Small but Complex:

Integrating Smallholders within the Handbook for Product Social Impact Assessments

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Abstract:
Purpose. The Handbook for Product Social Impact Assessments is a consensus method used to assess the positive and negative impacts along the life cycle of a product. Currently the social impacts are assessed for 3 stakeholder groups: workers, local communities and consumers). For many agri-food businesses, smallholders are a crucial part of their product supply chains. However, the current Handbook has a limited capacity to address smallholders. Therefore, the aim of this paper is twofold:

1. To integrate a new stakeholder group Smallholders within the existing handbook for Product Social Impact Assessments (PSIA)
2. To test applicability/feasibility of the proposed method and identify opportunities for improvement.

Methods. A literature concerning smallholders` constraints and social issues was reviewed to determine social topics and performance indicators. Impact assessment approaches were established based on the Theory of Change with an aim to assess if value chain actors are promoting good practices and creating positive value for Smallholders. The proposed scale-based impact assessment approach was tested on two case studies.
Results. Nine social topics and were proposed for stakeholder Smallholders. The proposed qualitative and quantitative performance indicators enable practitioners to assess positive and negative impacts on Smallholders. Implementation of the method on case studies presented multiple opportunities for improvement and highlighted aspects that need to be further clarified.
Conclusions. The proposed method makes it possible to assess Smallholders within PSIA framework and supports evaluation of products derived from agriculture supply chains. Thus, ensuring a complete assessment of product life cycle and inclusion of critical stakeholder group within agriculture supply chains. However, additional guidance is needed on how to address potential overlaps when conducting an assessment. It is recommended to further test the quantitative approach and conduct assessments on more complex supply chains that addresses other stakeholder groups.

Acknowledgments

This study has been carried out during the 4th semester of the master degree study program "Environmental Management and Sustainability Science" at Aalborg University. The master`s thesis was written in collaboration with the Roundtable for Product Social Metrics during my internship at PRé Sustainability. The project idea stemmed from the outcomes of my 3rd semester internship at Nestlé Research Centre and was further elaborated on by the Roundtable members AkzoNobel, BASF, MWM Group, DSM, Mahindra Sanyo, Philips Lightning, Steelcase, Nestlé, Solvay and Vebego.

I would like to extend a word of gratitude to all the Roundtable members and PRé Sustainability for giving me the opportunity to further look into this area. Special thanks to Urs Schenker from Nestlé, Thomas Andro and Dominique Debecker from Solvay for your active participation, insightful comments and feedback throughout the project period. Thank you for exploring this topic together with me!

Special thanks to Mark Goedkoop and Ilonka de Beer for subjecting me to challenging discussions and your support at every step along the way.

I would like to say thank you to Massimo Pizzol for his straightforward guidance. I really appreciate it!

Foreword

By Mark Goedkoop, PRé Sustainability

Companies have joined the Roundtable because they realise there is no workable methodology to assess the social impacts over the lifecycle of a product in a comprehensive way. The literature is either too academic to be usable, or not geared at a pragmatic application in decision support contexts. Some companies had already started to develop their own methodology but realised it would be much better to develop a common consensus approach: it is not credible to assess your own products with your own method.

Working in a format like this, the governance of the project primarily lies with the member companies, and in the end, they can influence the way the method is designed. The companies are well aware that they need to have the acceptance and support of academic and NGO groups and there is an open connection exchange to such groups. This is supported by the fact that nobody claims ownership on the methodology, and in principle all information about the methodology is available to all.

The methodology has been tested a dozen times by the members on cases and this has been a very important source of guidance to the development, as we learned which part work and which part does not work and likewise it helped the companies to see which parts provide useful insights, and which parts generally tells companies what they already know.

The development of the Smallholders methodology followed the same pattern when Nestlé (which has already done an impressive amount of work in this area) and Solvay (who see sourcing of bio-based materials as important new area) joined the Roundtable. We decided to perform two cases while develop the methodology and test the methodology at the same time.

The work of Diana Indrane has provided a very rich resource of insights and learnings, also relating to the current handbook. For instance, when she analysed how we had set up the scales we identified many inconsistencies, and in fact Diana had to develop her own guidance to add indicators and scales. The development based on the Theory of Change has convinced all members that we need to update all indicators based on this insight.

The members and at PRé we feel very happy with what Diana has contributed; not only do we all agree the extension towards Smallholders has been done in an excellent way, she has provided inspiration to all to further improve the Handbook and develop a fourth iteration on the route towards a science based yet easily applicable consensus approach for decision support in industry.

Contents

1 Introduction

An increasing interest from consumers have pushed companies to embed sustainability in their business operations. Consequently, reporting on sustainability is becoming a widespread practice. The Sustainable Development Goals (SDGs) published in 2015 are further pushing businesses to develop a better understanding of their own operations, potential sustainability impact and the opportunities they have for integrating sustainability into their core strategy. Moreover, sustainability rankings have created a competitive atmosphere among the companies to be industry leaders in this field. One of the most prominent raking system – the Dow Joes Sustainability Index (DJSI) – integrates social, economic, environmental and governance aspects in their comprehensive questionnaires. In 2016 DJSI introduced a new assessment criteria– Impact measurement and valuation – which aims to capture whether companies are proactively addressing societal needs and whether societal impacts are measured (RobecoSam, 2016). All these initiatives are encouraging companies to actively seek means for measuring impacts and multiple tools are available. One such tool is social life cycle assessment (SLCA) that enables companies to measure both the positive and negative social impacts throughout their product`s life.

The first discussions of including social aspects into Life Cycle Assessment (LCA) started in the 1990s (Sala et al., 2015). In 2009, the general guidelines for social life cycle assessments (SLCA) of products were published by the United Nations Environmental Programme/Society of Environmental Toxicology and Chemistry (UNEP/SETAC) working group. Both environmental and social LCAs stems from the concept of life cycle thinking and seek to capture environmental or social impacts of a product throughout the life cycle, from the extraction of raw materials to the end-of-life. The ultimate goal of social LCA is to systematically identify social conditions of a given product and promote improvement opportunities.

The UNEP/SETAC guidelines define social impacts as "*Consequences of positive or negative pressure on social endpoints (i.e. wellbeing of stakeholders)*" (UNEP/SETAC, 2009). That is, the social aspects assessed may have a direct or indirect effect on diverse stakeholder groups that are involved in the life cycle of a product. Five main stakeholder groups are identified within SLCA: Workers, Local communities, Consumers, Value Chain Actors and Society (ibid). Thus, inventory data in SLCA studies is collected to compute performance indicators into impact subcategories, that are further linked to stakeholder groups. Characterisation models are used to link performance indicators with subcategories and impact categories. The Guidelines distinguishes two different characterisation models within SLCA: performance reference point methods and impact pathway methods, or Type I and Type II SLCA methods (UNEP/SETAC, 2009). Type I methods aggregate the performance indicators into subcategories within a theme of interest to a specific stakeholder group. Whereas, Type II methods link performance indicators to impact categories through causal relationships (ibid.). Type I methods avoid the uncertainties of impact pathways and focused is places on specific product systems. Comperatively Type II methods provide less details but focuses on accurate identification of impact pathways (Wu et al, 2014). Hereafter, this paper focuses on Type I SLCA methods.

A comprehensive SLCA literature review by R. Wu concluded that for type I methods, the main challenge lies in a systematic identification of relevant stakeholders and social issues, but for SLCA to support decision-making in companies, it is essential that all relevant social impacts are included (Wu et.al, 2014). Thus, questions of "Whether the chosen SLCA approach fit the studied product system and are the most relevant stakeholder groups and social issues addressed?" should be asked by practitioners prior applying the SLCA method. As noted in several SLCA review papers (ibid.), (Arcese et al., 2016), most of the approaches and case studies focus on stakeholder group 'Workers'. In contrast, stakeholder groups 'Consumers' and 'Value chain actors' are rarely considered. Moreover, several authors highlight that SLCA methods have a limited capacity to evaluate social impacts associated with

Small and Medium Enterprises (SMEs) and family owned businesses. These applicability limits are largely caused due to the fact that the general SLCA guidelines were developed for large organisations with management systems in place (Arcese et al., 2016). Smallholders and SMEs, however, should be regarded as small entrupeneurs and associated with different social risks.

Hereafter, term Smallholder is used to refer to this stakeholder group, However, several other terms refer to the same group, including small-scale farmers and family farmers. In the literature, no universally accepted definition of smallholders is defined, and several parameters are used to describe the group. For example, 'Small' can refer to the capital invested or the size of the land. Landholding size is frequently used, however, given the differences in sizes of smallholder farms in Latin America (up to 750 ha), Asia and Africa (typically up to 10 ha), a single parameter cannot capture the characteristics of smallholders (Calcaterra, 2013). Smallholders are often marginalised by their lack of access to resources such as good inputs, services, technology and knowledge of markets (Murphy, 2012). Therefore, in this paper term smallholders is understood as *"Independent persons who mainly rely on family labour to produce food and non-food products on a small scale with limited access to resources"*. Smallholders can also refer to artisanal fishers, gardeners, hunters and gatherers, and other small-scale producers. (Appendix 1 outlines more detailed overview of the parameters used to describe smallholders).

The agri-food sector in low-income countries is often characterised by a predominance of smallholders. According to the Food and Agriculture Organisation (FAO), approximately 550 million farms worldwide are managed by smallholders and their families (FAO, 2014). It is estimated that smallholders make up to 85% of the world`s farmers (IFC, 2013), many of whom are linked to poverty and social vulnerability. A study by (Simas et al.,2014) concluded that majority of bad labour conditions within global supply chains are driven by the production of food products, even though a higher share of total labour is linked to services. That is, consumption of food commodities drives 40% of all vulnerable workforce in the world.

For many agribusinesses, smallholders are part of their product system and need to be included in assessments. Despite their significant role in agriculture supply chains, smallholders are neglected by SLCA frameworks and methods. The general UNEP/SETAC Guidelines fails to mention Smallholders or SMEs. Considering other stakeholder groups listed, smallholders could be regarded as a subgroup of Value Chain Actors. However, the impact area defined for this stakeholder group is Governance, which covers such social aspects as (i)Fair competition, (ii) Promoting social responsibility, (iii) Supplier relationships and (iv) Respect of intellectual property (UNEP/SETAC, 2009). Investigation of the supporting methodological sheets reveal that these social issues are more suitable for addressing larger companies. Furthermore, it emerged that within Type I agriculture case studies (Table 1) practitioners, typically, apply the procedure described by the UNEP/SETAC Guidelines or were set to test the application of the Guidelines. Even when an SLCA is conducted at a farm level, farmers or their family members are not included in the assessment. The lack of recognition could be caused due to the geographical scope of the case studies – mainly the developed countries. Commercial farms do not face the same basic development challenges as smallholders do, are often automated and run by workers.

Several authors (Arcese et al., 2016), (Martínez-Blanco et al., 2014) have adjusted the UNEP/SETAC framework by either defining an additional stakeholder group or including new indicators better suited to local conditions. To the author's knowledge, a study on wine production in Italy by (Arcese et al., 2016) is the only paper focused on including indicators specifically for SMEs and family businesses. This article assessed all five stakeholder groups listed in the general guidelines, but included additional impact categories and performance indicators. In the agriculture step, such indicators are included as "Distribution of responsibilities among family members", "Request of possession of certifications" and "Willingness to fulfil the same function" were added. Nevertheless, the set of indicators

presented for the agriculture step is suitable for evaluating family businesses in developed countries. With most of the smallholders living below the poverty line, there is a need to assess social aspects that are at the lower levels of the hierarchy of needs.

Author	Product system	Geographical specification	Purpose	Stakeholder groups	Comments regarding Smallholders, farmers and SMEs
(Arcese et al., 2016)	Wine production	Italy	To reproduce the Guidelines settings and integrating improvements tailored to Italian wine sector	Workers Local Communities Supply Chain Actors Society Consumers	Specialised indicators supplied also in the agriculture step: E.g. Distribution of responsibilities among family members
(Petti et al., 2016)	Tomatoes	Italy	To present implementation of subcategory assessment method (SAM)	Workers Local communities Consumers	It is noted that not all elements of regionalisation are considered by SAM, especially in small organisations
(Franze & Ciroth, 2011)	Agriculture: Cut roses	Ecuador & Netherlands	To "try out" the UNEP/SETAC Guidelines	Workers Local communities Supply chain actors Society Consumers	_____
(Revéret, Couture, & Parent, 2015)	Milk	Canada	To assess the environmental and social impact	Workers, Local communities Value chain actors Society	Covers only farm workers that are not relatives of the producer. As business owners, the producer and his family members are not considered to be Workers, even if they work on the farms.
(Agyekum et al., 2016)	Wild bamboo bicycle frames	Ghana	To assess the environmental and social impact	Workers Local communities	Identified challenges when applying S-LCA to SMEs in the developing countries

Table 1 Characteristics of Type I SLCA studies and scientific articles incorporating agriculture supply chains, farming, SMEs, published between 2010 – 2017

As the UNEP/SETAC Guidelines do not recommend an impact assessment method for aggregating diverse indicators into impact subcategory or category scores, a wide variety of methods has been proposed for interpreting the collected data. In 2013, the Roundtable for Product Social Metrics (hereafter Roundtable) proposed a complete impact assessment method and guidance for conducting assessments. The method was developed through collaboration with industry members and documented in the Handbook for Product Social Impact Assessments, hereafter refer to as PSIA (Fontes, 2016). The goal of the Roundtable was to harmonise principles and engage with other initiatives and address. The unique aspect of this method is that the Roundtable is an ongoing initiative that seeks continuous improvements in order to address cross-cutting implementation issues. During the phase four, the Roundtable was facilitated by PRé Sustainability and lead by 11 companies: AkzoNobel, BASF, BMW Group, Covestro, DSM, Mahindra Sanyo, Nestlé, Philips, Solvay, Steelcase and Vebego.

The PSIA method focus on three stakeholder groups: workers, local communities and consumers. However, the feedback received from external reviewers during phase 2 of the Roundtable pointed out that the current characterisation of stakeholders leaves out an important stakeholder group: farmers and SMEs (see table 2). Nevertheless, this area was not further explored by the Roundtable members. After Nestlé and Solvay joined the Roundtable for the phase 4, renewed interest was shown in tackling this methodological issue as agri-food and chemical industries often rely on smallholder farmers for production of raw materials.

External reviewer	Excerpts regarding smallholders and SMEs
ISEAL	"… leaves out farmers or others who work in production but not in an employee relationship…"
Anonymous NGO	"…supply chain focus is restricted to employees, which misses out an important and distinct group of SME or small farmer supplier…"
Technical University of Berlin	Social topic Employment relationship can lead to a grey area and "people who are self-employed can be ignored"
Product Stewardship and Regulatory Affairs Council	"It seems like sourcing/suppliers are missing as a life cycle stage/stakeholder group"

Table 2 Overview of the feedback received in regard to smallholders, excerpts from the Handbook (Fontes, 2016)

A method, largely inspired by PSIA, was developed specifically for the chemical sector by the World Business Council for Sustainable Development (WBCSD, 2014). It states that if smallholders or SMEs are part of the supply chain, they should be considered as Workers. Even though the performance indicators for Workers were established with large companies in mind. For example, while a social topic 'No child labour' is a critical issue to be assessed at smallholder level, the performance indicators outlined in the method are aimed at company's public policies. That is, even though some of the social topics proposed for workers are also relevant for smallholders, the performance indicators are not. Moreover, other social topics should be replaced by more appropriate ones (e.g. 'Fair wages' should be replaced by 'Living income', a more complex performance indicator). Thus, smallholder specific social topics and performance indicators should be integrated within the PSIA method rather than taking the sane approach as WBCSD. Considering all the aforementioned points, this thesis takes on the task of exploring the social issues most relevant for smallholders and how these could be integrated within PSIA.

The aim of this thesis is twofold:

1. To integrate a new stakeholder group Smallholders within the existing handbook for Product Social Impact Assessments;
2. To test the proposed method for smallholders on practical cases to gain a better understanding of the potential problems that may arise and identify opportunities for improvement.

The following sub-questions are selected to guide the project:

1. What is the best and operationally feasible way for companies to understand the social impact on smallholders? / What are the most relevant social issues to address for smallholders?
2. Do the proposed social topics and performance indicators provide relevant insights when tested on real life cases?
3. What is the most effective way for communicating the assessment results?

2 Methodology

The methodology chapter is split into three parts. Part I provides a framework for integrating smallholders within the method for product social impact assessments by outlining the general structure and key elements required. Part II describes the methods used to develop the PSIA method for smallholders. And lastly, part III of the methodology chapter describes the case studies used to test feasibility and applicability of the proposed method.

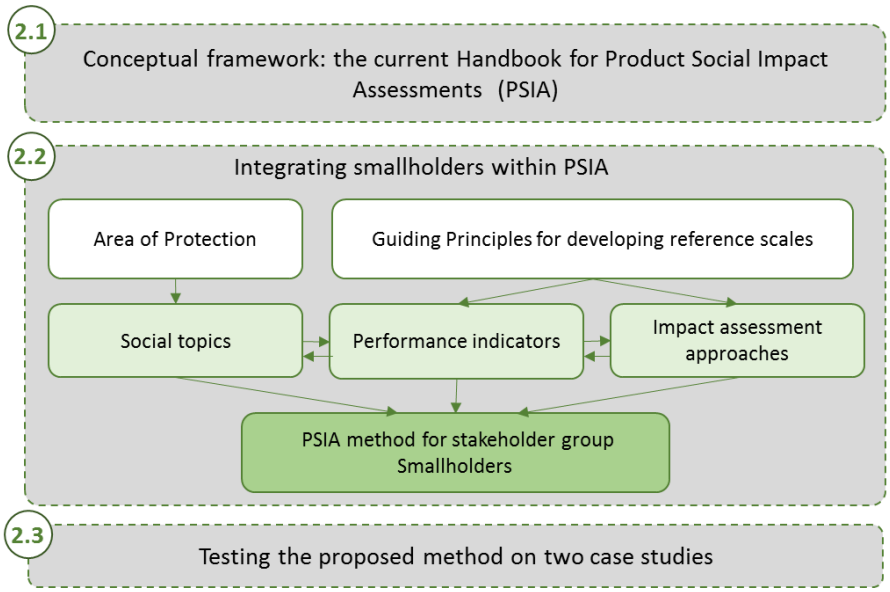


Figure 1 Methodological design displaying the elements addressed in the thesis

2.1 Part I - Conceptual framework (Handbook for Product Social Impact Assessments)

Development of the method for smallholders was based on the general principles of the Handbook for Product Social Impact Assessments (PSIA). The key components of the handbook are social topics, performance indicators and impact assessment methods proposed for each of the three stakeholder groups (see Figure 1). Each of the components and the general mechanics behind them few further described in this section.

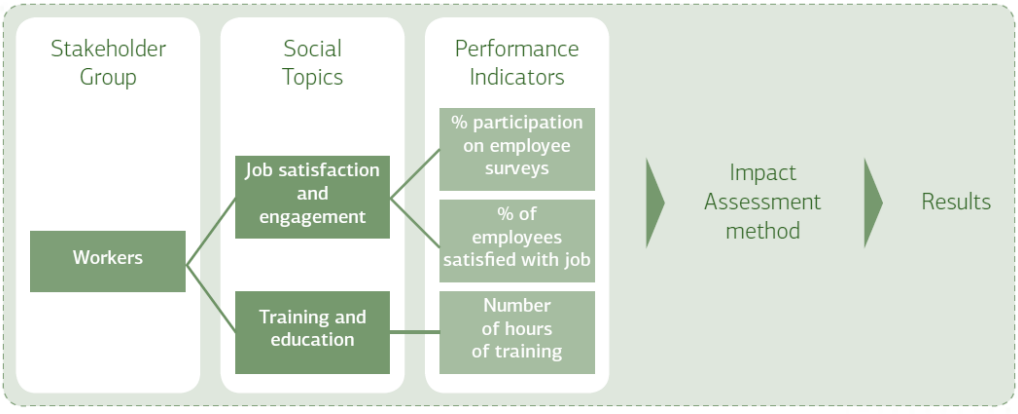


Figure 2 Key components of PSIA method

First component - Social topics

PSIA describes social topics as *"Social areas related to stakeholder groups that should be measured and assessed, such as working hours, community engagement or child labour"* (Fontes, 2016). Currently the handbook present 19 social topics: 11 for stakeholder group workers, 5 for local communities and 3 for consumers. For example, one of the social topics for the stakeholder group 'Workers' is working hours. Social topics further drive the selection of performance indicators.

With the focus on the practical feasibility for the companies, social topics in PSIA method were selected based on a bottom-up approach (Fontes et al., 2016). Moreover, the social topics were defined according to the international agreements or convention`s on worker`s rights and brought consensus among the Roundtable members through discussions on the key social issues to be addressed for each stakeholder group (ibid.).

Second component - Performance indicators

Performance indicators (PIs) guide the data collection process by clearly indicating the type of information required. In the Handbook, performance indicators are defined as *"performance markers for each of the social topics, for example, a number of working hours per week"* (Fontes et al., 2016). Hence, each of the performance indicators is linked to a social topic.

PSIA utilises quantitative, semi-qualitative and qualitative PIs to collect data for each proposed social topic. The established performance indicators are either direct or indirect measurement of the social issue assessed. For example, *the number of working hours* is a direct measurement. Whereas, the *existence of company policy* is an indirect measure of the social topic assessed (ibid.). In SLCA literature it has been pointed out that use of direct indicators in certain situations can fail to fully explain the complexities associated with social issues (Wu et al., 2014). Moreover, questions on data accuracy, systematic registration of incidents and a true reflection of problems are raised. Therefore a combination of direct and indirect indicators are utilised in PSIA. The handbook includes performance indicators that reflect positive and negative impacts of the assessed product system on three stakeholder groups: workers, consumers and local communities.

Third component – Impact assessment methods

Data collected per performance indicator is meaningless unless put into context. Therefore, a referencing step or impact assessment method is crucial for interpreting the results and supporting informed decision-making process. In the handbook, impact assessment method has been described as *"guidance on how to make the assessment, i.e. how to capture social performance using relevant data, interpret the performance indicators and assess the performance and impacts of a product…"* (Fontes et al., 2016). PSIA has proposed 2 approaches for assessing social impacts at product level: quantitative and scale-based approach.

The quantitative approach enables practitioners to allocate the inventory data on a product level and compare the social performance of two or more products. The quantitative method interprets the collected data by applying distance-to-target approach, where the result is compared to the identified target. The best or worst scenario is presented as reference values (RV) for each performance indicator. The performance value (PV) is calculated for each indicator by comparing the aggregated value of the indicator along the life cycle (PLC indicator) with the RV of the indicator (ibid.). PV indicate the positive or negative performance of each assessed indicator. If PV=0 or PV=RV it means that the target or minimum scenario has been reached. If the PV>0, the result indicates positive performance, and if PV<0, it demonstrates negative performance (ibid.)

In the scales-based approach, data is interpreted, and scores are attributed to each social topic in relation to a scale. The scale allows practitioners to compare data with a pre-defined reference points, typically an international agreement ot an industry average (Fontes, 2016). If the assessment method is tailored to a specific study, then the reference points could even be set as an improvement targets set by the company. The PSIA proposed scale has five positions. Each position on the scale is a performance reference point assigned a score ranging from -2 to +2. The proposed scales are described in generic levels: non-compliance to the reference point, compliance and above compliance. Lower and upper levels are further divided into intermediate steps. A generic approach for assessing social performance can be seen in the fig.3 below.

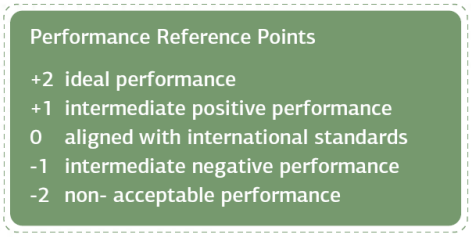


Figure 3 Generic approach presented in the Handbook for Product Social Metrics, (Fontes, 2016)

The application of the scale-based approach involves data collection for the qualitative performance indicators, scoring each social topic according to the developed reference scales and translating the score into aggregated stakeholder score. A social topic score is a dimensionless number that represents the impact of the product with regard to the social topic (ibid.). The stakeholder score represents the overall impact on smallholders that is associated with the production of the products

In the process of developing the current PSIA method, formal guiding principles were not used to establish reference scales for qualitative assessment. Thus, each position is left open for interpretation when developing scales for a new stakeholder group. During the research process, it was noted that the current reference scales presented in PSIA are not consistently established. Different approaches can be seen among the three stakeholder groups. For stakeholder group Workers, the levels of compliance and non-compliance are defined in accordance with international agreements, ILO conventions or national laws and assigned a score in a range from -2 to 0. Whereas, for stakeholder group 'Local communities' the compliance level is not as clear-cut (i.e. international standards are not always applicable). Therefore, the content of the upper levels of the reference scales presented in the Handbook varies from one social topic to another but mainly aims to capture certain aspects of best practices. In most of the examples, assessment of the ideal performance is focused on reducing exposure to unexpected risks (Table 3 below). Thus, the current principles applied in the Handbook could be described as non-compliance, compliance with international standards and risk avoidance.

	-2	-1	0	+1	+2
Uncompliant performance					
Compliance with international standards					
Reducing risk exposure, risk avoidance & prevention For certain social topics, focused is placed on examining corporate policy rather than corporate practice					

Table 3 Generic principles used to establish reference scales for stakeholder group Workers

1.2 Part II - Methods used to integrate smallholders within PSIA

The second part of the methodology chapter describes the methods used to integrate smallholders within PSIA based on the concepts outlines the previous section. Additionally, this section introduces an area of protection that guides the selection of social topics and outlines the selected guiding principles for establishing reference scales.

2.2.1 Choice of area of protection

A decision was made to guide the selection of social topics by determining as an area of protection. In the SLCA literature, 'human well-being' is stated as the area of protection, a term covering people`s health, dignity and fulfilment of basic needs (Jørgensen et al., 2008). However, throughout the discussions with the Roundtable members involved in the agriculture taskforce, the area of protection was determined as 'Livelihoods' of smallholders. The decisions stemmed from the fact that improving livelihoods of smallholders is one of the pillars in securing supply chains and a key area of importance for businesses. That is, by involving smallholders in the supply chains and enhancing their livelihood conditions, companies can potentially secure a long-term supply of goods.

Various definitions of Livelihoods were available in the literature. The definition of rural livelihoods suggested by R. Chambers and G. Conway is refered to in this document: *"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living"* (Chambers & Conway, 1991).Livelihoods and well-being are closely linked concepts and fulfilled livelihood requirements can be seen as a pre-requisite for human well-being (Lissner, 2014).

More specifically, the selection of social topics and performance indicators was guided by the various assets and capabilities that smallholders can draw upon to make a living. That is, Livelihood assets were used to relate the broad concept of rural 'livelihoods' to easier accessible quantities such as smallholder needs or resources. In the Livelihoods Framework, developed by the UK Department for International Development (DFID, 1999), livelihood assets are categorised into five groups: human, social natural, physical and financial capital (Table 4).

Human capital	Skills, knowledge, health and ability to work
Social capital	Informal networks, membership of formalised groups, relationships of trust that facilitate cooperation and economic opportunities
Natural capital	Natural resources such as land, soil, water, forests and fisheries
Physical capital	Basic infrastructure such as roads, water supply, sanitation, schools, information and communication technologies (ICT); inputs such as tools equipment
Financial capital	Financial resources such as savings, credit, income, trade and remittances

Table 4 Livelihood assets (UNDP, ISDR, & IRP, n.d.)

Moreover, two guiding questions were derived for selecting the social topics:

- Are smallholders meeting their basic needs and seeing improvement?
- Do smallholders have the necessary tools to withstand and adapt to shocks? Or in other words, how resilient smallholders are to changes?

2.2.2 Method for selecting social topics for smallholders

A combination of top-down and bottom-up approach was used when selecting social topics. In a bottom approach, social topics were determined by identifying the relevant social issues in the context of the product manufacturer. Whereas, in a top-down approach, social topics were determined by identifying what is valuable to society or in the context of this paper – smallholders.

A literature review was carried out to review the vast information available on social issues, risks and constraints associated with smallholders. As the profiles of smallholders is so diverse, the priority was given to literature sources addressing smallholders in a global context rather than site specific studies. Additionally, literature on smallholder performance assessments and poverty assessments were reviewed to determine the social issues addressed in such assessments. The information was retrieved from the following sources:

1. Documents on fundamental human rights - The Universal Declaration of Human Rights
2. Reports published by international organisation such as FAO (Rapsomanikis, 2015), IFAD (IFAD & UNEP, 2013), (OECD, 2005), (ETI, 2005); (IFC, 2013)
3. Smallholder performance assessments such as (Sustainable Food Lab, 2014), (Unilever, n.d.), (Kellogg's, 2015)
4. Poverty assessments – Poverty Footprint tool (UNGC, n.d.); (IFAD, 2014)
5. Social issues assessed for smallholders by the Roundtable members

A vast number of social issues were identified in the literature (displayed in Appendix 2), and the most essential aspects were prioritised. The set of social topics were determined in four steps:

1. The social issues, risks and constraints listed in the reference documents were grouped into clusters to create a better overview;
2. Overlapping social issues were removed to eliminate duplication;
3. The social issues mentioned at least most frequently (more than five times) were shortlisted
4. The shortlisted social topics were assessed against the AoP to determine if the social topic affects smallholders within the AoP 'Livelihoods'.
5. Additionally, material social issues defined by Roundtable members were included in the assessment

Once the relevant social topics and performance indicators were determined, company`s ability to influence the issue or act upon the result were evaluated. That is, a question "To what extent the value chain actors/companies can be held accountable for the selected social topics?" was discussed with the Roundtable members before finalising the list of social topics for smallholders.

1.2.3 Defining impact assessment approaches for smallholders

Once the social topics were selected, a set of guiding principles were established to create an understanding of what the PSIA method for smallholder should assess. A decision was made to move away from the 'Risk avoidance' mindset and focus on value creation within the product supply chains.

Scale based approach

Common norms provide a well-understood frame of reference. However, stakeholder group Smallholders are not well covered by national and international laws. For certain social topics, basic human rights recognised by UN (e.g. access to safe water) can be used to establish a common frame of reference, but for other social topics, no such standards exist. In the absence of clear compliance level for Smallholders, a different set of guiding principles were applied when establishing reference scales. The scales were to include information and insights on the local conditions and the extent to which a contribution is made by the value chain actors to improve the current situation. The high-level principles applied were: silent complicity and risks avoidance on the lower levels and value creation /driving of improvements on the upper levels of the reference scales.

Possession of product certification was also considered as a relevant reference point to include in the scales. Typically, possession of certifications is associated with compliance and meeting the basic requirements e.g. compliance with local laws. Thus, "possession of product certification" was used as a reference point on scales for the compliance level i.e. 0 level. That is not to say that possession of certifications has an importance on all social topics. A report by KPMG *'Improving smallholder livelihoods: Effectiveness of certification in coffee, cocoa and cotton'* concluded that certification schemes could have a positive effect on 'Access to training & education', 'Working conditions/Health', 'Child labour' and 'Farm economy' (KPMG Advisory N. V., 2013). However, certifications have limited to no effects in the areas of democratic decision making in cooperatives and gender equality (women`s empowerment) (ibid.).

In the process of establishing the upper levels of the references scales, the focus was placed on whether supply chain actors are promoting good practices, carrying out interventions to improve working conditions for smallholders and whether the undertaken interventions are creating positive value for smallholders. This approach aimed to assess the effort and will of supply chain actors to manage given social issues (Are the supply chain actors able to make improvements and are they willing to?). Thus, the upper levels of scales were designed to be action oriented. Hence, to achieve an ideal performance, value chain actors will need to actively contribute.

To establish consistent reference scales for each social topic, more detailed guiding principles were proposed. As each intervention undertaken by the value chain actors can be observed and measured at different points along an impact pathway, a decision was made to focus on certain points for each level on the reference scales. That is, interventions undertaken to improve Livelihoods of smallholders were linked with a Theory of Change. In the literature, Theory of Change (ToC) is defined as *"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."*(Sustainable Food Lab, 2014). Figure 4 below displays generic, the high-level theory of change and example for social topic "Education and training". In the appendix 4, additional examples of the Theory of Change found in the literature for smallholders.

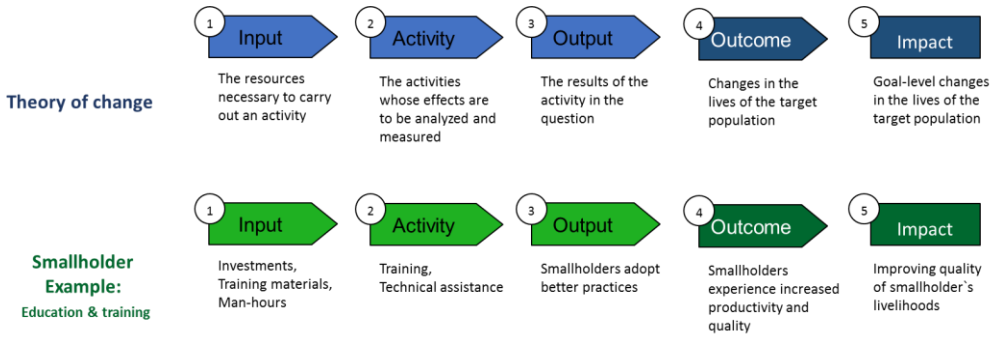


Figure 4 Theory of Change

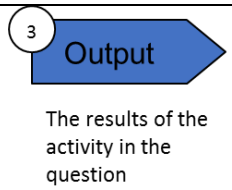
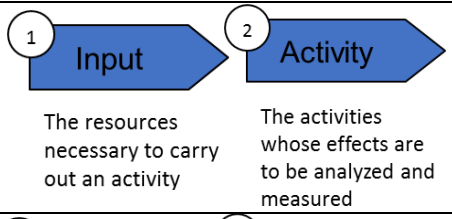
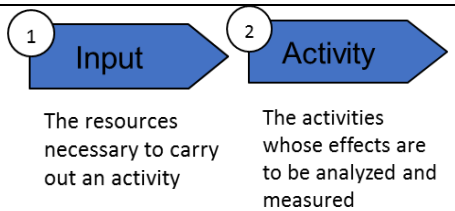
A decision was made to assess the ideal performance as an output from conducted interventions as it is harder to disentangle the specific effects from interventions on outcome or impact level. That is, while the link between the carried-out activities and their immediate effects are relatively easy to recognise, this link is harder to acknowledge if performance is measured further down the impact pathway. Moreover, outcomes and impacts can take many years to evolve and manifest. That said, if the Theory of Change for certain inventions is clear, then it is recommended to measure further along the impact pathway e.g. Outcomes or Impact.

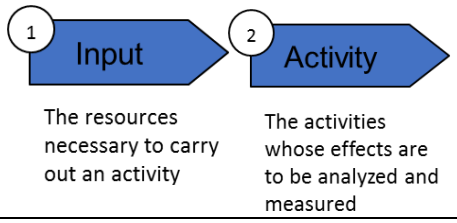
The inclusion of smallholders` experience and satisfaction with the undertaken interventions and application od though practices served as a way to assess outputs. The approach aims to give voice to the affected stakeholder group. Moreover, the scales considered whether good practices are supplemented by continuous improvement and sharing/reporting of the best practices. Whereas, the intermediate positive performance was determined on Input and Activity level. More detailed guiding principles for establishing reference scales are described in Table 5 below. The table outlines the general criteria that have to be met for each level on the references scales. For levels 0 and -1, multiple options have been described depending on whether interventions are undertaken or not. For example, the first situation when a score of 0 can be assigned is if the local conditions are satisfactory (all smallholders meet their basic needs) or for certain social topics smallholders possess product certification. In the second situation, interventions are undertaken to improve local conditions (inputs or activities), however, no follow-up assessment is conducted to understand whether smallholder are satisfied with provided interventions. That is, the usefulness of the activities is not clear.

For all the social topics selected for stakeholder group Smallholders, detailed reference scales were established based on the principles described in the table below.

Additionally, data/performance indicators not found on an impact pathway provided contextual information and insights on potential effects of social performance, or as an element that may.

Table 5 Principles formulated to guide the development of reference scales:

Reference scales	Location on the impact pathway	Additional stipulations
+2		• Intervention activities have resulted in positive outputs/ resources provided are used/ knowledge is applied, etc. • Continuous monitoring of local conditions to assess whether the situation is not deteriorating.
+1		• Smallholders found interventions to be useful, informative and tailored to their interests and needs. • Activities are tailored to local conditions.
0		• No follow-up assessment/questionnaire to estimate usefulness, satisfaction or relevance.
0	No interventions	• Local conditions meet the basic human rights: e.g. all smallholders have access to safe drinking water/improved water sources, and no further actions are taken. • OR Product certifications for certain social topics.

-1		• Local conditions do not meet the "compliance level", interventions are undertaken to improve local conditions, interventions show a positive trend, BUT the compliance level is still not fully achieved
-1	No interventions	• Social risk assessment is conducted. • Opportunities for improvement are identified, but no actions are taken. / Intermediate performance. • Policies/ mechanisms in place to avoid risks.
-2	No interventions	• Silent and or beneficial complicity. Likely to be high risk. • Risks are not known. • Risks are known, but opportunities for improvement are not identified.

Quantitative approach

An ideal or worst-case scenario was defined for every proposed quantitative performance indicator to benchmark the social performance of products. The worst-case scenarios were defined for only those performance indicators where an ideal scenario was not available.

1.2.4 Methods used for selecting performance indicators

Performance indicators for smallholders were determined in 4 steps:

1. All relevant PIs listed in the literature were collected in one document, grouped per social topic and most relevant PIs were selected.
2. Selection of PIs was guided by six criteria, that were slightly adapted from the original PSIA development process:
    i. Aligned with definition used - The PIs are relevant to definition used
    ii. Aligned with the guiding principles established for the reference scales – PIs effectively cover all the levels of the reference scales
    iii. No repetition -No two indicators should cover the same information
    iv. Non-sector specific - The PI is relevant for all sectors
    v. Improvement-oriented - Indicators enables actions and 'rewards' proactive companies
    vi. Preferably at product level - The PI expresses the performance of the product.
    vii. Balanced - The complete set of PIs should reflect positive and negative impacts of the assessed product system
3. Selected PIs were reviewed to eliminate duplication and check if the PIs were complimentary to the definition of the social topic and wording were refined.

A two-layered approach with contextual performance indicators and activity-oriented performance indicators are applied to establish the reference scales. Understanding that direct questioning may not result in accurate data that accurately represents the situation, a combination of direct and indirect indicators was selected.

2.2.5 Feedback from the Roundtable members

Once a working version of the method for smallholders was developed, members within the agriculture working group were invited to provide feedback on how the methodology could be improved. Reviewers were asked to comment if they see a "showstopper", or if they are concerned about something that is included or excluded and provide feedback to the following points:

- Are the most important social topics captured? If not, what should be added?
- Are the performance indicators reasonable, achievable actionable and applicable to all industry sectors?
- Are there gaps or overlaps among the social topics and performance indicators?
- What are your thoughts on the approach proposed for developing reference scales?

Following the call for feedback, a meeting took place to discuss the draft version of the method. Representatives from PRé-Sustainability, Nestlé and Solvay, participated in the discussions. Moreover, the first version of the method was presented to all the Roundtable members attending the working group session. (Members present: BASF, Covestro, DSM, Nestlé, Steelcase, Phillips Lightning and Vebego). The received feedback was integrated into the next version of the method.

Integrating smallholders within the PSIA is an iterative process, and the proposed method is further adjusted. Additional improvements are made while mapping data points for case studies as overlaps among the performance indicators were discovered.

1.2.5 Visualisation of the results

Originally, PSIA suggests that the results could be displayed in a spider diagram. However, spider diagrams present a risk of misinterpreting the results based on the order in which the social topics are places in the diagram. Thus, a new approach for illustrating results were developed.

1.3 Part III - Testing the proposed method through case studies

As one of the aims of this thesis was to test the proposed method for smallholders, the use of case studies was deemed as a relevant approach. The cases studies were conducted to gain insights on applicability and feasibility through the practical application of the method. As the proposed method is a first attempt at assessing social impacts on smallholders within the PSIA framework, learning about the method was the most crucial factor of success in both case studies.

Due to time constraints, only the proposed scale-based impact assessment approach was applied to two case studies representing different smallholder systems from two different continents. The products chosen for the case studies were coffee beans sourced by Nestlé and Guar gum derivable produced by Solvay. Both case studies analysed real-world cases. The companies taking part in the supply chain of these products were involved in the Roundtable for Product Social Metrics.

Both case studies made use of locally derived site-specific data previously collected by the companies. Additional information was collected through desktop study. The quality of the data applied is a critical element of the assessment. It is understood that poor data quality may compromise the results and reliability of the case studies. Therefore, the data sources used in both case studies were assessed with the data quality matrix presented in the PSIA handbook (p.12). The seven aspects addressed were the quality metric are completeness, accessibility, accuracy, integrity, validity, timeliness and correlation.

2.3.1 Coffee case study

The Coffee case study assessed production of green coffee bean in two regions located in Colombia, where coffee is grown on slopes in small farms with an average size of 2.55 ha (p.c. Nestlé, 2017). Both regions are characterised by high altitudes and high temperature variations between days and nights. The case study focused on production of green coffee beans and not the entire product supply chain. Therefore, other product life cycle stages are excluded from the assessment. The aim was to investigate the potential social hotspots within the production of green coffee beans. Social hotspots were understood as*: "unit processes located in a region where a situation occurs that may be considered as a problem, a risk or an opportunity, in function of a social theme or interest."* (UNEP/SETAC, 2009).

The inventory data used in this case study has been previously collected by Nestlé to support their continuous monitoring and improvement programs on environmental, social and economic issues. The data was collected with an aim to identify and actively tackle these issues. The data on local conditions in the 2 regions in Colombia was collected directly from 313 smallholders in 2014. 138 in the A region and 175 in the B region. Altogether, 133 data points were available on social, environmental and economic aspects from which a selected number was used in the case study.

2.3.2 Guar case study

India represents 80% of the world's annual guar seed production (Solvay, n.d.) In India, Rajasthan is the leading producer of guar seed. An average size of smallholders` landholding in Rajistan region is estimated to be 6.49 ha with 80% of it allocated to guar cultivation. In partnership with TechnoServe, Solvay launched a three-year project called "Sustainable Guar Initiative" in May 2015 to promote sustainable growth of the Guar production system in India. The project is being implemented in 13 villages in two blocks of Bikaner district in the state of Rajasthan (ibid). The goal of the Guar case study was to compare the social impact of Guar seeds produced as part of the Sustainable Guar Initiative and traditionally produced Guar seeds in the Bikaner district, Rajasthan.

The inventory data used in this case study to assess the impacts on smallholder from the production of Guar seeds has been previously collected by Solvay and TechnoServe to support the Sustainable Guar Initiative. The data sources reviewed for the case study consisted of:

- a scoping report from 2013 outlining the local conditions and Guar production system,
- a baseline study from 2014 which surveyed 150 farmers in Bikaner district,
- annual reports and KPIs collected for the Sustainable Guar Initiative,
- the training modules offered to smallholders through the project period,
- additional insights were gained from a meeting with the NGO TechnoServe, a partner carrying out the activities in India.

3 Results

The following chapter presents the proposed PSIA method for smallholders and outlines the key lessons learned and methodological challenges encountered while applying the method to real-life cases.

3.1 PSIA method for smallholders

Altogether nine social topics were determined for the stakeholder group Smallholders (presented in Table 7). Each of the social topics were selected in relation to the AoP smallholder livelihoods and correspond to at least one Livelihood asset (previously described in section 2.2.1). For example, social topic 'Meeting basic needs' is closely linked with such Livelihood assets as health, ability to work knowledge, water supply and sanitation. Whilst social topic 'Trading relationship' correspond to such assets as membership of formalised groups and relationships of trust that facilitate economic opportunities. It has to be noted that the identified linkages are plausible, yet the impact pathways are uncertain and could be affected my multiple outside factors.

The proposed social topics addresses issues not only directly linked with production processes (Education and training i.e. agriculture practices) but also includes important social aspects at a household level that are linked with smallholders` the ability to work (i.e. meeting basic needs). Moreover, social topic 'Next generation smallholders' addresses the attractiveness of the profession.

Smallholders	Meeting basic needs
	Access to services and inputs
	Women`s empowerment
	Education and Training
	Child Labour
	Health and Safety
	Land titles
	Trading relationship
	Next generation smallholders

Table 6 Social topics determined for the stakeholder group Smallholders

Appendix 3 defines the selected social topics in more detail and presents the rationale for the selection. Moreover, quantitative and qualitative performance indicators together with reference values and reference scales are provided in the appendix. At least 2 quantitative and 2 qualitative performance indicators are determined for each social topic. Table 7 displays an example of how social topics are defined.

Table 7 Definition of social topic "Women`s empowerment" with respective indicators, reference values and references scales

Social topic	**Women`s empowerment**
Definition	Equal access to jobs, training, advancement, benefits, and other rights for women, as well as opportunities to maintain a cultural identity (OXFAM & UNGC, 2015). Social topic aims to assess local conditions and the extent to which contributions are made to empower women smallholders.
Rationale	Women smallholders the most disregarded actors in the value chain, investing in programmes targeted at women could have an impact on children`s education, health and food security at the household (TWIN, 2013). Moreover, it is important to understand the role of women in the supply chain to better target training and other interventions.
Quantitative approach	
Performance indicators	
1. The number of empowerment programs, events or other interventions focused on inclusivity of women smallholders carried out during the reporting period. ***Answer format:*** Whole number	
1. Percentage of women smallholders who are satisfied with the provided interventions. ***Answer format***: Percentage	
Reference values	
Performance indicator 1: 1 action	
Performance indicators 2: 80%	
Scale-based approach	
Performance indicators	
1. Women`s role at the household and in growing the focus crop is evaluated and recognised. ***Answer format:*** Yes/No	
2. Assessment is conducted to understand needs, barriers and opportunities of women smallholders. ***Answer format:*** Yes/No	
3. Empowerment programs, events or other interventions focused on inclusivity of women smallholders are promoted and carried out. ***Answer format:*** Yes/No	
4. Percentage of women smallholders interviewed who are satisfied with the provided empowerment programs. ***Answer format:*** Percentage	
5. Women`s needs and progress made are regularly monitored. ***Answer format:*** Yes/No	
Reference scales	
+2	All the items listed on +1 level. Evidence indicate that the thought practices are applied. The local situation is continuously monitored.
+1	All items listed on 0 level. Most women believe that the offered activities are useful (correspond to their needs and interests).
0	The role of women smallholders in growing crops is evaluated and recognised within the value chain. Women smallholders have equal rights and opportunities to provided interventions. Activities tailored to enhance women`s empowerment are promoted and carried out.
-1	The role of women smallholders in growing crops is evaluated and recognised. Activities tailored to enhance women`s empowerment are not promoted and carried out.
-2	The role of women in growing crops is not evaluated and recognised within the value chain, and no actions are undertaken to identify opportunities for gender inclusive interventions. Generic data sources indicate that women smallholders` role is not recognised regionally.
Glossary	
Women`s role	May refer to the distribution of work, the role of decision-making at the household level, farm management, income generation, etc.
Empowerment programs	May refer to women`s income generation projects, training and development, technical assistance, women`s health
Generic data sources	Social hotspot database (SHDB), reports from governmental and non-governmental organisations, research papers, etc.

3.2 Learnings from the case studies

Due to confidentiality agreements among the parties involved in this project, full results of the case studies are not disclosed. However, this subchapter outlines the key challenges identified when applying the proposed method on real-life cases.

Application of the PSIA method for smallholders showed that an assessment can be conducted for each of the proposed social topics. As shown in Table 8, data was available for all the social topics, and the method provided a systematic way of bringing together information from multiple sources within the companies. Please note that data availability is not directly connected with the assessments scores as abundance of data does not guarantee a good score. Appendix 5 provides an example from each case study to demonstrate how the scale-based approach was applied. These examples illustrate the supporting evidence collected per each performance indicator, how the inventory data is interpreted and how a social topic score is assigned.

The scale-based approach allowed to assess both negative and positive performance and helped to identify potential hotspots. However, no new knowledge was generated from the case studies. It is largely because no additional data collection took place and readily available data were utilised. Nevertheless, if an assessment was conducted in 'uncharted' territory, it would provide knowledge about the supply chains on key social issues and serve as a tool for identifying potential risks and areas for improvement. This framework includes the key social issues identified in the literature and serves as the basis for such assessments.

	Social topics proposed for smallholders	Data coverage, Coffee case	Data coverage, Guar case
		PIs, both regions	PIs, Sustainable Guar
Smallholders	Meeting basic needs	4 out of 7	5 out of 7
	Access to basic services & inputs	2 out of 4	3 out of 4
	Women`s empowerment	3 out of 5	4 out of 5
	Education & Training	7 out of 7	6 out of 6
	Child labour	3 out of 4	4 out of 4
	Health & Safety	4 out of 6	4 out of 6
	Land rights	1 out of 3	2 out of 3
	Trading relationship	3 out of 4	3 out of 3
	Next generation smallholders	1 out of 2	2 out of 4

Table 8 Data availability in each of the case studies per social topic

It is difficult to evaluate reliability of the method when the "true or correct" answer is not known, and results cannot be compared to it. Does the methodology give the correct answer? This question cannot be answered. However, it is possible to evaluate the reliability of inventory data as suggested in the Handbook (page 12). In both case studies, data collected directly from smallholders through field visits and observations were used and, therefore, was deemed reliable. Table 9 outlines the data quality score given. Nonetheless, it has to be kept in mind that this data was collected by 3rd party and the reliability of the data could be distorted by my multiple other factors such as tendency to not disclose the correct information and conceal facts, language barriers, no knowledge of local culture. Moreover, as the data was not specifically collected for these assessments, some of the data points had to be used as proxies.

	Assessment A	Assessment B	Assessment C
Accuracy, integrity and validity	Quality score 1. Data obtained from value chain actor directly with documentation.	Quality score 1. Data obtained from value chain actor directly with documentation.	Quality score 4. Data obtained from the literature. Quality score 1. Data obtained from value chain actor directly with documentation.
Timeliness	Quality score 3. Data from 2 years before the reporting period. Also, Quality score 1.	Quality score 1. Data from current reporting period.	Quality score 3. Data from 2 years before the reporting period.
Correlation	Quality score 1. Data from specific "sites" under the study.	Quality score 1. Data from specific "sites" under the study.	Quality score 1. Data from specific "sites" under the study.

Table 9 Assessment of data quality as defined in the handbook for PSIA (p.12)

During the assessment process, a question arose of whether the impacts on smallholders should be assessed per household, village or region. In both case studies detailed data was available per individual household/farm, and theoretically, hundreds of household level assessments could be performed within one case study. However, keeping in mind that the scale-based approach was set up to measure not only local conditions but also the activities undertaken by value chain actor, it was assumed that the results would be similar within the limits of one village or regions. Therefore, the assessments were conducted on regional/district level by using averages.

Table 10 shows a summary of the results obtained from Coffee and Guar case studies. Altogether 4 assessments were conducted - 2 assessments for each case study. In one of the case studies both assessments resulted in identical social topic scores, therefore, the results here are presented as one. Hence, results for assessments A, B and C are presented below. Social topic scores and aggregated stakeholder scores are displayed for each assessment. Minus values represent negative performance, whereas, positive values represent positive impact.

Social topic	Assessment A	Assessment B	Assessment C
Meeting basic needs	-1	-1	-1
Access to basic services	0	0	-1
Women`s empowerment	0	+2	-1
Education and Training	+1	+2	-1
Child labour	0	+1	0
Health & Safety	-1	0	0
Land rights	0	0	0
Trading relationship	+1	+1	-1
Next generation smallholders	+1	-1	-1
Stakeholder score	0.11	0.44	-0.67

Table 10 Overview of the assessment scores obtained for both case studies

'Meeting basic needs' was flagged as a hotspot in all the conducted assessments. The case studies showed that scoring the social topic is not a straightforward process as 3 separate social issues are covered within one assessment:

- Access to safe drinking water
- Access to improved sanitation
- Food security

Access to safe drinking water is often assessed as both case studies indicated. If needed, information on access to improved sanitation in rural areas can be obtained from generic data sources i.e. WHO data. However, assessment on food security and nutrition is a complex process which is not often undertaken in the capacity required for this PSIA method for smallholders. Generic data is available in different formats and deemed not applicable. That is, FAO offers information on the calorific intake. Thus, a question arose on how to approach this social topic when data is available for two out of three assessed issues. The Handbook states that if no data is available, then a score of '-2' should be assigned. However, in both case studies an incomplete set of data was available rather no data at all. Throughout discussions with the Roundtable members, it was agreed that if data is available for at least 2 out of 3 issues, then a score higher than '-2' can be assigned.

Another lesson learnt from the case studies is that the social topic Health & Safety could cause confusion among the practitioners applying the method. All 3 stakeholder groups presented in the current handbook, are linked to social topic Health & Safety. That is, while the term used is the same, performance indicators differ for each stakeholder group. To maintain the same style, the identical term was also used for stakeholder group Smallholders. In the proposed method, this social topic intends to address only health and safety issues related to working conditions and practices. However, confusion arises because smallholder assessment generally looks not only at working practices but also households. During discussions, it was observed that Roundtable members were inclined to place such social issues as hygiene and sanitation under 'Health'. Therefore, changing the name of this social topic should be considered. The name should clearly state that only work-related issues are addressed e.g. Safe working practices.

During the inventory data collection, it became apparent that the training or assistance offered to smallholders often covers aspects from multiples social topics. For example, training on agronomy practices also covered safety measures that should be taken when working with machinery or agrochemicals. Theoretically, to avoid double counting, all the training related to safety could be captured by social topic Health and Safety. However, the proposed method for smallholders also aims to assess satisfaction/usefulness of the provided training and application of the thought practices. The issue encountered during the case studies was that after the training only one feedback form was filled in by smallholders. Hence, in both case studies, all the training related to safety was captured by social topic Education & Training. However, clear guidance on this aspect is needed.

Another overlap encountered was among the social topics Women`s Empowerment and Education & Training. In one of the case studies smallholders` spouses were offered to participate in training activities, thus encouraging women to participate and take more active role in growing the focus crop. It is understood that promoting training is the first step towards improvement and lays the groundwork for next interventions to come. Thus, this activity should be captured by social topic Women`s empowerment. However, practitioners should be careful, not double count and capture this by social topic Education & Training. Another aspect to consider is that female smallholders were offered the same opportunities as male smallholders. By definition, this should be considered as Women`s empowerment. However, in this specific case study, this was considered under training an education because the primary goal of this intervention was to provide training to all the smallholders.

In one of the case studies, a question was raised on how to handle the overlaps between social topics 'Meeting basic needs' and 'Women`s empowerment. In this case, women smallholders were offered training, seeds, pest control mechanisms and assistance on how to establish their own kitchen gardens. The goal of these interventions was to ensure year-long supply of green vegetables from their own gardens. On the one hand, this solution aims to enhance the nutritional value of the consumed food at smallholder households and eliminate any risk of potential food insecurity. But on the other hand, this solution empowered women as they did not have to rely on men to bring ingredient from

the market once a week and opened opportunities for women to have their own source of income. Consequently, the question is whether this initiative should be captured by social 'Meeting basic needs' or by social topic 'Women`s empowerment'. In this specific case study, a decision was made to capture this by social topic 'Meeting basic needs', however, there is a need for additional guidelines on how to handle potential overlaps.

Application of the proposed PSIA method for smallholders showed that data is varying degrees was available for all the proposed social topics (see table 10). Even though the data used in both case studies has been collected for different purposes, it provides an indication of the type of questions often asked in smallholder/farm assessmets and highlights the potential data gaps. A few potentially challenging performance indicators were determined:

- Food security (complex assessment which is not often conducted & lack of generic data)
- Smallholder`s satisfaction with offered inputs and services (in both cases data was not available)
- Specific information on smallholder`s satisfaction with H&S interventions offered to them
- Smallholders perception on their land security (No data in both cases)
- Additionally, it should be evaluated how accurate are the satisfaction and application surveys. What can realistically be expected?
- Net income is considered by social topic 'Next generation smallholders'. Information was collected in both case studies, but accuracy of the disclosed fata is questionable.

3.3 Visualisation of results

Therefore, the following illustration is proposed for presenting the key results of the assessment. Of course, considering that each assessed stakeholder group would require a separate illustration. The illustration presents all nine social topics assessed for smallholders, scores assigned, aggregated result/stakeholder score and the overall quality of the data used to evaluate the performance. The aim of the illustration is to convey the message without underwhelming readers most effectively / the aim is to provide a quick overview of the results. The same colour scheme is used as in the reference scales, with red indicating non-acceptable performance or unavailability of data and dark green indicating an ideal performance. If based on materiality assessment, a social topic is deemed to be irrelevant and therefore excluded from the assessment, the whole section can be marked in light grey. Please note that the score presented in the illustration below are fictional.

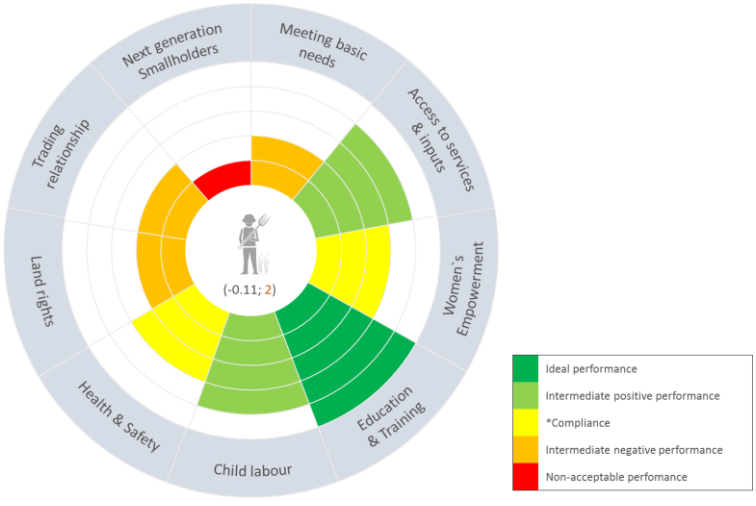


Figure 5 Illustration of fictional results

4 Discussion

Typically SLCA methods incorporating Type I characterisation models, emphasise the importance of product specific systems (Wu et al., 2014), however, such specification may reduce the applicability of the developed methods for future studies and widespread use. The method developed for smallholders is based on consensus approach and compromises had to be made in the development. The aim was to develop a method that is standardised for smallholders and is not designed for a specific geographic region. The list of social topics and performance indicators proposed for smallholders is limited, but if needed, can be expanded. The method provides a framework for assessing smallholder within PSIA, which can be adapted to specific case studies. However, the assessment should focus on material issues. The Handbook advises practitioners to assess the materiality of issues as a first step in conducting the assessment. Systematic identification of materiality issues in the newly proposed method for smallholder should follow the same procedure. However, a stronger focus should be placed on involving smallholders in the process. The materiality assessment could give voice to smallholders and enable them to identify the most salient issues for themselves. However, different stakeholder groups could voice contradicting opinions on the importance of social issues. For example, in the eyes of consumers and society, Child labour is often seen as a key social issue to address. However, smallholders may not see it as a problem at all. Thus, the materiality assessment will require practitioners to strike a balance between the interests of stakeholders involves and the business value. Additionally, a screening exercise is recommended before conducting a full assessment to identify whether all performance indicators are relevant for the analysed product.

Development of the PSIA method for smallholders did not include the development of weighting factors. Thus, aggregation of social topic scores and the total stakeholder score were based on equal weighting. Weighting factors may be necessary when a distinction needs to be made on the importance of various social topics assesses e.g. in the decision-making process. Hence, there are opportunities to establish either case specific or generic weighting factors based on their perceived importance or relevance for the stakeholders. The development process could be based on smallholder or expert opinion. On indicator level, this could be very important for social topic “Meeting basic needs’ which is covering 3 separate social issues. Meanwhile, weighting factors could play a significant role when aggregating stakeholder scores. Here, case-specific factors should be developed based on the importance of social issues in the assessed geographic region and sector. The weighting factors could be established by asking an additional set of questions to smallholders during the data collection process. Having said that, development of case study specific weighting factors would be time-consuming process.

The development of the PSIA method for smallholders relied mainly on literature review, discussions with the Roundtable members and internal experts in the companies working with smallholder assessments. Therefore, it may be desirable to review the method externality to identify further opportunities for improvement. Moreover, in the process of establishing reference scales a few not science-based choices where made that may need to be revisited. That is, a target of 80% was set for smallholder’s satisfaction with the offered interventions. It was assumed that that a target of 100% is unrealistic, however what is the desirable target was not explicitly clear. Therefore, further exploration of the targets proposed in the reference scales is needed.

Due to the time constraints, only one stakeholder group was addressed in the case studies. In the future, it is suggested to apply the whole PSIA method along the whole product value chain. Starting from the raw materials and ending with the end of life of products. Assessment of more complex supply chains would provide insights on the compatibility of smallholder method with the current Handbook. As well as, there is a need to investigate how the assessment could aggregated when a product system includes multiple raw materials produced by smallholders.

Moreover, the overlaps with stakeholder group local communities have not been fully addressed. It is understood that smallholders could form up to 100% of the 'Local communities'. Thus, the question arises whether in this case the assessment of impacts on local communities should be excluded? However, if an assessment for local communities is performed, the social aspects should be addressed on two levels: smallholders` impact on local communities and indirect impact on local communities from the interventions carried out by value chain actors. That is whether smallholders themselves cause a positive or negative impact on local communities by for example lowering the water table, discarding waste in the rivers, improving the local economy. Alternatively, interventions targeted at smallholders may have a positive or negative impact on local communities e.g. transfer of knowledge or improved infrastructure.

This paper does not address *smallholders-outgrowers*. For certain commodities, smallholders may not be fully independent. For example, the Indonesian oil palm sector consists of various types of smallholders and are usually divided into two categories, (i) tied alternatively called scheme, plasma, dependent or affiliated) and (ii) independent smallholders (Sullivan, 2013). Tied smallholders participate in outgrow schemes, where farmers transfer some part of their land to an oil palm company for inclusion in an estate plantation. Tied smallholders supply their produce to the plantation company's palm oil mill. Their relationship is based on a contract, while the plantation company retains responsibility for technical assistance and marketing. In contrast, independent smallholders are free to sell to any buyer. The basic distinction between smallholder farmer and smallholder-worker or shareholder is as follows: the smallholder farmer takes risks and invests in his or her land, while the smallholder-worker or shareholder are paid a salary or receive a periodic share. In the context of PSIA, smallholder-worker could be considered as a worker and assessed with the performance indicators suggested for stakeholder group Workers. However, smallholder-farmer might still be exposed to social risks associated with smallholders. Therefore, further guidance is need on how to handle *smallholders-outgrowers* within PSIA method for smallholders.

It should be noted that the cases studies looked at in this paper have well-mapped supply chains. The smallholders supplying raw materials to traders and mills were known. However, in supply chains with little visibility/traceability, it could be harder for practitioners to actually reach smallholders as, typically, efforts have been put into addressing Tier 1 suppliers. As actual on-site data collection was not tested during this project, it is not clear what would be the best approach for reaching smallholders. It is assumed that companies would need to collaborate with partner who speak in the local language and knows how to address sensitve subjects. However, in order to make these assessments operational, the data collection would need to be embedded in the supply chains to optimise the resources spent Potentially this could open opportunities for more frequent data collection than irregular collection efforts from outside the supply system.

How data collection could be embedded in the supply chains:

1. Coordinating with 3rd party audits, product certification standards in the case that smallholders hold certification (to name some, UTZ for cocoa, RA for coffee or Bonsucro for sugar)
2. Coordinating data collection wit farmer cooperative audits in the case if smallholders are organised in groups. (Possibility for later stages as one of the PIs in the assessment are aimed at encouraging smallholder to join and form smallholder groups)
3. Coordinating data collection at the product collection point.
4. Data collection software/ ICT tools such as SupplyShift.

5 Conclusions

This thesis developed an extension to the Handbook for Product Social Impact Assessments for assessing potential social impacts on stakeholder group Smallholder. The development process relied on literature review, experience shared within the Roundtable for Product Social Metrics and feedback/review from the Roundtable members. The proposed method is based on 9 social topics that address issues connect with the area of protection – Livelihoods. Relatively limited number of social topics were selected to keep the method manageable for companies, simple and transparent. However, the selected topics allow examination of the key social issues associated with smallholder production systems. The method presents both quantitative and scale-based impact assessment approaches for each of the nine social topics.

The scale-based approach was applied to 2 case studies to test the applicability of the method on real-life cases. The method proved to be a useful framework for analysing the readily available data at the companies. The method provided a systematic way of compiling the collected data points. The scale-based approach for smallholders allowed to assess both negative and positive performance within the production step and helped to identify potential hotspots.

As part of the project, a new way of how to illustrate the results from case studies was proposed. The illustration utilised the same colour scheme as the scale-based approach to provide an easy to understand illustration.

Numerous opportunities for improvement were identified when the method for smallholders was applied in case studies. A clear guidance on how to manage potential overlaps among the social topics is needed, and there may be a need to reconsider the importance of social topic Health and Safety. Moreover, the assessment process highlighted the performance indicators and social topics that may be challenging due to lack of data. For example, food security is a complex assessment and lacks the generic data sources.

As for the next steps, it is recommended to test the quantitative impact assessment approach on case studies and review the proposed method externally.

For further assessments, it recommended to include participatory based approaches for experts to facilitate inclusion of context-specific social issues e.g. materiality assessments. Furthermore, it is suggested to test the proposed methodology to cases studies covering the whole product lifecycle. It may be desirable to test the method on more complex products where multiple raw materials are sourced from smallholders. It would also allow to gain a better understanding on how to reach smallholders when supply chains are not fully visible.

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Appendix 1 - Literature review, defining smallholders

The various reviewed literature sources define smallholders by a combination of different parameters and criteria, an overview can be seen in the table below:

	Parameter described in the literature	Specifications/Examples
1	Labour input	Farm work is done only by family labour
		Additional workers are not hired all year long (seasonal labour)
		Smallholder hires less than X number of permanent workers For example: • Max. 2 employees hired permanently • 500 days' wages are paid per annum
		X Ratio family labour versus hired labour
2	Farm management responsibility	Smallholder and other members of the family are responsible for farm command/management (have a say in how to farm) and are not bound to a plantation or a company.
		Smallholder bound to a plantation or a company (outgrower schemes, contract farming/agriculture) where freedom of making own decisions is constrained by contractual obligations.
		Smallholder owns both tied & independent smallholdings
		Smallholder devotes >50% of their working time to working on his/her farm
3	Family's place of residence (max distance)	Family resides on farm or nearby site
		Family resides on a nearby site at a distance ≤ 50 km.
4	Landholding size (Max. size of farm, ha Max number of animals)	Land cultivated is less than 2 ha
		Land cultivated in between 2-10 ha
		Land cultivated is more than 10 ha
		The land cultivated is equal or below the regional/national or sector average
		E.g. Smallholder dairy farmers having 1-50 animals
5	Source of farm income/earnings	Share of household income from farming (most of the income comes from their farm) For example: • 50 % of income derived from on-farm activities (with a cap value of non-farm income equivalent to 3 legal wages for rural workers, about US$ 6,000/ year)
		Multiple income sources (off-farm activities)
		Costs of an audit or certification compared to commodity value For example: The average annual income from the certified product is below approximately 5,000 US$ taken over a number of years (e. g 5 years).
6	Farming system	Low-tech production system
		Rainfed system
		Modern irrigation system
7	Capacity	Limited capacity of farm management
		Limited capacity of farm administration
		Limited capacity of marketing on his/her own
		Limited capacity of storing and processing
		Limited capacity of obtaining product certification

		Limited capacity of communicating in the language of certifier
8	Legal aspects	Formal land titles or smallholder is a lawful occupier of the land
		Farm is registered as a private company
9	Location	Rural area
		Urban area
		Isolated area

*Outgrower - Smallholders in a more formal, managed relationship with an exporter or processor (Source: ETI, 2005)

Examples/Excerpts from the literature

Examples of various definitions and descriptions applied to smallholders in the literature can be found in supporting document uploaded on Google Drive:

https://drive.google.com/file/d/0B2hQsdWV32AJYTVEMGlqOVhsYkE/view?usp=sharing

Appendix 2 – Selection of social topics

Social issues and constraints listed in the literature:

		OECD, 2015	Dep. Of Agriculture, Republic South Africa, 2012	UNCTAD, 2015	ETI, 2005	Sophie Murray, 2012	IFC Handbook for working with Smallholders	FAO, 2015	IFAD, 2013	IFPRI, 2013	COSA	Unilever	Kelloggs	Poverty Footprint tool	IFAD, MPAT	Social Metrics for Chemical Products	ISEAL: Guidance farm economic metrics	Women's empowerment in agriculture index	UNDP Multidimensional Poverty Index (MPI)	Guar project	Nestle proposal
		Contraits listed in the literature									Performance and poverty asessments									Cases	
Resources	Lack of access to land & land quality	•	•			•	•	•	•					•	•						
	Land tenure/ land rights	•		•		•	•		•	•		•	•		•		•				
	Assests such as ICT or fixed assets	•	•	•		•			•	•	•				•	•			•		
	Seeds and fertilizers			•		•		•	•		•				•						
	Water access	•	•		•		•	•	•		•	•		•	•	•			•	•	•
	Adequate toilet facilities				•			•						•	•	•			•		•
	Adequate housing/shelter							•		•				•	•	•			•		•
	Cooking fuel used											•			•				•		
	Protective clothing				•									•	•						
	Access to services		•	•				•		•	•			•							•
	Access to market information		•	•		•	•	•		•		•		•							
	Education & training	•	•				•	•		•	•	•		•	•	•			•	•	•
	Lack of financial & marketing skills		•													•					
	management skills						•				•										
	Health	•			•			•						•	•	•			•		•
	Food security					•	•	•	•	•	•	•		•		•			•	•	•
	Income	•		•	•			•	•	•	•	•		•						•	•
Technological	Land productivity	•	•	•			•	•	•												
	Technical efficiency	•	•				•	•	•	•											
	Know-how, training	•	•				•	•	•		•	•		•	•	•					
	Storage capacity	•					•		•												
Financial	Cash flow deficit	•												•							
	Credit	•	•	•		•	•			•	•			•	•						
	Insurance	•								•				•							
	Farmer share of export price		•											•							
	High transaction costs		•	•																	
	Lack of reliable markets	•	•			•	•	•	•					•							
	Volatile prices			•										•							
Product	Volume	•	•	•					•		•						•				
	Product quality	•	•	•			•			•	•		•								
	Seasonality of production	•																			
	Inconsistency in production		•											•							
	Lack of associativity	•		•			•			•											
	Lack of bargaining power		•				•			•				•							
Structural	Infrastructure (physical and institutional)	•	•	•		•			•	•						•					
	Access to electricity										•	•			•	•			•		
	Lack of proper roads		•	•			•	•	•	•											
	Access to medical facilities/healthcare			•						•				•	•	•					
	Social security				•									•							
	Weather patterns	•					•		•	•											
	Geography	•								•							•				
	Legal	•																			
Other	Progress out of Poverty Index (Income)										•	•									
	Well-being										•										
	Children in school							•		•		•									
	Women`s empowerment									•	•	•		•	•			•		•	•
	Gender equality									•	•	•	•	•	•						
	Trading relationship										•	•		•							
	Next generation farmers						•				•	•									
	worker`s rights												•	•							
	Child labour												•	•							
	Grievance mechanisms													•							•

Grouping of the initial social topics that were further discussed with the Roundtable members:

Social topics	Metrics
Basic needs	Access to water
	Sanitation & hygiene
	Safe accommodation
	Electricity
	Food and nutrition security
Health & Safety	PPE
	Training
Living income	Revenue from the crop
	Labour input
	Production costs
Access to basic services & inputs	Credit
	Market information
	Healthcare
	Roads
	Schools
	Pesticides & seeds
	Technical capacity
Education & training	Skill development, technical assistance, etc.
Women`s empowerment	Role in the decision making
	Sources of income
	Access to training
Land rights	
Child labour	Children attending school
Next generation farmers + Social security	Future of growing this crop
	Job satisfaction
	Work-life balance
	Pension funds
	Insurance
Trading relationship	Loyalty
	Perceived quality of relationship
	FoA and CB
	Transparency

Google Drive link – constraints and metrics
https://drive.google.com/file/d/0B2hQsdWV32AJX0RCWGZfVURSNVU/view?usp=sharing

Appendix 3 – Definitions, performance indicators and impact assessment methods

The appendix describes all 9 selected social topics for the stakeholder group "Smallholder":

- Meeting basic needs
- Access to services and inputs
- Women`s empowerment (described in the main document)
- Education and training
- Child labour
- Health and Safety
- Land rights
- Trading relationship
- Next generation farmers

Description of each social topic follows the same structure as presented in the Handbook for Product Social Impact Assessments (page 30):

- Definition
- Rationale
- Quantitative approach – performance indicators and reference values
- Qualitative approach – performance indicators and reference scales
- Glossary

Social topic 1

Social topic	**Meeting basic needs**
Definition	All smallholders should have sufficient access to basic, essential goods and services (such as adequate water sources, sanitation facilities, food). The social topic aims to assess whether the basic needs are met and the extent to which a contribution is made towards improving the status quo.
Rationale	UN have recognised the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights. Food security is a key component of sustainable livelihoods, understood by many as a basic right, and is a CSR and sustainability risk.
Quantitative approach	
Performance indicators	
1. Percentage of smallholders who have access to improved water sources. ***Answer format:*** Percentage	
1. Percentage of smallholders who have access to improved sanitation. ***Answer format***: Percentage	
2. A number of interventions undertaken during the reporting period to improve smallholders` access to safe drinking water, improved sanitation facilities, hygiene and food security. ***Answer Format***: Whole number	
Reference values	
Performance indicator 1: 95%	
Performance indicators 2: 95%	
Performance indicator 3: 1 intervention	
Scale-based approach	
Performance indicators	
1. Percentage of smallholders who have access to improved water sources. ***Answer format:*** Percentage	
2. Percentage of smallholders who have access to improved sanitation.	

Answer format: Percentage

3. Percentage of smallholders who feel that they do not have sufficient food supply throughout the year/smallholders interviewed who have suffered from food shortage during the reporting period.

Answer format: Percentage

4. Opportunities for improvement are identified

Answer format: Yes/No

5. Interventions focused on improving water management practices, sanitation, hygiene and diverse diets are undertaken to improve the current situation.

Answer format: Yes/No

6. Evidence indicates that smallholders find the interventions useful.

Answer format: Yes/No

7. Continuous monitoring of local conditions to assess whether the situation is not deteriorating.

Answer format: Yes/No

Reference scales

+2	All items listed on level 1. Smallholders` access to safe water sources, improved sanitation facilities and food security is regularly monitored to control whether the current conditions are not deteriorating.
+1	All items listed on Level 0. Actions targeting smallholders` basic needs are undertaken (awareness raising programs, best practices). Evidence indicates that > 80% smallholders find the provided interventions useful.
0	>95% smallholders have access to both safe water sources and improved sanitation. Most of the smallholders feel that they have a sufficient food supply throughout the year
-1	Situation 1: Most of the smallholders have access to improved water sources and sanitation. Most of the smallholders feel that they do not have a sufficient food supply throughout the year. Opportunities for improvement have been identified, but no action are taken. Situation 2: Interventions to improve current conditions are undertaken, but the basic needs are still not met.
-2	Situation 1: Majority of the smallholders do not have access to safe drinking water and improved sanitation facilities. Most of the smallholders feel that they do not have a sufficient food supply throughout the year. Opportunities for improvement have not been identified. Situation 2: Local conditions and risks are not assessed.

Glossary

Improved water source	Source that, by nature of its construction, adequately protects the water from outside contamination, in particular from faecal matter. Common examples: piped household water connection, public standpipe, borehole, protected dug well, protected spring, rainwater collection.
Improved sanitation	Sanitation facilities that hygienically separate human excreta from human contact. E.g. Facilities with sewer connections, septic system connections, pour-flush latrines, ventilated improved pit latrines and pit latrines with a slab or covered pit.
Food and nutrition security	It refers to UNSCN definition: Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life

Social topic 2

Social topic	**Access to services and inputs**
Definition	The extent to which smallholders have access to inputs such as credit, good-quality seeds, and services such as ICT, electricity, infrastructure (e.g. roads, bridges, schools). Social topic aims to both assess local conditions and the contributions made by value chain actors.
Rationale	Many smallholders lack physical and economic access to lucrative markets for their crops. Distance, poor roads, and access to only bicycles or motorbikes for crop transport cause physical isolation. Small quantities of crop to sell, a need for immediate payment, no capacity to safely store crops, and limited knowledge of prices and quality requirements beyond the farm gate are economic constraints.
Quantitative approach	
Performance indicators	
1. The number of interventions undertaken during the reporting period targeting smallholders` access to inputs and services. ***Answer format:*** Whole number	
2. Percentage of smallholders who are satisfied with the provided interventions. ***Answer format***: Percentage	
Reference values	
Performance indicator 1: 1 action	
Performance indicators 2: 80%	
Scale-based approach	
Performance indicators	
1. Type of extension services and inputs available to smallholders are evaluated and opportunities for improvement are identified. ***Answer format:*** Yes/No	
2. Interventions tailored to local conditions and needs are carried out to improve smallholders` access services and inputs. ***Answer format:*** Yes/No	
3. Percentage of smallholders are satisfied with the provided services and inputs. ***Answer format:*** Percentage	
4. Use and application of provided interventions are monitored. ***Answer format:*** Yes/No	
Reference scales	
+2	All items listed on Level 1 Evidence indicated that the offered services and inputs are used by the majority of smallholders.
+1	>=80% of smallholders are satisfied with the services and inputs offered.
0	Interventions are undertaken to improve smallholder`s access to services and inputs.
-1	Extensions services and inputs available to smallholders are identified. Improvement opportunities are identified and evaluated, but no actions are undertaken.
-2	Evidence indicates that smallholders` access to services or inputs is limited. No actions (screening, evaluation, monitoring) are taken to assess the local conditions and evaluate improvement opportunities.
Glossary	
Extension services	Extension services offered to smallholders could include but are not limited to: access to input, credit, development of other markets, spraying, irrigation, etc.
Access to inputs	E.g. Planting seed, tree seedlings, fertilizer, chemical and non-chemical crop protection products, agricultural hand tools, irrigation products (like drip systems), and mechanized equipment for production or processing.
Risk management tools and services	E.g. Insurance, advanced payment, input credit, etc.

Social topic 3

Social topic	**Women`s empowerment**
Definition	Equal access to jobs, training, advancement, benefits, and other rights for women, as well as opportunities to maintain cultural identity (Poverty footprint). Social topic aims to assess local conditions and the extent to which contributions are made to empower women smallholders.
Rationale	Women smallholders the most marginalised actors in the value chain, investing in programmes targeted at women could have a greater impact on education, health and food security at the household (TWIN, 2013). Moreover, it is important to understand the role of women in the supply chain to better target training and other interventions.

Quantitative approach

Performance indicators

1. The number of empowerment programs, events or other interventions focused on inclusivity of women smallholders carried out during the reporting period.

Answer format: Whole number

3. Percentage of women smallholders who are satisfied with the provided interventions.

Answer format: Percentage

Reference values

Performance indicator 1: 1 action

Performance indicators 2: 80%

Scale-based approach

Performance indicators

1. Women`s role at the household and in growing the focus crop is evaluated and recognised.

Answer format: Yes/No

2. Assessment is conducted to understand needs, barriers and opportunities of women smallholders.

Answer format: Yes/No

3. Empowerment programs, events or other interventions focused on inclusivity of women smallholders are promoted and carried out.

Answer format: Yes/No

4. Percentage of women smallholders interviewed who are satisfied with the empowerment programs provided.

Answer format: Percentage

5. Women`s needs and progress made are regularly monitored.

Answer format: Yes/No

Reference scales

+2	All the items listed on +1 level. Evidence indicate that the thought practices are applied. The local situation is continuously monitored.
+1	All items listed on 0 level. Most women believe that the offered activities are useful (correspond to their needs and interests).
0	The role of women smallholders in growing crops is evaluated and recognised within the value chain. Women smallholders have equal rights and opportunities to provided interventions. Activities tailored to enhance women`s empowerment are promoted and carried out.
-1	The role of women smallholders in growing crops is evaluated and recognised. Activities tailored to enhance women`s empowerment are not promoted and carried out.
-2	The role of women in growing crops is not evaluated and recognised within the value chain, and no actions are undertaken to identify opportunities for gender inclusive interventions. Generic data sources indicate that women smallholders` role is not recognised regionally.

Glossary

Women`s role	May refer to distribution of work, role of decision making at household level, farm management, income generation, etc.
Gender analysis	Addresses constraints, needs, interests and availability i.e. the planning and scheduling allows women smallholders to participate
Empowerment programs	May refer to women`s income generation projects, training and development, technical assistance, women`s health
Generic data sources	Social hotspot data base (SHDB), reports from governmental and non-governmental organisations, research papers, etc.

Social topic 4

Social topic	Education and training
Definition	Human development includes the process of enlarging people's choices by expanding human capabilities and functioning, thus enabling women and men to lead long and healthy lives, to be knowledgeable and to have a decent standard of living. The social topics aims to assess the extent to which a contribution is made towards expanding the knowledge base of small-holders and unlocking their earning capabilities through improved access to training, knowledge, information, technology and technical assistance.
Rationale	Many smallholders have little formal education, which limits their ability to keep adequate written records or educate themselves about improved agricultural practices. They may have only a vague idea of basic metrics, such as farm size, crop yield, and real costs, on their own farms.
Quantitative approach	
Performance indicators	
1. Percentage of smallholder farmers who received training and technical assistance during the re-porting period. ***Answer format:*** Percentage	
2. Number of training programmes targeting smallholders during the reporting period. ***Answer format***: Whole number	
3. Percentage of smallholders satisfied with the training received. ***Answer format***: Percentages	
Reference values	
Performance indicator 1: 100%	
Performance indicator 2:1 program	
Performance indicator 3: 80%	
Scale-based approach	
Performance indicators	
1. Needs and opportunities for smallholder training and skill development are identified ***Answer format:*** Yes/No	
2. Training and other initiatives offered to smallholders have transparent guidelines and timelines. ***Answer format:*** Yes/No	
3. Percentage of smallholders satisfied with the received training and/or technical assistance ***Answer format:*** Percentage	
4. Percentage of smallholders who have implemented practices or activities demonstrated as part of the training and technical assistance. ***Answer format:*** Yes/No	
5. Percentage of smallholders who possess/are affiliated to a (product) certification schemes ***Answer format:*** Percentage	
6. Ongoing training and technical assistance is offered to smallholders. ***Answer format:*** Yes/No	
7. Progress and smallholder`s needs are regularly monitored. ***Answer format:*** Yes/No	
Reference scales	
+2	Evidence indicate (>75%) of smallholders have implemented taught practices. Ongoing training and technical assistance are offered to smallholders. Progress and smallholders` needs are continuously monitored.
+1	>80% of smallholders are satisfied with the training and technical assistance received.
0	Training programs and technical assistance are offered to smallholders have clear guidelines and timelines. (If relevant) Most of the smallholders possess/are affiliated to product certification scheme.
-1	Opportunities to improve and build smallholder capabilities are identified, but no initiatives are undertaken.
-2	Opportunities to improve and to create smallholder capabilities are not identified

Social topic 5

Social topic	**Child labour**
Definition	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. Minor children can perform work at their own parents' farm for activities not considered dangerous, as long as it does not affect their school attendance and their moral, social and physical development. Work must be appropriate to the subject's age and physical condition.
Rationale	
Quantitative approach	
Performance indicators	
1. Number of actions during the reporting period targeting smallholders raise awareness of the issue of child labour. ***Answer format:*** Whole number	
2. Number of child labour cases identified during the reporting period ***Answer format***: Whole number	
3. Percentage of identified child labour cases followed up and assisted with remediation. ***Answer format***: Percentage	
Reference values	
Performance indicator 1: 1 action	
Performance indicator 2: 0 cases	
Performance indicator 3: 100%	
Scale-based approach	
Performance indicators	
1. Risk of child labour in a particular region and sector is identified/known. ***Answer format:*** Yes/No	
2. Child labour monitoring mechanism are in place. (It is monitored whether smallholder`s children are enrolled in school during the school period (both male and female children). OR Percentage of smallholder children attending school.) ***Answer format:*** Yes/No	
3. Reasons for children not attending school are understood (e.g. financial, cultural, etc.). And opportunities for improvement are identified. ***Answer format:*** Yes/No	
4. Actions are taken to mitigate risk of child labour, raise awareness of the issue, and support children`s school education. ***Answer format:*** Yes/No	
5. Smallholders possess a product certification scheme. ***Answer format:*** Yes/No	
Reference scales	
+2	Items listed on Level 1. Progress is regularly monitored.
+1	Child labour monitoring mechanisms are in place. Actions are taken to mitigate the risk of child labour, raise awareness of the issue, and support children`s school education.
0	Situation 1: No child labour is detected in the region, or the risk of child labour is very low. Evidence exist that female and male smallholder children are enrolled and attend school. Situation 2: Evidence indicates that majority of smallholders sell products under certification schemes.
-1	The risk of child labour in the region and sector is identified. Children have little access to school/ do not attend school. Root causes of child labour are understood, and opportunities for improvement are identified, but no actions are taken to mitigate the risk of child labour. Situation 2: Actions are taken to mitigate the risk of child labour, but cases of child labour are reported (child labour is still prevalent).

-2	Situation 1: High and very high risk of child labour in a particular region and sector is identified (site specific data, literature sources, SHDB) but no actions are taken to mitigate the risks. Situation 2: The level of child labour risks are not known/ no human rights assessments are conducted.

Glossary

Child labour monitoring mechanisms	Monitoring and evaluation surveys, self-assessment questionnaires, audits, etc.
Hazardous work	Work which by its nature or the circumstances in which it is carried out is likely to harm the health, safety, or morals of children. Hazardous work must not be performed by any worker under the age of 18.
Generic data sources	E.g. Social Hotspot DB, Child labour index, audits, precedents in press, human rights due diligence assessment, etc.

Social topic 6

Social topic	**Health and Safety (Safe working practices)**
Definition	Smallholders should ensure safe working conditions for themselves, family members and workers. The indicator aims to measure the risks associated with smallholder working conditions and the extent to which extent to which the company is making contributions to increasing good safety procedures by engaging smallholders in training programs, awareness raising events, etc
Rationale	
Quantitative approach	
Performance indicators	
1. Number of H&S risks identified during the reporting period. ***Answer format:*** Whole number	
2. Number of actions targeting health and safety of smallholders during the reporting period. ***Answer format***: Whole number	
3. Percentage of smallholders who are satisfied with the interventions/ training received. ***Answer format:*** Percentage	
Reference values	
Performance indicator 1: 0	
Performance indicator 2: 1 action	
Performance indicator 3: 80%	
Scale-based approach	
Performance indicators	
1. Risks and Opportunities for improving smallholders` working conditions/occupational safety are identified. ***Answer format:*** Yes/No	
2. Percentage of smallholders who have access to PPE (when necessary). ***Answer format:*** Percentage	
3. Working conditions, practices and progress is regularly monitored. ***Answer format:*** Yes/No	
4. Training focusing on safe working practices (handling of input chemicals, machinery, tools) and first aid is an offer to smallholders. ***Answer format:*** Yes/No	
5. Percentage of smallholders who find the training offered useful. ***Answer format:*** Percentage	
6. Compliance with international or national regulations in regard to banned chemicals are their application by smallholders are monitored. ***Answer format:*** Yes/No	
7. Percentage of smallholders who possess/are affiliated to product certification schemes. ***Answer format:*** Percentage	
Reference scales	
+2	Items listed on + 1 level. Working conditions, practices and progress is regularly monitored. Evidence indicates that smallholder farmers have adopted thought practices.
+1	Interventions focusing on safety, handling of input chemicals and/or machinery and tools is an offer to smallholders. Evidence indicates that >80 % of smallholders found the training/interventions useful.
0	Situation 1: Most of the smallholders have access to adequate PPE. Evidence indicate that internationally banned chemicals are not used. Situation 2: Most the product is bought from smallholders is sold under certification scheme.
-1	Situation 1: Most smallholders do not have access to adequate PPE. Reasons have been identified for the lack of access and/ or usage of PPE from smallholders. Interventions are taken to addresses the major reasons. Most smallholders do not use internationally banned chemicals.
-2	Situation 1: Health and Safety risks are not assessed. Situation 2: Most smallholders do not have access to adequate PPE. Reasons have not been identified for the lack of access and/ or usage of PPE from smallholders.
Glossary	
PPE	Personal protection equipment such as gloves, masks, overalls/coveralls, boots, goggles, etc.

Social topic 7

Social topic	**Land rights**
Definition	Rights to the land that are clearly defined, long-term, enforceable, appropriately transferable, and socially and legally legitimate. Land tenure security exists when an individual or group is confident that they have rights to a piece of land on a long-term basis, protected from dispossession by outside sources. The social topic aims to assess smallholder`s legal rights to land and tenure security.
Rationale	Smallholder farmers rely on land for their livelihoods; fishing communities need access to lakes and rivers; indigenous peoples find deep cultural and spiritual value in their territorial land. Property is often allocated by tradition and culture. The vast majority of smallholders do not have formal title to the land they farm. They may own the land through traditional structures, or they could be sharecroppers or renters. Lack of formal land tenure is often a constraint upon investment in the farm as well as the ability to raise finance. A second problem is the lack of equality of land tenure between men and women.
Quantitative approach	
Performance indicators	
1. Percentage of smallholders who have secure legal rights to land. ***Answer format:*** Percentage	
2. Number of land grabs reported in the area during the reporting period. ***Answer format***: Whole number	
Reference values	
Performance indicator 1: 100 %	
Performance indicators 2: 0	
Scale-based approach	
Performance indicators	
1. Percentage of smallholders who have documented legal rights to land. ***Answer format:*** Percentage	
2. Percentage of smallholders who feel that their land rights are secure. ***Answer format:*** Percentage	
3. Risk of land grabbing and tenure security in the region is monitored. ***Answer format:*** Yes/No	
Reference scales	
+2	All items listed on + 1 level. Evidence can be given that no land grabbing takes place in the region. Most of the smallholders feel that their land rights are secured.
+1	All items listed on 0 level. Land tenure security in the region is regularly monitored, and risks of land grabbing are assessed.
0	Most of the smallholders have documented legal rights to land.
-1	Situation 1: Most of the smallholders do not have documented legal rights to land. Situation 2: Evidence indicates that there is a substantial risk of land grabbing. Most the smallholders think that their land rights are not secure
-2	Security of land rights is not monitored/ known.
Glossary	
Land tenure	Legal tenure, traditional tenure, leased

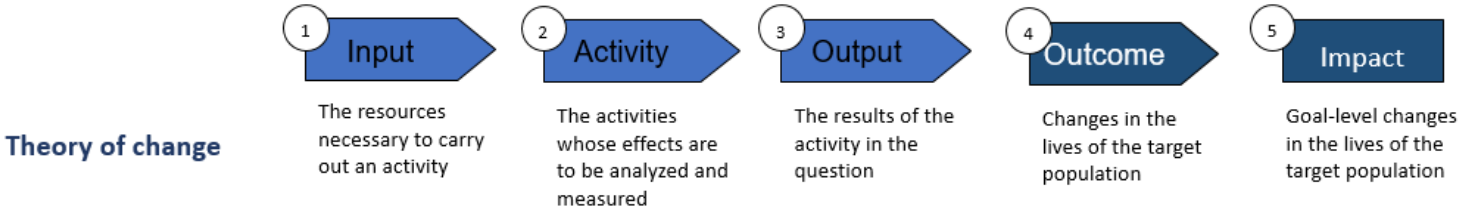
Social topic 8

Social topic	**Trading relationship**
Definition	The social topics aims to assess quality of trading relationship between smallholder and the supply chain actors: - Membership in or access to a farmer organisation (While participation in a farmer organization is not necessary for good trading relationships, it is one indicator that farmers are organized and therefore have potential for better negotiating power.) - Understanding of quality standards, price & premiums
Rationale	Where farmers have access to information—prices, price structures, quality grades, etc.—they are better able to make informed choices about market participation and investing in their production.
Quantitative approach	
Performance indicators	
1. Percentage of smallholders who are part of farmer's group/organisation. ***Answer format:*** Percentage	
2. Percentage of smallholders who understand price structure. ***Answer format***: Percentage	
Reference values	
Performance indicator 1: 100%	
Performance indicators 2: 100%	
Scale-based approach	
Performance indicators	
1. Percentage of smallholders understand quality standards, price structure and premium requirements. ***Answer format:*** Percentage	
2. Smallholders can obtain price premiums (if requirements are met). ***Answer format:*** Yes/No	
3. Actions are undertaken to encourage and facilitate smallholders to organise themselves and join collectives, cooperatives and farmer associations/groups ***Answer format:*** Yes/No	
Reference scales	
+2	All items listed on Level 0. Smallholders can obtain premiums.
+1	Actions are taken to encourage smallholders to join collectives, cooperatives and farmer associations/groups.
0	>80% of Smallholder understand quality standards, price structure and premium requirements.
-1	<80% of Smallholders understand quality standards, price structure and premium requirements.
-2	No assessment is conducted to understand smallholders` perception and knowledge of price structure and quality standards.
Glossary	

Social topic 9

Social topic	**Next generation smallholders**
Definition	Social topic aims to assess: • Future of growing this crop • Empowering youth • Job satisfaction (the extent to which smallholders are satisfied with growing focus crops, etc. and intend to keep growing it)
Rationale	The population of smallholders is ageing. With alternative economic opportunities, available to youth in urban areas, farming has lost its appeal among the next generation. Youth are the future of a secure global food supply and as such, those investing in agricultural development initiatives would do well to monitor progress in this area in a common way in order to compare and share learning, adapt strategies and speed up progress and innovation.
Quantitative approach	
Performance indicators	
1. Percentage of Smallholder who think that growing focus crop is an attractive profession ***Answer format:*** Percentage	
2. Percentage of smallholders who thinks that price of their product is equal or larger than the production costs. ***Answer format***: Percentage	
Reference values	
Performance indicator 1: 80%	
Performance indicators 2: 100%	
Scale-based approach	
Performance indicators	
1. Percentage of Smallholders who believe that growing focus crop is an attractive profession. ***Answer format:*** Percentage	
2. Percentage of smallholders who think that price of their product is sufficient. Answer format: Equal, less or more than costs of production ***Answer format:*** Percentage	
3. Actions are taken to understand the needs of the next generation of smallholders. ***Answer format:*** Yes/No	
4. Actions are taken to engage with the next generation of smallholders. ***Answer format:*** Yes/No	
Reference scales	
+2	All items listed on Level 1. Actions are taken to engage with the next generation of smallholders.
+1	Most smallholders think that the price of their product is larger than the production costs > 80% of smallholders indicate that growing focus crop is an attractive profession. Actions are taken to understand the needs of the next generation of smallholders
0	Smallholders experience that price of their product is equal to production costs.
-1	Smallholders experience that price of their product is less than the production costs. < 80% of smallholders indicate that growing the focus is an attractive profession
-2	The attractiveness of the profession is not monitored. No assessment is carried out to assess smallholder's perception of their product price.
Glossary	

Appendix 4 – Theory of Change example found in the literature, smallholders



Examples found in the literature on smallholder farmers:

Input	Activity	Output	Outcome	Impact	Source
	Training: Animal management Food gardens Nutrition Sanitation & health Women`s leadership		Livestock productivity Formation of women`s groups Increasing food production for home consumption & sales	Income Food during 'lean months' Diverse & sufficient diet Smoother consumption Improved health outcomes	HEIFER International, Ten years of coffee in the Americas 2006-2016
	Asset transfer: Animals Seeds/Seedlings Coffee processing mechanisms		Protein consumption Home garden production Quality of coffee beans		
	Cooperative strengthening & partnership: Governance Impact supply Marketing Business Plan development Promoter training & support		Transparency & Accountability Input supply, fertilizer, credit, technical assistance, disease resistant stock (increase)	Access to income Sustainable commitment to extension via Promoters Partnership development	
...(we will) provide them with strong trading relationships and access to training and services...	We will engage smallholder farmers in our supply chain... E.g. We will train farmers in better farm practices...	...improving their agricultural practices. E.g. ...practice adoption...	...thereby increasing their productivity. E.g. ...increased productivity and quality...	1)...thereby increasing their productivity. 2)...and improving the quality of farmer livelihoods and the surrounding environment E.g. ...improving the quality of farmer and farmer community livelihoods.	Sustainable Food Lab: Towards a Shared Approach for Smallholder Performance Measurement
Activities and investment: Provide training and support for farmers		Farmers adopt better practices	Farmer, worker, and family wellbeing	Sustainable, resilient rural landscape that:	SAN/Rainforest Alliance

Facilitate access to tools, inputs & services to support sustainable agriculture		Farmers have increased knowledge & capacity to farm sustainably	• Essential needs are met: food, housing, clean water, health care education, transport, clothing, and savings • Minors are not exposed to harmful labor conditions • Farmer groups support smallholders through effective & transparent management	• Conserve native biodiversity and ecosystem services • Produce crops/livestock efficiently & profitably • Equitably improve local livelihoods • Are managed to adapt effectively to changing conditions	Impacts Report, 2015
1. Financial services (short-term, long-term, insurance) 2. Business services (business and technical training and support) 3. Infrastructure (transport& storage, grading, certifications) 4. Market linkages for each actor across the value chain	Will accelerate a virtuous cycle within agriculture supply chains	• Stable & premium pricing • Improved agronomic practices • Farmer productivity • Sustainable practice adoption	• Agribusiness growth • Rural employment • Farmer income & assets growth • Women`s empowerment • Improved soil treatment, water management, energy consumption, waste management, chemical use	• Food security • Education & health for rural families • Stronger rural communities • Ecosystem resilience	The initiative for smallholder finance, 2013
1. Knowledge (Agronomy, Farmer org., Management skills) 2. Finance (Short-term, medium term and long-term capital, Banking and insurance) 3. Technology (Inputs (seeds & fertilizers), Irrigation, Storage, Processing equipment, ICT) 4. Markets (Business services (e.g. haulage, certifications), Market linkages)	creates and accelerates a virtuous cycle within agricultural value chains...	• Improved and sustainable agriculture practices • Organised farmers • Improved business competence	• Higher farm productivity • More sustainable farming practices • Produce prices higher and more stable • Profitable agribusinesses • Higher rural employment • Higher and more diverse rural incomes • Higher levels of family assets • Women`s empowerment	• Drop in extreme poverty • Food security • Better healthcare • Better education • Strong communities • More resilient physical environment	Small Foundation, ToC
Financial, technical and managerial support	Farmers trained in good agriculture practices, post-harvesting, saving and loans management… Establishment of demonstration gardens and value adding facilities Financial institutions develop new types of loans and credit	Improved skills and capacities of farmers Farmers have access to better services, inputs and market information Access to rural financial services	Farmers increases productivity, quality, sales, volume and value	Competitiveness of agriculture and agroprocesing sectors enhanced → Sustainable increase in employment and income	Theory of Change, Uganda

	Long-term relationships Build Business/service capacity Increase access to credit Farm technical assistance Increase access to inputs Nutrition and FS trainings Water quality	Strong management/services Adoption of GAPs Diversity of income sources Nutrition and FS awareness	More stable coffee prices More stable business relationships Increased productivity and quality Increased non-coffee income Increased Coffee income Improved Food and Nutrition Security	Long-term supply of quality coffee Improved coffee Grower Livelihoods: • Net HH Income • Stability of Income • Economically viable • Food secure • Resilient to shocks (market/climate)	Keurig Green Mountain's Livelihoods Theory of Change
Plantlet distribution Farmer training in NBFP Farmer training finance literacy& basic controls Training focus on youth and women Sanitation/Hygiene training & projects Food crops & nutrition prog Monitoring external shocks Water stewardships project Soil management projects Climate c. adaptation proj. Income diversification proj Procuring responsibly sourced coffee		<u>Short-term outcomes:</u> Renovated treestock Farmers and mills adopting best practices Farmers adopting finance/control concepts Young/women farmers adopt improved practices Sanitation/hygiene practices improved Improved food security and better nutrition Price premiums <u>Medium term outcomes:</u> Higher productivity Higher quality Optimised cost of production Healthier farmer families and warm workers		Improved farm economics Empowered Agro-entrepreneurs, Youth & women Resilient families, communities and landscapes Compliant practices & work conditions	Nescafe Plan

Appendix 5 – Application of scale-based approach

Example from the Guar case. (Numbers and percentages are removed, but it gives an indication of how the scale-based approach were applied in the case studies.)

Application example for social topic 'Access to inputs and services', scale-based approach

Data is collected per performance indicator, and then a score is assigned. An example for social topic 'Access to inputs and service' is provided for both quantitative and qualitative assessment.

Data inventory for scale-based approach

Performance indicator 1: Type of extension services and inputs available to smallholders are evaluated, and opportunities for improvement are identified.
Supporting evidence: It has been identified that little investment had taken place to invest organised farmer extension and the knowledge, and application of good practices is sorely lacking. Availability of such inputs and services have been assessed: good seeds/hybrid seeds, irrigation source of market information, distance to market, farm assets, tools, access to credit, etc.
Opportunities for improvement have been identified: to introduce low-cost, effective technologies & equipment developed by local research institutes. Mechanisms for receiving market information are lacking. Almost very farmer has a phone, indicating a potential to use it as a communication & information tool.

Performance indicator 2: Interventions tailored to local conditions and needs are carried out to improve smallholders` access services and inputs.
Supporting evidence: SMS in local language were sent out to smallholders twice a week to inform them about the price at the local market and advise or crop growing. Plants have been planted to provide shade. It`s reported that 70% of the plantation is surviving due to adverse climatic conditions. The initiative has facilitated the purchase of qualitative guar seeds.

Performance indicator 3: Percentage of smallholders are satisfied with the provided services and inputs.
Supporting evidence: No information is available.

Performance indicator 4: Use and application of provided interventions are monitored.
Supporting evidence: A follow-up assessment on planted trees i.e. surviving rates is conducted. However, no information is available about other services and inputs offered.

Assigning a social topic score, scale-based approach

Based on the supporting evidence collected, a social topic score is attributed in relation to a five-point scale.

In this case, assessment is conducted to identify the extension services already available to smallholders, and improvement opportunities are identified. Interventions tailored to local conditions are offered to smallholders. However, no extensive information on satisfaction or application is available. Thus, a score of 0 is assigned.

+2	All items listed on Level 1 Evidence indicated that the offered services and inputs are used by the majority of smallholders.	
+1	>=80% of smallholders are satisfied with the services and inputs offered.	
0	Interventions are undertaken to improve smallholder`s access to services and inputs.	•
-1	Extensions services and inputs available to smallholders are identified. Improvement opportunities are identified and evaluated, but no actions are undertaken.	
-2	Evidence indicates that smallholders` access to services or inputs is limited. No actions (screening, evaluation, monitoring) are taken to assess the local conditions and evaluate improvement opportunities.	

Additionally, one should conduct a data quality assessment described on page 12 in the Handbook for Product Social Impact Assessments.

Communication of results

Depending on the detail requirement by the audience, the results can be communicated per social topic with detailed information per every performance indicator, or an overview of all the social topic scores can be presented. Potentially one can aggregate the social topic scores into a stakeholder score.

Example 2 – Coffee case

Application example for social topic 'Access to inputs and services', scale-based approach

An example for social topic 'Access to inputs and service' is provided for the scales-based approach. Data is collected per performance indicator, and then a score is assigned.

Data inventory for scale-based approach

Performance indicator 1: Actions are undertaken to encourage and facilitate smallholders to organise themselves and join collectives, cooperatives and farmer associations/groups
Supporting evidence: In collaboration with other organisations, Nestlé has been promoting smallholder organisations and community projects where smallholders lack formal and informal structures such as farmer groups or cooperatives. Moreover, smallholders have been encouraged to apply for group product certification. Evidence indicate that smallholder groups have the power to decide on how the development funds will be spent.

Performance indicator 2: Smallholders can obtain price premiums (if requirements are met).
Supporting evidence: Yes, Nestlé offers premiums when the quality criteria are met. An assessment has been carried out to understand whether smallholder farmers are aware of the premium system.

Performance indicator 3: Percentage of smallholders understand quality standards, price structure and premium requirements.
Supporting evidence: No information is available on this specific indicator. However, additional information can be used as a proxy. Farmers are offered guidance on farm management practices through initiatives aiming to tackle social and environmental issues. Farm management practices address such aspects as costs of inputs, labour costs, quality of coffee, record keeping, etc. Moreover, these aspects are covered by product certification schemes.

Assigning a social topic score, scale-based approach

Based on the supporting evidence collected, a social topic score is attributed in relation to a five-point scale. In this case, smallholders have been encouraged to form farmer groups and cooperatives. Evidence indicate that smallholders have obtained group product certifications. This also implied that smallholders understand the price structure, quality standards, Additionally, premiums can be obtained if the quality criteria are met, and the majority of smallholders are aware of the premium system.

+2	All items listed on Level 0. Smallholders can obtain premiums.	•
+1	Actions are taken to encourage smallholders to join collectives, cooperatives and farmer associations/groups.	
0	Evidence indicate that majority of smallholder understand quality standards, price structure and premium requirements	
-1	Evidence indicate that majority of smallholders do not understand quality standards, price structure and premium requirements.	
-2	No assessment is conducted to understand smallholders` perception and knowledge of price structure and quality standards.	