

# Data collection guideline for SDG screening case studies

For the UNEP Life cycle Initiative project: "Linking the UN Sustainable Development Goals to life cycle impact pathway frameworks"



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Prepared by: PRé Sustainability  
Rosan Harmens, Ellen Meijer, Shaniq Pillay

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PRé Sustainability B.V.

Stationsplein 121

3818 LE Amersfoort

The Netherlands

T +31 33 455 50 22

E [consultancy@pre-sustainability.com](mailto:consultancy@pre-sustainability.com)

W [pre-sustainability.com](http://pre-sustainability.com)

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# 1 Introduction

This document is part of the project “Linking the UN Sustainable Development Goals to life cycle impact pathway frameworks”. The project was initiated by the UN Life Cycle Initiative to create robust links between the SDGs and LCA and to develop a methodology for measuring and reporting on companies’ contributions to the SDGs. The project is under administration of OnePlanet and is being executed by 2.-0 LCA Consultants and PRé Sustainability.

More about the project and its context can be found in Harmens et al., 2021.

This document provides the guidelines for data collection for the life cycle SDG screening methodology and aims to support companies that want to apply the methodology.

## 1.1 Determine the application context

Within this project, two different application contexts can be distinguished. This is based on the observation that companies can have different goals and reasons for analyzing or reporting on their contribution to the SDGs. Within the project, two main contexts are observed in which companies want to link the SDGs to environmental and social LCA (Weidema et al. 2018):

1. When companies want to reuse their existing LCA procedures and results but also want to understand which products and impact categories generally contribute to which SDGs, a **life cycle SDG screening** (LCSS) can link their LCA results to the SDG targets in a qualitative way.
2. Companies that desire to go beyond existing LCA indicators and toward a more comprehensive integration of SDG indicators can do a **life cycle SDG assessment** (LCSA) instead. Such an assessment quantifies the impact pathways and makes the contributions to the SDGs comparable by tracing all impacts to the ultimate endpoint of sustainable wellbeing. This allows organizations to calculate *how much* their product contributes to each SDG, target and indicator, as well as to overall sustainable wellbeing.

A first step for applying the SDG methodology is to determine whether you want to do a lifecycle SDG screening, or a lifecycle SDG assessment. More about the two approaches can be found in the publication of the preliminary findings of the project (Weidema et al, 2020), as well as in the final publication for the SDG screening (Harmens et al, 2021). The type of results and the required data differ between the approaches.

The goal of the study determines whether you need a SDG screening or a full SDG assessment. Determining whether you need an SDG screening or and SDG assessment is therefore part of the goal and scope definition of your overall SDG study. It involves different considerations, and should be determined on a case by case basis. It’s also possible to follow both approaches. For example, starting with an SDG screening and then diving deeper into relevant parts of the product life cycle with the assessment.

The rest of this document focusses on the **life cycle SDG screening**.

## 2 Steps for life cycle SDG screening

The steps of the SDG screening are similar to those of a regular LCA study. An LCA, as described in the ISO standards 14040 and 14044 (ISO, 2016a; ISO, 2016b), consists of the following four stages, and so does the LCSS:

1. Goal and scope definition
2. Inventory analysis
3. Impact assessment
4. Interpretation

This document focuses on stage 1 and 2. The final report describes these phases in more detail (Harmens et al, 2021). This data collection guide focusses on providing additional guidance on the goal and scope definition and inventory analysis. For further guidance on the regular aspects of LCA, please refer to ISO standards 14040 and 14044 (ISO, 2016a; ISO, 2016b). For the social LCA, please refer to Product Social Impact Assessment Handbook 2020 method for social impact assessment (Goedkoop et al, 2020) and the Methodology Report 2018 (Goedkoop et al, 2018b) for the details about the social assessment methodology.

## 3 Goal and scope definition

This chapter provides more detail about defining the goal and scope for the SDG screening. This is the first step of the SDG analysis. The goal and scope stage determines the most important elements of the SDG study, such as the reason for executing the study, a definition of the studied product and its life cycle, and a description of the system boundaries. As described in chapter 1, part of the goal and scope is to determine your application context. The rest of this chapter builds further on the case when you have already determined that you want to start with the SDG screening.

### 3.1 Define the goal for your SDG screening

The first step of the SDG study is to define the goal and scope. Examples of goals that can be achieved with the SDG screening are:

- **To understand *which* SDG or SDGs your product is currently contributing to.** This can support the development of a (company-wide) strategy for SDG contribution, and the choice of which SDGs to focus on as an organization.
- **To determine if and how the contribution of your product to certain SDGs has changed over time.** This ongoing impact monitoring allows a company to check whether development efforts are indeed having a positive impact on the SDGs a company is targeting.
- **To support working toward an increased positive contribution to an SDG or SDGs.** The information can show the R&D department how their work affects the company's contribution to the SDGs, allowing them to focus their efforts on those aspects that matter most for improving the contribution to the SDGs.
- **To support communication about SDG contribution.** The information can be used to back up your claims regarding SDGs, which strengthens the credibility and trustworthiness of SDG reporting.

This list is not exhaustive, but it communicates the essence: the SDG screening approach can be used to make a qualitative analysis of a product to determine if it may potentially be a detriment or a benefit to one or more SDGs. It is important to stress the word *potentially*: since this is a screening method, there are inherent limitations to robustness and detail.

#### 3.1.1 Output of the goal definition:

The output of the goal definition should be a description of your goal that contains at least the following aspects:

- The goal of the SDG study and the reason for carrying out the study
- The intended application
- The intended audience
- Whether you want to use the results for external communication

Questions to ask in the process of defining the goal are included in Annex A, which contains a template for determining your goal and scope.

## 3.2 Define the scope

After describing the goal of the SDG screening, the next step is to define the scope. The scope definition of the SDG screening should contain the same elements as that of a regular LCA, and extra elements that are of importance for the SDG screening methodology. This section provides mainly guidance for those elements that are specific to the SDG screening.

### 3.2.1 SDGs under study

Depending on the goal, your study may cover all SDGs or only focus on a subset of them. In case a selection of SDGs is done, the reasoning behind this needs to be provided. The scope of the SDGs also impacts the environmental and social impact categories that need to be in scope (see 3.2.3). We want to highlight two possible situations to illustrate the influence of the goal on the scope of the SDGs, and consequently on the impact categories:

1. If your goal is to get a general idea of which SDGs your product is contributing to, you will need to include **all SDGs** in the scope of the study. This also influences the scope of environmental and social impacts that are to be included in your LCA results: all categories that have a link with the SDGs that are in scope, should be included. Consequently, it can be the case that you can use part of your existing LCA results (see *data requirements and availability of LCA results*), but that you may have to collect additional data during the inventory phase. Note that non-material social topics can be seen as a 0-score in the assessment step.
2. If you have a **specific set of SDGs** you want to analyze, only those impact categories that have a relevant link with these SDGs have to be included in your LCA results. This can be the case when your company has already selected the SDGs that are most important based on a materiality assessment, and you want to illustrate the contribution of a product to these selected SDGs in more detail.

In addition, the SDG screening approach provides results on two levels:

1. For each of the Sustainable Development Goals
2. For each of the targets of each Sustainable Development Goal

At this stage, it is worth considering whether your goal requires results on SDG goal level or SDG target level.

### 3.2.2 System boundaries

In the scope definition you describe the product that you are analyzing, as well as the parts of the lifecycle of the product that are in scope. Since the LCSS covers both environmental and social aspects, this should be supplemented with the relevant stakeholders (see the Handbook for Product Social Impact Assessment for further guidance). The system boundaries can be described in the form of a flow chart, see for a simplified example Figure 1.

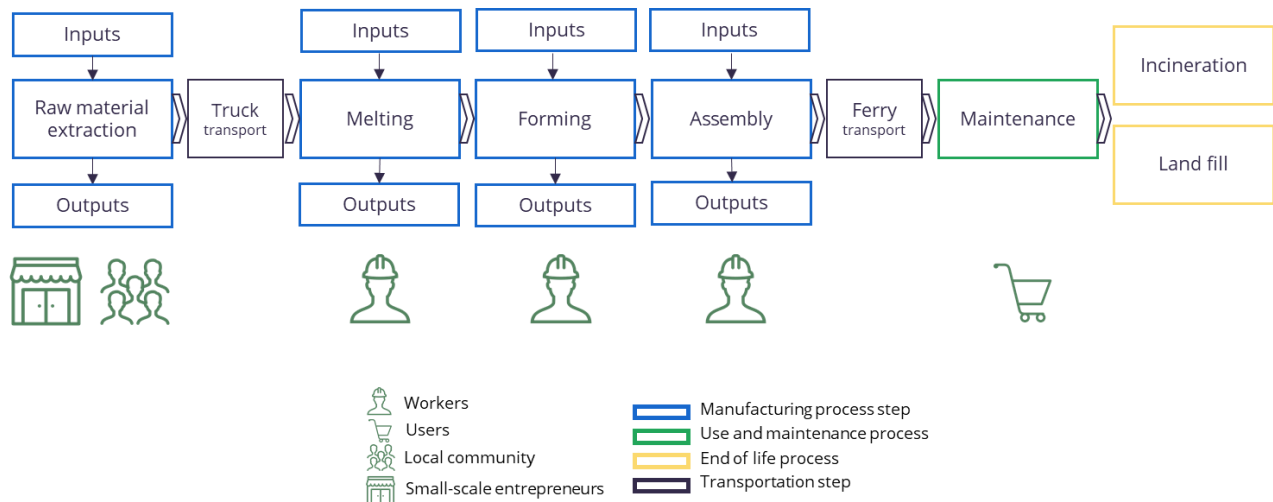


Figure 1 Simplified example of a flow chart of a product life cycle indicating the main processes and a first indication of the stakeholders

The rationale of the system boundaries should be documented clearly. The Handbook for Product Social Impact Assessment (Goedkoop et al., 2020) provides guidance that can be used for determining the processes that are most important. The following questions can be asked to determine the (social, environmental or SDG related) significance of a supply chain step:

- Does the process occur in a country with known human right violations or social risks? This is mainly relevant for social topics, but can also be used to make a selection of potentially relevant SDGs.
- Is the process known to present risks to stakeholders due to the nature of the activity?
- Are there specific risks resulting from a supply chain actor company's structure or organization?

Furthermore, the following aspects can be considered to determine what is in and out of scope:

- A rough estimate of the (social, environmental or SDG related) impacts using databases or other resources
- Consider mass or other physical parameters as a basis for the system boundaries
- Consider the economic added value of processes
- In the case of workers, consider an estimate of the worker hours

All activities in the supply chain that influence the impact categories and SDGs that are in scope (see 3.2.3) need to be included in the scope as well. It is therefore good practice to reference the list of impact categories that influence each of the SDGs under study at this point, to make sure all relevant processes and stakeholders are covered in your system boundaries.

It's possible that certain processes and/or stakeholders, or SDGs are not applicable to your specific supply chain, for example that there are no small-scale entrepreneurs involved. If this is the case, they can be left out of scope. However, this needs to be documented and a clear and convincing reasoning needs to be provided.



### 3.2.3 Impact categories and impact assessment methods

By default, all impact categories that are linked to the SDGs you want to analyze, have to be in scope of the assessment. In some cases it is possible to exclude impact categories from the assessment, for example if they are related to stakeholders that are not relevant in the lifecycle of your product, or if a social topic has shown to not be material in the social impact study. If impact categories are left out of scope, it should be clearly documented.

The SDG screening already prescribed the impact assessment methods that are to be applied. For the environmental topics these are the EF 3.0 method (Zampori & Pant, 2019)<sup>1</sup> and ReCiPe 2016 (Huijbregts et al, 2016). For the social topics, the Product Social Impact Assessment Handbook 2019 and 2020 method for social impact assessment (Goedkoop et al, 2018a, Goedkoop et al 2020)<sup>2</sup> is used.

### 3.2.4 The reference product

To determine whether or not a product contributes towards a specific SDG or SDG target, a reference point is needed. For the social impact categories, this is included in the methodology and results are obtained in relation to a reference by default. This reference is the compliance with laws or regulations.

For the environmental impact categories, no regulatory reference point exists. Therefore, a different benchmarking approach is needed to be able to say something about the contribution towards the SDGs.

Several benchmarking approaches were investigated, including absolute targets based on carrying capacity, policy targets, industry average products, representative products and previous products, with the conclusion that at this point in time, the use of a previous product as a reference is the most practical. Defining this reference product is part of the goal and scope definition of the SDG screening.

A good candidate for a reference product is to use an internal benchmark, such as the previous version of the product under study. If the product is completely new and no internal predecessor exists, an external benchmark can be used, such as a readily available generic product with the same function.

### 3.2.5 Data requirements and availability of LCA results

Part of the scope definition is to describe the availability of existing LCA results. In principle you need both environmental and social LCA results for the impact assessment step of the SDG

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<sup>1</sup> The Environmental Footprint (EF) 3.0 method is developed as part of the [“Single Market for Green Products”](#) initiative from the European Commission.

<sup>2</sup> Earlier in the project, we used ReCiPe 2016 and ILCD indicators, but based on feedback from the Technical Advisory Committee we are now using EF 3.0 for most impact categories, because this contains most of the latest developments in impact assessment methodology. See Annex B for the list of impact categories and accompanying impact assessment methods. A similar comment can be made about the version of the PSIA Handbook: we started with the 2018 version but used the 2020 version in the final stage of the project.

screening. However, the LCA results have to meet a number of requirements in order to be applicable in the context of the SDG screening methodology:

- The system boundaries of the existing LCA studies should be compatible with the boundaries defined in this SDG screening.
- The impact categories linked to the SDGs that are in scope of the assessment should all be in scope of the existing LCA studies.
- The environmental LCA results should be calculated using the impact assessment methods that are included in the SDG screening methodology. For the (midpoint) impact categories we mostly use the EF 3.0 impact assessment method. For endpoints we use ReCiPe 2016. See Annex B for the list of environmental impact categories that are included in the SDG screening, and their recommended impact assessment method.
- For the environmental assessment, results for the product under study and for the benchmark product are required. The LCA results for the benchmark results also have to meet the above-mentioned requirements.
- The social LCA results should be assessed with the Product Social Impact Assessment Handbook 2019 and/or 2020 method for social impact assessment.
- Where possible, the LCA studies use primary data for the most important foreground processes. Secondary data is allowed for the less important processes.

We distinguish different situations when it comes to the availability of LCA results:

1. Social and environmental LCA results are available that meet the requirements
2. Some social and/or environmental LCA results are available, but additional results have to be generated to meet the requirements
3. There are no social and environmental LCA results available

Depending on your situation, the steps to perform in the inventory phase differ, and consequently the resources that are needed for the inventory step differ as well. Similar to regular LCA, ambitions for data quality will also affect the required workload and the reliability of the results (Baumann & Tillman, 2004). The scope description should mention the availability of existing LCA results, and additional LCA results that are required for the SDG screening.

### 3.2.6 Output of scope definition

The scope definition should result in a description of the following elements (*italic* aspects are specific to the SDG screening):

- *SDGs in scope*
- A description of the product system to be studied
- The function of the product system
- The functional unit
- The system boundaries *and relevant stakeholders*
- Environmental and social impact categories and methodology of impact assessment
- *The reference product*
- Allocation procedures (if applicable)
- Data requirements *and available LCA results*
- Assumptions
- Limitations

## 4 Inventory analysis

During the inventory analysis stage, the required information about the product system under study is collected. The exact data needs vary, depending on the goal and scope. In traditional LCA, the inventory analysis focusses on data collection, and the social and environmental results are calculated in the impact assessment step. For the SDG Screening methodology, the inventory step requires that the environmental and social results are already calculated. During the inventory analysis, they are then translated to a 5-point scale. These scaled results are used in the impact assessment phase of the SDG Screening, where the link with the SDG goals and targets is assessed.

The SDG screening method is based on the EF 3.0 method for environmental impact assessment (Zampori & Pant, 2019), ReCiPe 2018 (Huijbregts et al, 2016) and the Product Social Impact Assessment Handbook 2019 and 2020 methods for social impact assessment (Goedkoop et al, 2018a, Goedkoop et al, 2020). An overview of the impact categories included in these methods is presented in Annex B. For definition of the impact categories we refer to the original publications.

The first step of the LCSS inventory analysis is to collect results from earlier LCA studies, or to execute new environmental and social LCA studies of the product, plus an environmental LCA study of a benchmark product. If pre-existing studies are used, it is critical to pay attention to the requirements for earlier LCA studies (see 3.2.5).

Once compatible environmental and social LCA studies have been identified or performed, the second step is to convert the LCA results for each impact category to a 5-point scale, as illustrated in Table 1. The details of the scale are further defined per type of impact. The results on a 5-point scale are required for all impact categories that are in scope of the SDG screening.

For environmental impact categories, the results can be aggregated over the total lifecycle, and a comparison with the reference product is made.

For the social impact categories, it is necessary to aggregate the score per social impact category over the different life cycle stages. This aggregation is not part of the methodology described in the Product Social Impact Assessment Handbook, because aggregation is still a point of discussion in the field of social LCA. For this SDG screening method, an approach is developed that is explained in the next section.

Table 1: Structure of the 5-point scale

Point	Scale description
+2	Performance is a lot better than the benchmark
+1	Performance is better than the benchmark
0	Performance is equal to the benchmark
-1	Performance is worse than the benchmark
-2	Performance is a lot worse than the benchmark

### 4.1.1 Inventory analysis for social impact categories

The impact assessment method used for social LCA in this project, product social impact assessment, already presents the results on a compatible 5-point scale, as illustrated in Table 2. The scale is benchmarked against compliance with local laws or alignment with international standards, where a scale of 0 means the product or company is in compliance. A more specific scale exists for each social impact category – please refer to the Handbook (Goedkoop et al., 2020). An example is shown in Table 3, which shows the scale for occupational health and safety of workers plus the relevant performance indicators (see also Table 4).

The score on this scale is determined by looking at performance indicators, which are specific to each impact category. Table 4 shows the performance indicators used to determine the score of the product with regards to occupational health and safety of workers. A full list of the performance reference scales and performance indicators for all impact categories can be found in the Product Social Impact Assessment Handbook (Goedkoop et al, 2020). An SDG study requires the performance level results, on the 5-point scale, for all impact categories and life cycle stages that are in scope.

When no existing social LCA results are available, or additional social LCA results are needed, these results will have to be generated in this step of the SDG Screening. To do this assessment, please refer to the Handbook (Goedkoop et al, 2020). The handbook also provides optional data sources that can be consulted for the different topics.

Table 2: Generic structure of the 5-point scale in the Product Social Impact Assessment Handbook (Goedkoop et al, 2020)

Point	Scale description
+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

Table 3: 5-point scale for occupational health and safety of workers from the Product Social Impact Assessment Handbook (Goedkoop et al, 2020)

Reference scale	Performance indicators
+2 The company is best in class compared to its peers on OHS performance	<p>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</p> <p>Credible statements from NGOs, unions and workers that confirm this</p>
+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.	<p>Documents that provide a credible description of management system to promote continuous improvement of health and safety and the results of these efforts</p> <p>Credible statements from NGOs, unions and workers that confirm this</p>
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.	<p>Documents like audits that show compliance with National standards, see Global ILO LEGOSH database</p> <p>Documents that show certification schemes/standards on health and safety, audits.</p>
-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.	<p>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.</p> <p>There are incidents of complaints, lawsuits and other signals but they have been significantly reduced during the last 3 years</p>
-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.	<p>Complaints, lawsuits and other signals</p> <p>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.</p>

Table 4: Performance indicators for occupational health and safety of workers from the Product Social Impact Assessment Handbook (Goedkoop et al, 2020)

## Aggregation of social topics

Aggregation of social topics over the life cycle is not elaborated in the Handbook for Product Social Impact Assessment. However, for this method, an aggregation approach is needed to come to a single score for the a social topic for the total lifecycle. Therefore, similar calculation rules are developed as for the aggregation of impact categories to SDG targets and SDG targets to SDG goals. This means that a negative impact has a higher weight than any positive impacts, meaning a -1 or -2 score will cancel out +1 or +2 impacts. Examples for this calculation procedure are shown in the table below, showing how social topic scores for different processes are to be combined into an aggregated score.

Table 5 Aggregation approach for social topics

Social topic	Process A	Process B	Process C	Aggregated score
Child labor	+1	+2	0	+2
Accessibility	+2	-1	0	-1
Affordability	+1	0	0	+1
Land rights	-2	0	0	-2
Women's empowerment	0	0	0	0

### 4.1.2 Inventory analysis for environmental impact categories

The impact assessment methods used for environmental LCA in this project, EF 3.0 and ReCiPe, present quantitative results with a different unit for each impact category. For each impact category, the impact of the studied product is to be compared with the results of the reference product. Table 5 shows the generic structure of the 5-point reference scale for the environmental analysis.

Table 6: The 5-point scale for environmental impact categories

+2	The environmental impact is a lot lower than the reference product (>10%)
+1	The environmental impact is significantly lower than the reference product (5 to 10%)
0	There is no significant difference in environmental impact
-1	The environmental impact is significantly higher than the reference product (5 to 10%)
-2	The environmental impact is a lot higher than the reference product (> 10%)

As a consequence of using a reference product as a benchmark, any identified contribution to the SDGs is always in relation to this reference product, and should be communicated as such. A positive score on the 5-point scale indicates an improvement, and thus a contribution towards achieving the SDG, but does not necessarily mean that the product is sustainable on an absolute basis, or that there are no better alternatives available. For example, an improved coal energy plant could, according to this method, deliver a beneficial contribution to the SDGs compared to its less sustainable predecessor. But compared to renewable energy sources, coal may still be a very unfavorable energy source. Therefore, both the reason for using the chosen reference product and the resulting limitations need to be clearly described in the SDG screening results.

The inventory assessment for the environmental impact categories results in a score on the 5-point reference scale for each of the impact categories included in the analysis. These scores, together with the social scores, form the input for the impact assessment step that follows.

### 4.1.3 Output of the inventory analysis step:

The output of the inventory step of the SDG Screening should be the following:

- Results for social LCA on a 5-point scale for each of the social topics and lifecycle processes in scope.
- Results for environmental LCA on a 5-point scale for each of the environmental impact categories in scope. The results reflects the performance of the product under study compared to the reference product.

## 5 Acknowledgments

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<sup>a</sup>Life Cycle Initiative, <sup>b</sup>Grupo GEA, <sup>c</sup>WBCSD, <sup>d</sup>European Commission, <sup>e</sup>King Mongkut's University of Technology Thonburi, <sup>f</sup>CIRAIG

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<sup>3</sup> <https://lca-net.com/clubs/sdg/>



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## Annex A: goal and scope template for life cycle SDG screening

Questions	Answer
What is the intended goal of the study?	
Why do you perform the SDG study?	
What is the intended use of the SDG study results (e.g. internal decision-making, external communication)?	
Who is the intended audience?	
Do you plan to communicate the results externally? If so, in which context?	
What type of results do you require for the intended use?	
Which product or service is the object of study?	
Which lifecycle phases do you include in your study?	
What is the benchmark product that you use for the environmental part of the assessment?	
Do you want to analyze contribution to all SDG's, or a specific selection of the SDGs?	
Do you want to analyze the SDGs on goal or on target level?	
What is the strategy for data collection?	
Do you have existing environmental and/or social LCA results that you can use for the analysis?	
Do you have access to data tools e.g. Social Hotspot database, PSILCA, RepRisk, Datamaran, Ecovadis, Supplyshift etc.?	
Other remarks	

## Annex B: impact categories and impact assessment methods included in the SDG screening approach

	Impact category	Method
Environmental impact categories	Acidification	EF v3.0
	Climate change	EF v3.0
	Ecotoxicity, freshwater	EF v3.0
	Ecotoxicity, marine	ReCiPe2016 midpoint
	Ecotoxicity, terrestrial	ReCiPe2016 midpoint
	Particulate matter	EF v3.0
	Eutrophication, freshwater	EF v3.0
	Eutrophication, marine	EF v3.0
	Eutrophication, terrestrial	EF v3.0
	Human toxicity	EF v3.0
	Ionizing radiation	EF v3.0
	Land use	EF v3.0
	Ozone depletion	EF v3.0
	Photochemical ozone formation	EF v3.0
	Resource use, fossils	EF v3.0
	Resource use, minerals and metals	EF v3.0
	Water deprivation	EF v3.0
	Endpoint - Damage to Human Health	ReCiPe2016 endpoint
	Endpoint - Damage to Ecosystem Quality	ReCiPe2016 endpoint
	Endpoint - Damage to Resource Availability	ReCiPe2016 endpoint

<b>Workers</b>	Occupational Health & Safety	Product Social Impact Assessment 2020
	Remuneration	Product Social Impact Assessment 2020
	Child labor	Product Social Impact Assessment 2020
	Forced labor	Product Social Impact Assessment 2020
	Discrimination	Product Social Impact Assessment 2020
	Freedom of association and collective bargaining	Product Social Impact Assessment 2020
	Work-life balance	Product Social Impact Assessment 2020
<b>Users</b>	Health and safety	Product Social Impact Assessment 2020
	Responsible communication	Product Social Impact Assessment 2020
	Privacy	Product Social Impact Assessment 2020
	Inclusiveness	Product Social Impact Assessment 2018
	Affordability	Product Social Impact Assessment 2020
	Accessibility	Product Social Impact Assessment 2020
	Effectiveness and comfort	Product Social Impact Assessment 2020
<b>Local communities</b>	Health and Safety	Product Social Impact Assessment 2020
	Access to tangible resources/Access to material and immaterial resources	Product Social Impact Assessment 2018/2020
	Community engagement	Product Social Impact Assessment 2020
	Employment and skill development	Product Social Impact Assessment 2018
	Skill development	Product Social Impact Assessment 2020
Contribution to economic development	Product Social Impact Assessment 2020	
<b>Small-scale entrepreneurs</b>	Meeting basic needs	Product Social Impact Assessment 2020
	Access to services and inputs	Product Social Impact Assessment 2020
	Women's empowerment	Product Social Impact Assessment 2020
	Child labor	Product Social Impact Assessment 2020

Health and Safety

Product Social Impact Assessment 2020

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Land rights

Product Social Impact Assessment 2020

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Fair trading relationship

Product Social Impact Assessment 2020

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