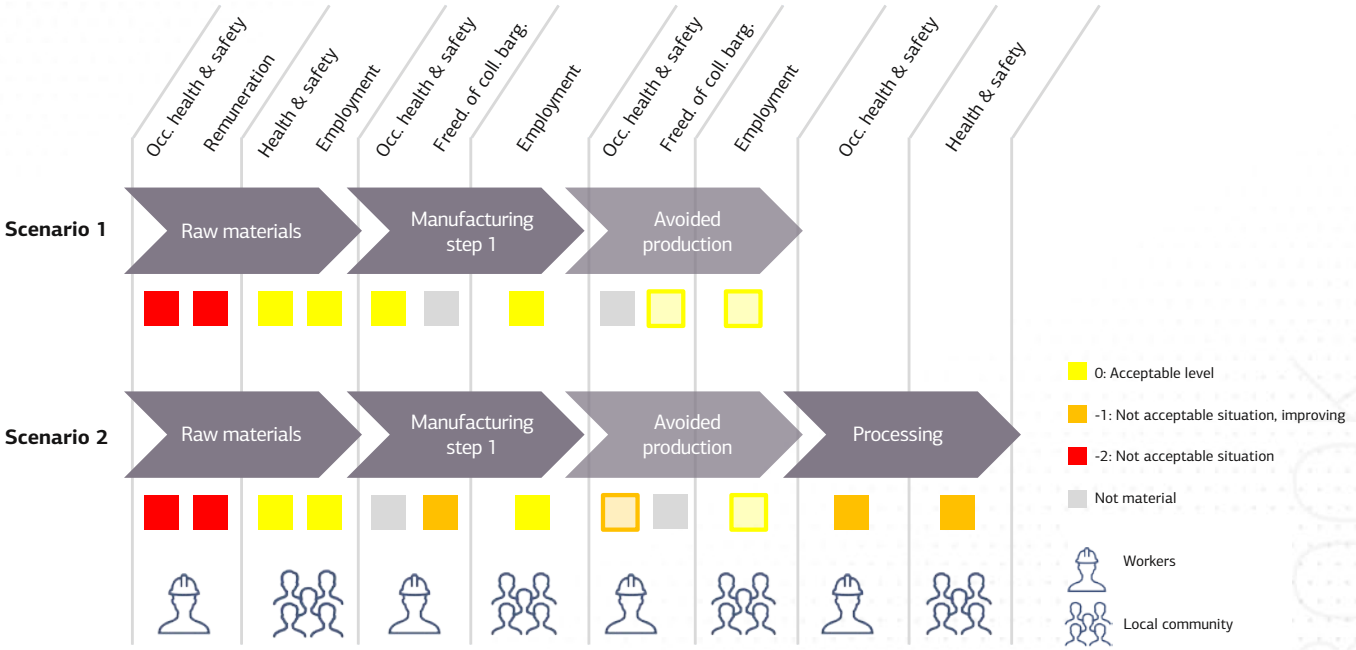


Figure 9.11: Illustrated fictional results for each of the assessed stakeholder groups

Other visualisation techniques may also be used to illustrate the results: heat maps, linking the assessment results with Areas of Protection or the UN Sustainable Development Goals. In the Methodology Report, we outlined the business impact on stakeholders and the various types of capital needed to support the wellbeing of stakeholders. The link to the Areas of Protection can be used to interpret the result and to provide additional context to the assessment.

Textbox 9.3: Interpretation and illustration of results from Social LCA within the SEEbalance® method

The SEEbalance® method offers another example for illustrating comparative PSIA studies. To interpret comparative results, the SEEbalance® method presents the two alternatives and their average risk score for all the process steps and the splits per individual process step. Within the figure, the lowest scores indicate the worst alternatives. The process steps are shown from worst to best for each of the alternatives. It should be noted that visual comparison is only possible for alternatives with a comparable number of process steps. The four-step approach of the interpretation combines both graphical information (Figure 9.11) and numeric information (Figure 9.12). In the graph, the results clearly show the advantages of the extraction process. In all differentiating steps, the extraction process has better results than the fermentation.

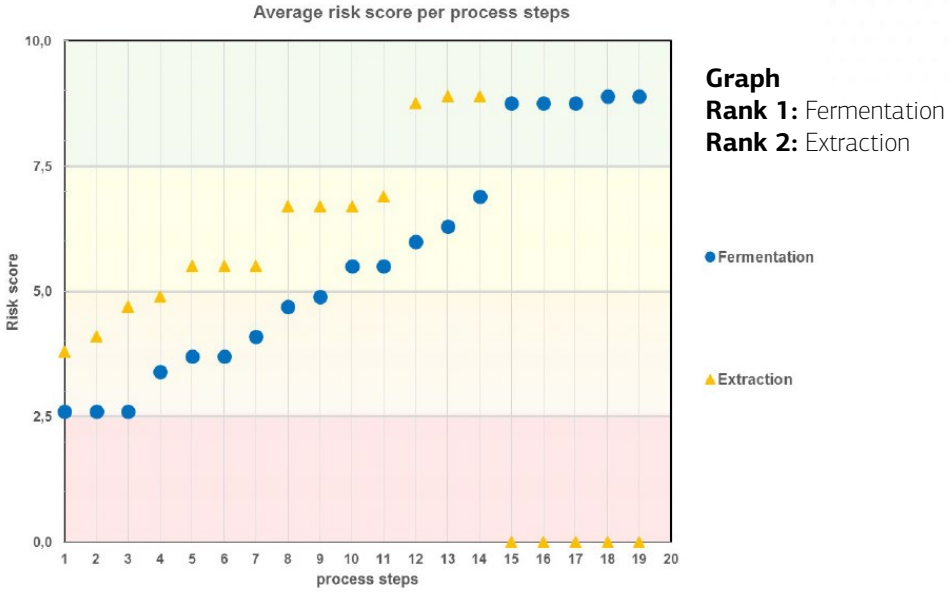


Figure 9.12: Graphical comparison of alternative approaches

The numeric assessment shows the same direction of results. The number of steps with high and medium-high risk is much higher for the fermentation than for the extraction process. Even if the fermentation process has a higher number of low-risk steps, from a risk perspective, the number of high and medium high-risk steps exceed the low-risk steps.

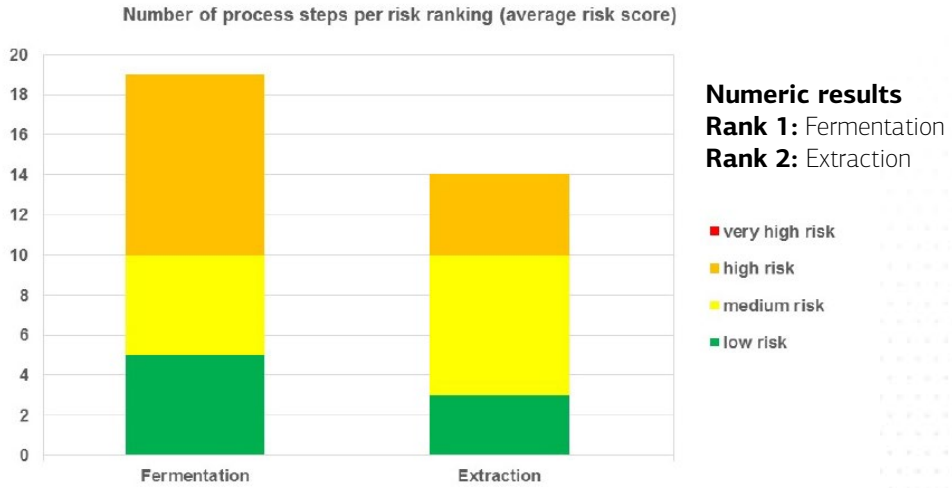


Figure 9.13: Example of the social LCA for an illustrative extraction process

In total, the extraction process is rated and ranked better than the fermentation process. All gathered information is used to come to final conclusions, which can be used in the decision-making processes.

Textbox 9.4: Results of the hotspot analysis for the DSM casestudy Akulon RePurposed

The whole case study can be found on the website. The pupose of this textbox is to give an example of a visualisation of an hotspot analysis.

This visualisation gives an overview of the results for different stakeholder groups, the different process steps in the value chain and counted risk levels. The counted risk levels are shown by the size of the box where the risk level is highlighted. The breakdown is represented by each ring within the diagram, starting with country level, stakeholder group and process step in the value chain. Each process step contains all social topics assessed belonging to the stakeholder group represented.

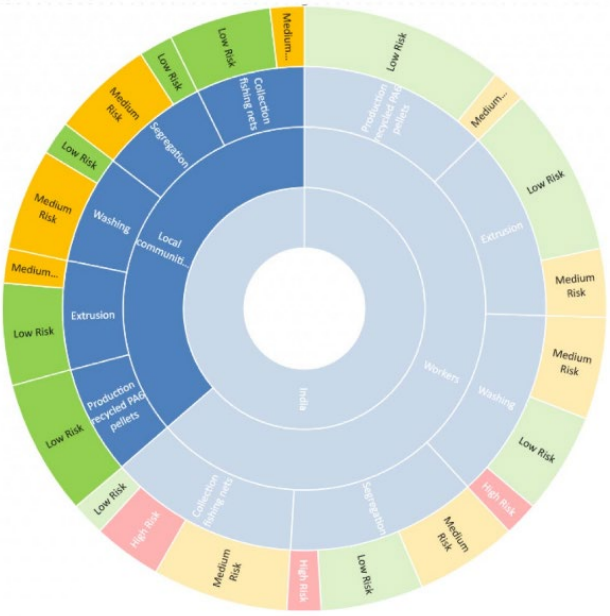
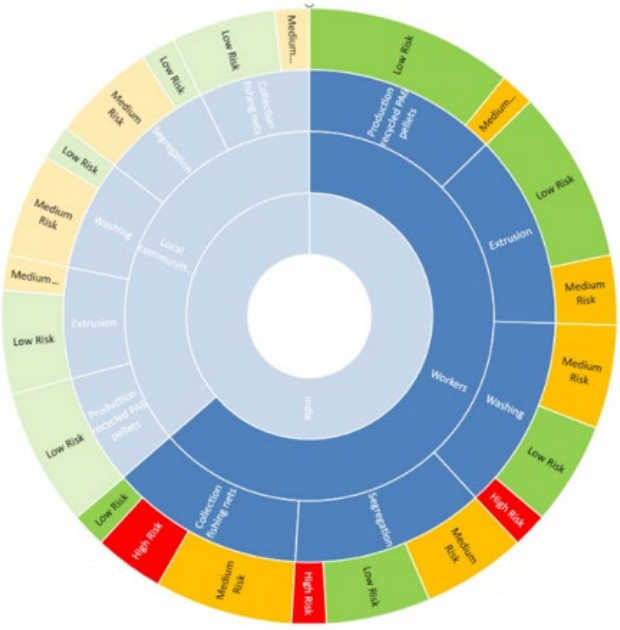


Figure 9.14 presents the results for the stakeholder group local communities at the production phases: e.g., the total of risk level at the recycling phase for the pellets results in low risk because all social topics result in low risk scores after the risk level assessment. At the extrusion phase, two risk levels are highlighted with a larger box for low risk, which means 3 out of 4 social topics were assigned a low risk score.



In Figure 9.15 workers are assessed in the different phases. For example at the phase of the collection of fishing nets phase three risk levels are highlighted for seven social topics which belong to the workers stakeholder group, where 4 social topics received medium risk score, 2 received high risk score and 1 received a low risk score.

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Product Social Impact Assessment

Roundtable for Product Social Metrics

More background information about the Handbook and the development process is available on **www.product-social-impact-assessment.com**

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