



VOLUNTARY SUSTAINABILITY STANDARDS ASSESSMENT TOOLKIT



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ACRONYMS AND ABBREVIATIONS

CoP	Constellation of Priorities
DTI	Department of Trade and Industry, Philippines
FGD	Focus group discussion
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
PCA	Philippine Coconut Authority
SDG	Sustainable Development Goal
VCOP	Virgin Coconut Oil Producers and Traders Association of The Philippines, Inc.
VSS	Voluntary Sustainability Standards
UNFSS	United Nations Forum on Sustainability Standards

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EXECUTIVE SUMMARY

Voluntary Sustainability Standards (VSS) can be instrumental in the achievement of the Sustainable Development Goals (SDGs) by providing incentives to improve the environmental, social and economic impact of production processes, and by leveraging international trade as an engine of sustainable growth. However, there are multiple challenges that can limit their potential: VSS can be costly and they establish new constraints on production processes. Those unable to adapt can be excluded from global markets.

This highlights the importance of better understanding VSS adoption, what their unintended effects may be, what actors stand most to gain or lose, and what actions, if any, can be taken in each case to promote inclusive development.

Voluntary sustainability standards (VSS) are norms and standards designed to ensure that a product is produced, processed or transported sustainably in order to contribute to specific environmental, social and economic targets.

THE VSS ASSESSMENT TOOLKIT

In order to address this, UNCTAD developed the VSS Assessment Toolkit, which is designed to:

- Identify challenges and perceptions behind the adoption of VSS in a specific value chain and country;
- Explore policy options to address the challenges and perceptions identified.

The VSS Assessment Toolkit is organized in 5 steps that combine qualitative and quantitative methods to analyse objective and perception-based data on:

- (i) Production challenges and relationships within the value chain;
- (ii) Economic, social and environmental outcomes;
- (iii) and perceptions of actors that motivate or de-motivate the adoption of VSS.

The VSS Assessment Toolkit in 5 steps



BENEFICIARIES OF THE VSS ASSESSMENT TOOLKIT

A number of actors can benefit from the analytical support of the VSS Assessment Toolkit, in particular local, national or regional government agencies, but also the private sector, standard setters, non-governmental organizations (NGOs), international donors, academia and cooperatives.

The VSS Assessment Toolkit helps policy makers understand whether VSS can be a source of upgrading, what the challenges are and what the leverage points are in each value chain so that they can support implementing bodies in order to increase the effectiveness of VSS.

1. INTRODUCTION

The Voluntary Sustainability Standards (VSS) Assessment Toolkit was developed under the UNCTAD project “Fostering the development of green exports through VSS in Asia and the Pacific”. The project established an approach to help developing countries build their capacity to achieve sustainable growth through green exports. As part of the analytical side of the project, an earlier version of the VSS Assessment Toolkit was piloted in Lao People’s Democratic Republic, the Philippines and Vanuatu. The current version of the VSS Assessment Toolkit incorporates the lessons learnt from those cases, as well as feedback from experts.

What are green exports?

Green exports are exports that are harvested, produced, processed or serviced with methods that are sustainable, in the sense that they generate potentially positive, or fewer negative, externalities in terms of socio-economic or environmental development.

What are Voluntary Sustainability Standards?

Voluntary sustainability standards (VSS) are norms and standards to ensure that a product is produced, processed or transported sustainably in order to contribute to specific environmental, social and economic targets, e.g. respect for human rights, decent working conditions, gender equality or environmental protection. Certification is one of the tools used by producers to adhere to sustainability standards and for consumers to make informed buying decisions. VSS can play a role in fostering green trade, which can accelerate sustainable development.

Why is it important to analyse VSS?

VSS can be instrumental in the achievement of the Sustainable Development Goals (SDGs) through a number of channels. VSS can provide incentives for firms to adopt production processes in line with environmental, social and economic objectives that contribute directly to the SDGs. Additionally, since they grant access to the rapidly growing global “green” markets, they may also contribute to the SDGs more indirectly by leveraging international trade as an engine of sustainable growth.

However, there are multiple challenges that can limit their potential: VSS are not only costly, but they also establish new priorities, constraints and requirements on production processes and use of resources. Producers unable to adapt

may be excluded from global markets. In addition, since VSS are (mostly) private standards, they need not be aligned with local government priorities and strategies.

Given the potential benefits and challenges of VSS adoption, it is important to understand more systematically whether benefits outweigh unintended effects, what actors stand most to gain or lose, and what actions, if any, can be taken in each case to promote inclusive development.

Why is a toolkit needed to analyse VSS?

Overall, empirical evidence regarding VSS adoption is scattered and case specific. Much of it has focused on evaluating the effects of VSS adoption. Sustainability standards have been shown to have several direct benefits ranging from promotion of product quality improvement and green exports, to brand building (Komives and Jackson 2014, UNFSS 2018). At the same time, studies have shown positive and negative effects of VSS adoption (e.g. Fransen and LeBaron 2019, Lambin et al 2018), or no effect at all.

However, there is no tool that supports the systematic measurement and mapping of the challenges, motivations and outcomes of VSS adoption in a flexible way, one that is not constrained by country, product or value chain. In order to facilitate such assessment, UNCTAD developed the VSS Assessment Toolkit.

The objective of the VSS Assessment Toolkit

The objective of the VSS Assessment Toolkit is to guide the identification of the challenges and perceptions behind the adoption of a VSS scheme in a particular value chain and in a region or country, as well as to explore policy options to address the challenges and perceptions identified.

The VSS Assessment Toolkit tackles these objectives through a combination of qualitative and quantitative methods to analyse objective and perception data on three dimensions: (i) production challenges and relationships within the value chain; (ii) economic, social and environmental outcomes; (iii) and priorities/preferences and risk perceptions of actors that motivate or de-motivate the uptake of a VSS.

Who can benefit from using the VSS Assessment Toolkit?

This exercise is useful for a number of actors, in particular local, national or regional government agencies, but also the private sector, standard setters, non-governmental

organizations (NGOs), international donors, academia and cooperatives. For government agencies, the toolkit helps understand whether VSS can be a source of upgrading, what the challenges are and, importantly, what the leverage points are in each value chain, so that they can support implementing bodies in order to increase the effectiveness of VSS.

What is different about the VSS Assessment Toolkit?

The VSS Assessment Toolkit is unique in that it relies on both objective and subjective data to develop a holistic analysis. The toolkit uses both qualitative and quantitative methods in a simple standardized analysis framework, which can nonetheless be easily adapted to different value chains or countries. This approach provides a novel way to assess whether and how VSS can indeed be a path to livelihood development and attainment of SDGs.

There are number of other VSS-related analytical toolkits that support the assessment of different aspects of VSS design, adoption, implementation and evaluation. The VSS Assessment Toolkit can be used as stand-alone tool or in combination with other VSS tools that have a different focus.

Sections 2 and 3 guide the reader step by step on how to implement the VSS Assessment Toolkit. More detailed rationale and context are provided in the companion publication *Handbook for the VSS Assessment Toolkit*.

2. A 5-STEP OVERVIEW OF THE VSS ASSESSMENT TOOLKIT

This section provides a brief overview of the 5-step structure of the VSS Assessment Toolkit. This overview is meant to familiarize users with the toolkit. Detailed implementation guidance for each step is provided in Section 3.

Before implementing the VSS Assessment Toolkit, a specific case needs to be selected: a product and region, as well as a specific VSS. This choice will depend on the needs and interest of the toolkit user. Once a specific case has been selected, the user can proceed to the VSS Assessment Toolkit itself, following the five steps outlined in Figure 1.

Step 1: Value chain mapping

The first step is to map the value chain in detail, identifying all relevant actors, supporting institutions and power structures, with a special emphasis on regulation and policy that can affect VSS uptake and use.

Step 2: Interviews

The interviews consist of open-ended questions that aim to inquire deeper into the links between value chain actors, attempting to identify the challenges, power asymmetries, risk perceptions and priorities associated with the uptake and use of VSS. Actors are selected to be interviewed based on what is observed in Step 1. At the same time, information discovered in the course of the interviews may prompt a revision of the value chain mapping in the previous step. Interview guidelines are provided in Annex A.1.

Figure 1: The 5-steps of the VSS Assessment Toolkit



Step 3: Survey

In Step 3, actors along the value chain are surveyed using a structured questionnaire that consists of objective and perception-based close-ended questions. The questionnaire, available in Annex A.2.1, has 10 sections designed to capture different aspects of: (i) challenges and value chain relationships, (ii) outcomes, and (iii) risk perceptions and priorities. The questionnaire can be adapted to any actor in any agricultural value chain, as long as sampling is careful, and questions are piloted. The questionnaire can be deployed via the free software Survey Solutions. This allows for easy customization and offline

data collection.

Step 4: Analysis

Observations from the value chain mapping (Step 1), the interviews (Step 2) and the survey (Step 3) are brought together and analysed to identify: (i) the challenges, (ii) outcomes and (iii) risk perceptions and priorities of VSS adoption and use for specific actors along the value chain. Section 3.4 suggests methods and metrics to perform the analysis, as well as a mapping of findings to the SDGs.

Step 5: Policy options

The final step, Step 5, is dedicated to exploring policy options that may be suitable to address the issues identified in the previous step. Exploring those options entails evaluating whether they are appropriate to the case under study, in particular to the conditions identified in previous steps, clearly explaining why some options may be preferred to others. The outcome of this step is not supposed to be a set of policy recommendations, but a body of evidence-based options to feed into policy dialogues.

A final note

Lastly, it is important to note that although these steps appear to be sequential, there may be considerable overlap between steps, and users should remain attentive to opportunities for revision and inclusion of additional observations. To that effect, the guidelines include an additional instance of follow-up interviews that can be conducted post data analysis (Step 4) if needed.

The next section contains detailed explanations of the five steps briefly presented here, with accompanying tips and suggestions. Note that the interview and survey questions provided are merely guidelines, as users are encouraged to modify and adapt the VSS Assessment Toolkit based on their own context and experience.

3. THE VSS ASSESSMENT TOOLKIT IN DETAIL

The VSS Assessment Toolkit is designed to be implemented for specific cases: it is meant to be applied to a product, region, and a VSS. Some of the criteria that may be suitable to choose a case are its green export¹ and certification

1. There are a number of tools available to help determine green export potential, for example UNCTAD's National Green Export Review (NGER), ITC export potential, and the ODI Export Competitiveness Matrix, among others.

potential, relevance for the local economy² and alignment with government strategies or development plans, among others. The assessment can take place at the national, regional or village level, or with a focus on specific communities or groups within the population. It is up to the toolkit users to determine what criteria best fit depending on the objectives of their analysis.

3.1 STEP 1: VALUE CHAIN MAPPING

Having selected a specific product, region or group and VSS, the user can proceed to the first step of the VSS Assessment Toolkit: mapping the value chain.

Value chain mapping entails identifying: the stages in the production process of a good or service; the inputs and outputs involved in each stage; relevant contextual factors such as supporting functions, rules and regulations; and all actors along the production stages, including their roles and connections.

The following guiding questions can be useful to map the chosen value chain, in particular with the intention of capturing aspects relevant to VSS in an agricultural value chain.

What are the main nodes of the value chain?

The first step is to identify the main nodes of the value chain under study. A value chain node is defined as a stage of the chain where value is added. Nodes can be classified as being (relatively) upstream in the value chain or (relatively) downstream. More upstream nodes in an agricultural value chain include, for example, the input stage and the production stage. The input stage involves pre-production activities such as sourcing seeds, chemicals, fertilizers and agricultural machinery and labour; the production node involves the process of growing crops, the extension support and the sale of crops to intermediaries (brokers, agents) and processors. More downstream nodes are, for example, processing and retail or sale. The processing node involves value addition to primary products to convert them into intermediate or final goods, and the retail node includes procedures involved in sale and delivery of the product to the point of final consumption (Reardon et al. 2019).

2. Relevance for the local economy can be determined based on the total production in the country and opportunities for local sales, the amount of people directly and indirectly employed in the production, the availability of natural resources and infrastructure access required, etc.

Who are the key actors in each node and what are their main functions?

While establishing what the main nodes are, all relevant actors in the value chain should be identified. Actors in an agricultural value chain can be input suppliers (such as village stores or companies), producers (such as small-, medium- or large-scale growers), producer associations, traders (such as village collectors) processors, wholesalers, retailers, exporters, or retail consumers (e.g. international buyers, other processors, wholesalers or restaurants). Figure 2 illustrates two types of value chain actors, vertical and horizontal, in their typical nodes. Vertical actors are the ones involved in different commercial activities of the value chain, from production to retail. Horizontal actors are not directly involved in production activities but play an important role in facilitating the functioning of the value chain.

Information for each actor needs to be thorough: it is important to understand who is doing what in the value chain and how. For instance, input suppliers (vertical actor) are critical in terms of provision of good quality inputs, which can often be imported, but also for the recommendations and information they can provide to producers. Another example: governments (horizontal actor) provide extension service support, create and implement regulations that promote traceability and quality and provide infrastructure required for value addition. Thus, governments are present both upstream and downstream in the value chain.

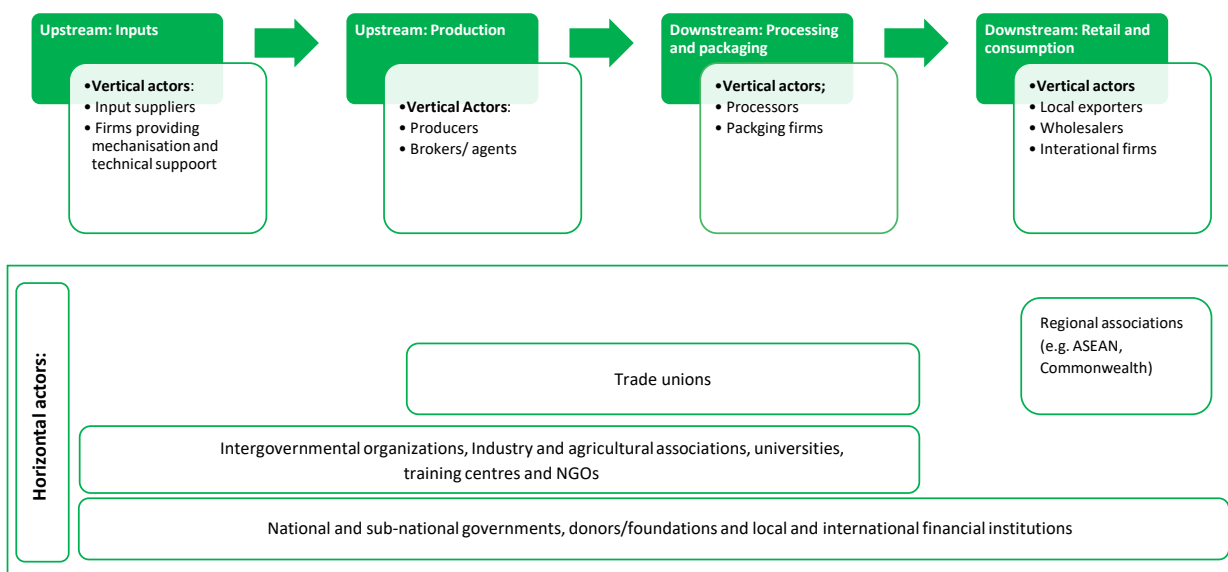
How are actors connected?

Understanding how different actors in the value chain are connected, together with their roles and functions, helps comprehend what actors have power over others and what instruments they may use to influence outcomes.³ For example, international retailers can often demand contracts that require the adoption of a VSS, thus determining quality, production methods and prices, which suggests a power imbalance in their favour (e.g. Barrientos 2019, Ponte 2020, Havice and Campling 2017).

Other relevant contextual factors

Other relevant contextual factors are, for instance, infrastructural and institutional elements that can affect what benefits and challenges actors face when adopting or using a VSS, or condition their perceptions about VSS. For example, in the case of organic certification, the transportation infrastructure available may play a significant role in making it harder or easier for producers to obtain and maintain certification. Institutionally, a number of laws, regulations and norms can also play a significant role in VSS adoption and use. In this sense, toolkit users should be mindful of development strategies, agricultural laws, commercial treaties, etc.

Figure 2: Illustration of common nodes and actors in an agricultural value chain



3. In this context, power is defined as power over information, production methods, production quality or quantity, and price-setting (Krauss and Krishnan, 2016).

3.2 STEP 2: INTERVIEWS

After mapping the value chain, selected vertical and horizontal actors are interviewed. This instance provides an opportunity to learn more about the role of value chain actors, and their key challenges and perceptions in relation to the adoption and use of VSS.

Interview guidelines

With that objective in mind, the interview guidelines provided in Annex A.1. propose three separate exercises: value chain questions, questions about perceptions and challenges and a constellation of priorities (CoP) model, explained in more detail below.

Value chain organization, power and governance

This section of the interview builds on the data collected in previous steps. The aim of this section is for the primary data obtained in the interviews to validate, complement and nuance the secondary data of the value chain mapping process. To that effect, Table A. 1 proposes a list of questions that shed light on key roles, network relationships, and power and governance structures in the value chain.

Challenges and opportunities of VSS uptake and use

This section of the interview aims at identifying the opportunities and challenges that exist or are perceived when adopting or using standards. In line with this, the questions proposed in Table A. 2 refer to barriers that may affect the ability to uptake or continue to use a VSS, and to what motivates actors to adopt a VSS. Additional questions inquire into the personal and aggregate impact of VSS, expected and observed, as well as issues around multi-stakeholder initiatives more broadly.

Note that the guidelines presented in Table A. 1 and Table A. 2 are designed as semi-structured questions. The first column shows the key topic of interest, the main question theme is presented in the second column, while the third column presents more specific questions. This format was chosen with the intent to minimize researcher bias⁴. It is important then that toolkit users start by asking broad questions drawing on the key topic or theme and move to more specific questions from the third column only if the

4. Researcher bias may arise in this case if interviewers elicit only specific aspects of the topic at hand, in line with their research objectives and to the detriment of broader aspects that may be relevant for an accurate assessment. In order to minimize the potential for researcher bias, it is important to word questions carefully and make them open ended, so that respondents can to some extent direct the interview rather than being prompted.

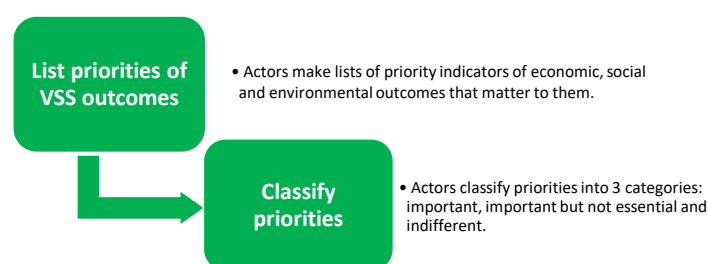
interviewee is not responsive to broad questions.

Constellation of Priorities model

The final set of questions in Step 2 revolves around a CoP model. The CoP is a perception exercise that can be used to learn the different reasons why actors may consider adopting a standard.

Figure 3 illustrates the phases of implementation of the CoP. Interviewed actors are first asked to list various economic, social and environmental aspects that matter to them (priority indicators)⁵. Once respondents have provided a list of priority indicators in all areas, they are then asked to classify each of them under the categories: important (critical and essential to the livelihood), important but not essential, indifferent/not very important.

Figure 3: CoP process



Selection of interviewees

While a number of different criteria could be valid to guide the selection of what actors to interview along the value chain, it is important that a specific criterion be chosen and explained.

One approach commonly used to select interviewees within a value chain is what is called a top-down process (Dallas et al 2019). This entails interviewing dominant or most powerful actors first (e.g. lead firms that make key decisions at the downstream end of the value chain) and then moving along the chain to interview other vertical and horizontal actors.

Interview records

There are a number of methods to record and manage interview data, ranging from field notes to digital recordings, but it is of paramount importance that one specific method is chosen and records of the interview are kept.

5. A priority is defined as a preference or an ordered set of importance the actor in question attaches to the expected benefits/outcomes of adopting a standard.

Field notes are often in the form of scratch or rough notes that are taken while the interview is ongoing. These scratch notes need to be transformed into proper, well-written field notes, as soon as possible while impressions are still vivid. The main advantage of this method is that it is the most economical option in terms of time and money (Lapadat and Lindsay, 1999). Although it is simple, quick, and inexpensive, this method has several disadvantages, including that field notes cannot be replayed (Ashmore & Reed, 2005). This can lead to a loss of information or valuable details, and perhaps to unintended implicit interpretations on behalf of the interviewer.

Keeping digital recordings avoids this pitfall but may require additional work in processing the interview information, as users may either work directly from raw recordings or develop transcripts of the recording.

The choice between field notes and digital recordings will depend on time and budget constraints of the toolkit user, among other factors.

An alternative: focus group discussions

Focus group discussions (FGDs) can be an alternative approach to interviews. FGDs are timesaving and allow the toolkit user to interview actors that are large in numbers. An additional advantage of FGDs is the opportunity to gain access to usually unspoken group norms and processes (Bloor et al., 2001).

The downside of FGDs is that groups may become dominated by individuals (Mikkelsen, 2005) and biases due to misinterpretation of words and actions by both the interviewers and the participants of the FGD are more likely than in individual interviews.

When implementing this toolkit, FGDs may be particularly useful to interview groups of farmers. FGDs can have an average of 5 to 7 farmers each and can be conducted in different locations close to the farm areas to minimize costs.

3.3 STEP 3: SURVEY

In Step 3, actors along the value chain are surveyed using a structured questionnaire. This questionnaire is meant to complement the interviews of the previous step. As mentioned earlier, the interview guidelines suggest open-ended questions to allow for topics that might be of interest

or concern of different stakeholders to emerge. Conversely, the questionnaire proposed in this step consists of close-ended questions in order to explore specific aspects of VSS adoption and use across actors.

Implementing Step 3 successfully requires adapting the questionnaire to the value chain studied and the actors surveyed, sampling carefully, piloting the adapted questionnaire, and closely monitoring the rollout of the survey.

Structure of the survey

As seen in Table 1, the questionnaire for the survey consists of 10 thematic sections designed to capture different aspects of production challenges and value chain relationships, outcomes and risk perceptions and priorities. A sample questionnaire following this structure is provided in Annex A.2.1. The questionnaire presented there is a template based on a similar one designed to survey farmers in the avocado, ginger and tea value chains of the Inle Lake region in Myanmar, but the questionnaire can easily be adapted to any actor in any agricultural value chain.

Sampling strategy

We want the survey sample to accurately reflect the challenges, perceptions and outcomes related to VSS of the actors in the value chain under study, i.e. we would want to have a representative sample of the actors in the value chain under study.

Unfortunately, it is usually not straightforward to obtain a representative sample in the context of an agricultural value chain in a developing country. The first hurdle is that, generally, exhaustive lists of the actors to be surveyed (sampling frame) are not available, meaning that conventional probabilistic methods of sampling are not immediately feasible.

A second obstacle is that it is not obvious what a representative sample is in the context of a value chain, and with a focus on VSS. For example, conventional random sampling methods applied to a type of actor (e.g. farmers) may not accurately represent links between actors (e.g. how farmers and processors are connected), or they may not capture the experiences of small already certified groups. This limitation can be partially overcome by choosing other sampling methods (e.g. stratified or cluster sampling), but they require additional data on the structure of the value

chain that is usually not easily available either. This means that in some instances, a non-probabilistic sample may be the best feasible option.

A number of different sampling strategies are possible and appropriate to use in the context of the VSS Assessment Toolkit. Annex A.2.2. illustrates some of the options available in more detail. Note that all methods are vulnerable to biases and generally there is a trade-off between the potential for bias and the data, time and cost requirements of a method. It is important for users to carefully consider what sampling strategy is more suitable for their case based on data availability, their understanding of the value chain under study, and their time and budget constraints.

Table 1: Structure of the survey questionnaire

Farmer specifics	Demography	Livelihood activity	Education status
Production challenges and relationships within value chains	Production	Buyers and contracts	Network embeddedness
	Input costs by crop	Main buyers	Access to information, services and training for production
	Farming practices	Difficulties finding buyers	Key actors providing information, services and training
	Outputs and labour productivity by crop	Contract terms	
	Land size and ownership	Rejection rates	
Assets			
Outcomes	Income and value addition	Farmer groups	Gender equity and participation
	Types of value addition	Ease of association	Income and time spent in fields
	Changes in income and expenditure patterns	Benefits or challenges in joining groups	Working conditions
			Roles of women
Risk perceptions and priorities	Certification specifics	Certification perceptions	Other perception
	Payment, duration, financial assistance, production	Motivation or perceived benefits of adoption	Perceived economic, social and environmental benefits
		Challenges of adoption and continuation	

Adapt and pilot the survey questionnaire

The template questionnaire presented in Annex A.2.1. was initially designed through a combination of desk research, interviews and focus groups discussions. It was later adapted and piloted in three cases⁶. After considering the lessons learnt from the pilot cases and consulting with experts, the questionnaire was reformulated to its current form. While the questionnaire as presented in Annex A.2.1. captures all basic elements for the case of farmers in the avocado, ginger and tea value chains, there might be additional or different elements that are relevant for other value chains, for which the questionnaire can be extended or modified depending on the needs of users. The questionnaire should certainly be adapted to the different actors surveyed, e.g. processors, brokers, etc.

Pre-testing of the adapted questionnaire with a few respondents at each node surveyed is critical. This is an important step as it will test whether questions are effective in obtaining useful responses and if they are understandable to respondents, particularly when the questionnaire is translated. Pre-testing also provides an instance to note and adjust the duration of the survey.

Roll out structured questionnaire and clean data

Once the lessons from the pilot are incorporated, the questionnaire can be rolled out in a number of ways. The option we suggest is to deploy it using Survey Solutions, a free survey software option developed by the World Bank Data Group that allows users to collect data both online and offline⁷. It is possible for us to share the current version of the questionnaire in that software, so that users do not need to design the questionnaire but can still modify it. The potential downsides of choosing this option are that enumerators will need to receive training, even if minimal, and use a tablet to conduct the survey.

Alternatively, the questionnaire can be deployed in paper form. This course of action is more time consuming and lends itself to pervasive errors in data intake and processing.

Tips for the survey and interviews

- All answers and statements should be kept confidential and should not be traceable to the respondent. Anonymize stakeholders and use pseudonyms for

associations. Kindly inform all respondents of this confidentiality clause beforehand.

- Clarify technical issues and terminologies in the questions to make sure that the respondents understand fully what is being asked.
- Talk to the respondents in a way that would bring out the best answers at the time of the interview.
- Redirect and guide respondents to get adequate responses in case they go off topic or they do not understand the questions fully.
- Keep in mind that in many cases farmers are certified through other actors but the farmers themselves do not know about VSS other than that it is profitable, and it requires them to meet certain conditions.
- As most interviewees are active in farming related activities, it is recommended to consider the farming cycle when planning interview timelines (in very busy periods, stakeholders may not be available).

3.4 STEP 4: ANALYSIS OF DATA

Once the interview and survey data are collected, the toolkit user can process that data to analyse various indicators that can allow for the identification of the challenges, opportunities and perceptions regarding VSS adoption and use in the value chain. This section presents a framework for the analysis as well as suggestions for processing the data obtained.

Structure for the analysis

The aim of the VSS Assessment Toolkit is to provide a systematic way to detect the motivation and challenges at play in the adoption and proliferation of VSS schemes, with the ultimate aim of identifying the conditions needed for VSS to realize their potential as a channel for greener exports and SDG attainment. In line with this, the guidelines for analyses suggested in this section do not provide econometric insights but rather simple diagnostics that can inform the policy discussion on VSS.

For the purpose of data analysis, it is useful to think of value chain actors as VSS “users” and “non-users”. The first category combines current VSS users and past VSS users,

6. The three cases were: organic coffee in Lao People's Democratic Republic, organic virgin coconut oil in the Philippines and organic coconut oil in Vanuatu.

7. Find more information about this at <https://mysurvey.solutions>.

i.e. actors that have already adopted and are currently using the VSS scheme in question, or actors that had experience using it or a similar VSS in the past, even if they are not currently using it. A “non-user” is defined as someone who has never participated in a similar VSS.

While the qualitative and quantitative data gathered for users and non-users has a similar structure, it is to be expected that perceptions on benefits and challenges may diverge between users and non-users, which can in itself be informative. We can think of as the VSS assessment toolkit identifying the “adoption readiness” (AR) of non-users and the “willingness to continue to use” (WTC) of users.

The toolkit identifies the AR and WTC of actors through three main components explored in steps 1, 2, and 3: production challenges and relationships within a value chain; economic, social and environmental outcomes; and risk perceptions in relation to VSS. The survey additionally covers a number of general questions aimed at understanding the profile of actors on other aspects beyond VSS. The following points elaborate on the three components and the profiling dimensions and helps match the data the survey and interviews to them.

Figure 4: Structure for analysis of toolkit data

	Users	Non-users
	Willingness to continue using	Adoption readiness
Production challenges and relationships within value chains		
Outcomes		
Risk perceptions and CoP		

Production challenges and relationships

This component aids in understanding the network of relationships between value chain actors and producers. This includes measuring the strength of relationships and

trust within the value chain and the various infrastructural, gendered and knowledge linked challenges for VSS users and non-users. Table 2 provides a guide to the various relevant dimensions of this component and matches them to specific questions in the interview guidelines and the survey. This component can shed light on power structures, intra-farmer group dynamics, gender participation and the availability of and access to information, infrastructure and extension services.

Table 2: Production challenges and relationships captured by the VSS Assessment Toolkit

Component	Relevant dimensions	Questions from the interview guidelines	Questions from the survey
Production challenges and relationships	Power relationships and governance	Section 2.1, Table 1	
	Buyers and contracts		2.6, 2.7, 3.3, 3.3.1, 3.4, 3.5, 3.6, 3.7
	Network embeddedness: information and training access		info access: 4.1, 4.2, 4.3, training access: 4.4, 4.5, 4.6
	Group effectiveness		4.8, 4.9, 4.10
	Gender exclusion		8.1, 8.2

Outcomes

Outcomes from VSS use can be direct, i.e. visible, easily measurable or with an economic value, or indirect, that is, less visible, more difficult to measure, and not always observable or without a market value. The VSS Assessment Toolkit captures mostly direct outcomes, mostly focused on the economic and social dimensions, rather than in the environmental one. While ideally the toolkit would reflect all socio-economic-environmental outcomes that impact

farmers and their communities, some of them are difficult to capture in the context of the toolkit. For instance, even when they may have irreversible effects on a farmers' land, environmental outcomes may only become visible over time. Conversely, many economic outcomes, such as increased value addition, may be observable in the short term (De Marchi et al 2019).

The direct outcomes, at the individual level, identified in the structured questionnaire include- economic outcomes such as productivity changes of capital and labour; value addition through cleaning, packaging or processing; and income and expenditure patterns. Social outcomes include, for example, the ability to participate in effective farmer groups that support their members and gender inclusion and empowerment (e.g. wages earned, permanency of contracts, measures in place to report harassment, etc). Outcomes related to changes in yield can also be interpreted as an environmental outcome: an increase can indicate an efficient use of resources.

At the community level, the outcomes captured indicate the cooperation and shared learning occurring between and within farmer communities in a value chain, which can shed light on whether VSS learnings are shared and the extent to which they spill over to non-users in the farming community.

Table 3 lists several relevant dimensions of the Outcomes component, and their corresponding questions in the interview guidelines and the survey.

Outcomes of users and non-users can be compared as an initial indication of impact of VSS adoption, although a number of other factors can affect that comparison (see section on Caveats). In a similar sense, outcomes collected in this component may inform on the link between VSS and SDG achievement.

Table 3: Outcomes captured by the VSS Assessment Toolkit

Component	Relevant dimensions	Questions from the interview guidelines	Questions from the survey
Outcomes	Individual		
	Economic	Section: 2.2, table 2	
	Productivity		2.1, 2.2, 2.3, 2.5
	Value addition		5.1, 5.2, 5.3, 5.4
	Income and needs		5.7, 5.8, 5.9, 5.10
	Social		
	Participation in farmer groups		4.8, 4.9, 4.10,
	Gender empowerment		8.3, 8.4, 8.5
	Environmental		
	Yield		2.1
	Community		
Cooperation		4.11, 4.12, 4.13	

Risk Perception

As stated earlier, the VSS Assessment Toolkit is unique in that it utilizes both objective and perception-based data to understand the motivation of and challenges for actors when adopting or using a VSS. This component consists of perception-based data, with the aim to capture the risk averse or seeking behaviour of actors, as well as their underlying uncertainties. In the interview guidelines this component is covered by the CoP model. The survey also contains specific sections that refer to the perceptions of users regarding benefits and challenges, as well as their motivation to adopt and use a VSS. Table 4 indicates the questions in the survey that correspond to this component, covering a range of subjective aspects, from the complexity of the certification process to lack of improved outcomes and others.

Understanding the underlying risk profiles of users and non-users can provide insights into the “profile” of the actor more likely to use a VSS. Perception-based data can also validate or complement results observed in objective data.

Table 4: Risk perception captured by the VSS Assessment Toolkit

Component	Relevant dimensions	Questions from the interview guidelines	Questions from the survey
Risk perceptions	Economic, social and environmental priorities	Constellation of Priorities	
	Perceived Challenges		6.1, 7.3
	Perceived benefits		6.2, 7.1, 7.2

Profiling

The profiling of actors in terms of their demographic characteristics, land size and ownership, assets possessed and livelihood characteristics, among others, facilitates understanding if there are specific profiles that are more likely to adopt a VSS or continue to use a VSS. Table 5 reflects what sections of the survey serve this purpose for the case of farmers.

Table 5: Farmer profiling in the VSS Assessment Toolkit

Relevant dimensions	Questions from the survey
Farm demographics, assets and land governance	Section 1
Farm structure	2.4, 2.8
Crops and buyers	3.1,3.2

Processing data

In order to organize the information obtained in the interviews and the survey, a number of methods to process qualitative and quantitative data are suggested that will facilitate the identification of patterns and the elaboration of findings.

Interviews

As readers may recall, interviews are organized in three parts: *Value chain organization, power and governance,*

Challenges and opportunities of VSS uptake and the Constellation of Priorities.

In order to process the data obtained in the first two parts, toolkit users can either work directly from notes, raw recordings or develop transcripts of the recording, all of which can then be systematically analysed. Crichton and Childs (2005) argue that clipping and coding directly from tape recordings is stronger and more authentic than transcripts. According to them, working from the recording better renders the voices of participants. Others (e.g. Tessier 2012) find that transcripts carry vital and detailed information. There can be disadvantages to transcripts as well, as some information may be “lost in translation” if interviews are not transcribed by the interviewers themselves. However, to date transcripts are one of the most accurate methods of record keeping. Finally, toolkit users may choose to use field notes or transcriptions depending on their time and budget constraints⁸.

Next, users should opt for one out of various qualitative analysis methods that can be used to examine interview and FGD data. Some of them are coding, mind maps and process tracing, among others (see A.3.1). The output of these methods can be used to visualize patterns, validate survey findings or as an autonomous part of the case under study.

The processing of information gathered in the CoP section follows a different procedure. As explained in Section 3.2, in the CoP section, interviewees list social, economic and environmental factors that they consider to be priorities and then classify them as important, important but not essential, and not very important. To process and analyse the responses obtained, the lists and rankings of respondents can be compared across types of actors. This provides a value chain level understanding of the “pre-conceived notions” different actors in the value chain have about the adoption and use of standards and their possible benefits. The greater the overlap in priorities across actors, the better the co-ordination within the value chain. When the priorities across different actors are very different, there are “spaces of contestation”. The example presented in Box 1 illustrates the use and interpretation of a CoP based on the findings of Krauss and Krishnan (2016).

8. There are a number of tools available online to support transcription, voice to text and captioning.

Box 1: An example Constellation of Priorities (CoP) model for Kenya and Nicaragua

The left-hand side of Figure 5 reflects a Kenyan horticulture CoP. A list of various economic (red section), social (blue section) and environmental (green section) priorities were presented to Muranga's farmer groups, Kenyan export firms or lead firms and Kenyan horticultural crops directorate (national government). Each of them was asked to classify their statements into the categories important, important but not essential and not important. Figure 5 depicts only the statements that were ranked as "important". It is clear that the priorities across each of the value chain participants diverge significantly.

Figure 5: CoP examples - Kenyan horticulture

	Export firm	Government	Farmer group	Floral	Macacao
Livelihood improvement		X	X	X	X
Capacity-building	X	X	X	X	X
Social certification				X	
Farmer organisation	X	X			X
Food security		X	X		X
High-quality crops		X		X	X
Crop yield and volumes	X	X	X	X	X
Safeguarding supply	X			X	
Traceability and food safety	X	X		X	
Reputation	X			X	X
Protecting forests, soil and water		X	X		X
Biodiversity conservation		X		X	X
Organic certification			X		X
Carbon sequestration					
Disaster/climate vulnerability reduction		X	X		X

Source: Kraus and Krishnan (2016).

Note: Cells marked "X" represent statements classified as "important".

In the same vein, in the Nicaraguan cocoa value chain, on the right-hand side of Figure 5, Floral (the German lead firm) and Macaco (the cooperative of farmers) also had diverging priorities, with Floral primarily focused on economic and social priorities, and Macaco mainly interested in environmental priorities. The divergence in these priorities eventually translated into poor economic and environmental outcomes such as lower incomes and depletion of natural resource stock after the VSS was adopted. Overall this suggests that the value chain is not aligned, which can cause significant tensions between value chain actors.

Survey

As mentioned in Section 3.3 it is ultimately up to the toolkit user how to deploy the survey, whether through Survey Solutions, other survey software or paper. This choice will affect how to best process that data obtained. If Survey Solutions or another survey software is used, the data is promptly exported in a format that can be easily processed and analysed. If paper is used, processing will be labour- and time- intensive. It is advisable that the information be brought to a spreadsheet and organized in an index sheet where questions expressed in text form are matched to a question code, and the actual data sheet, where each surveyed individual occupies one row and questions are columns.

We provide a simple Stata do file, and alternatively an excel file, to assist in the process of analysing the information and uncovering patterns in it. These files are available for download in VSS Assessment Toolkit webpage (www.vssapproach.unctad.org) and can easily be adapted to any changes the user may have implemented in the questionnaire. The analysis focuses on descriptive statistics to visualize the challenges and perceived benefits of VSS adoption and use and, when feasible, comparing them across users and non-users or other groups of interest. Further analysis may be possible, depending on the data collected. Additional suggestions on what sort of analysis tool could be applied to each dimension or components of the toolkit are presented in Annex A.3.2.

Check your findings: second round interviews

One of the benefits of using a mixed-methods approach is that findings from qualitative and quantitative data can be combined and compared, complementing and validating each other, and ultimately providing a more comprehensive account of the issue under study (Creswell and Plano-Clark, 2017; Yin, 2009).

In some cases, findings may not be consistent across methods, or unexpected patterns may arise in results. In such cases, a second round of interviews can be useful or even necessary. Previously interviewed actors can be contacted for follow-up or clarification, or even new respondents may be approached. Specific situations that may warrant an additional round of interviews are unexpected results or major deviation from expectation, lack of clarity on specific issues, suspicion of invalid or incorrect data, and more generally, the need for validation of findings.

Caveats

It is important to keep in mind that the objective of the VSS Assessment Toolkit is to understand the challenges and perceptions of value chain actors in relation to the adoption and use of a VSS. This understanding is intended to guide policy discussions on VSS. Consequently, the toolkit is designed as a diagnostic tool. This implies a number of caveats or limitations on what can and cannot be inferred from the findings of the VSS Assessment Toolkit.

Toolkit users should remain attentive to a potential selection bias: even when results are informative and may guide further discussion, they may not be representative. Importantly, an omitted variable bias may affect the observed patterns: even after considering a range of profiling questions and control variables, relevant explanatory variables of the performance of actors may have been omitted. This means that observed differential outcomes between certified and non-certified actors may not be attributed to certification. Similarly, better or worse performing actors may self-select into the certified or non-certified categories, making it difficult to attribute outcome differences to VSS adoption or use.

Previous sections have emphasized the importance of a sampling strategy in the survey, as well as the need to include profiling questions in it, in order to dispel some of the biases described above. Even then, the non-experimental nature of the exercise implies that biases in the findings may arise. More rigorous methodologies designed to avoid such biases altogether exist, but are complex, often times expensive, and beyond the goals of this toolkit. The combination of desk research, interviews and survey the VSS Assessment Toolkit proposes can be used as a way of triangulating or verifying results, so as to further limit potential biases.

Links to SDGs

The 3rd UNFSSS flagship report, “Voluntary Sustainability Standards, Trade and Sustainable Development”, led the way to understand the link between VSS and SDGs by matching over 240 existing VSS to the SDGs. The VSS Assessment Toolkit provides a path to approach the link between VSS and SDGs from a different perspective: the experience of individual actors in the value chain. To that effect, Annex A.3.3 presents a table that matches questions in the survey and interview guidelines to specific SDG indicators.

Tips for the analysis

- Do not only present the processed data, analyse it.
- Show how you arrive at findings through the qualitative or quantitative data you processed.
- Address potential counterarguments, caveats and alternative interpretations to your findings.
- Summarize your findings: present them briefly and concretely, perhaps in a table format, specifying what actors are affected and, when necessary, whose point of view they represent.

3.5 STEP 5: POLICY OPTIONS

The final step in the implementation of the VSS Assessment Toolkit is the analysis of policy options to match the diagnostic reached in the previous step.

Toolkit users may want to start by assessing what aspects identified in the previous step could benefit from policies to address them. Once this is determined, a list of potential policy pathways for them can be drawn. Such a list could be sourced from local experience in other value chains, previous experiences in the same value chain, successful options in other regions or countries, research outcomes or even spontaneous suggestions.

When weighing the list of potential policies to address an issue, it is important to contemplate pros, cons, trade-offs, feasibility, predictable outcomes, limitations or reservations, current economic climate, existing strategies and legislation, and others. Considering there are so many aspects to be considered, it is advisable to adopt a structure to assist in the analysis. One option is to use a PEST framework, which stands for political, economic, social, and technological factors that can affect the implementation and result of the policy options of interest, as illustrated in Table 6.

This framework allows for flexibility in the dimensions considered, e.g. administrative, legal or environmental factors could be separate columns if deemed necessary. The framework could also be used from the perspective of specific stakeholders. The analysis itself involves identifying how these factors affect the policy options considered and how that influence can be used or tempered if needed.

Table 6: PEST analysis framework

Issue: Information	Political factors	Economic Factors	Social factors	Technological factors
Option 1:				
Option 2:				
Option 3:				

There are multiple frameworks besides the PEST analysis that can also assist in the assessment of policies required for this step. For example the SWOT (Strengths/Weaknesses/Opportunities/Threats) analysis of each policy option can also be used in this context.

The end product of this step is a weighted list of policy options matching all issues identified in the previous steps. Where possible, suggestions as to the implementation should also be included, e.g. timeframes (short or long term), potential executing agencies, etc.

4. AFTER THE TOOLKIT

The VSS Assessment Toolkit was designed as a standalone tool. Once step 5 is accomplished, toolkit users can reflect their findings on challenges and perceptions of VSS adoption and their corresponding policy options in a final report and consider the use of the toolkit finalised. However, this should not be the end of the exercise, as policy options should eventually become policy decisions that are incorporated into agents' workplans and implemented.

Further discussion and decision making regarding the policy options presented in the report can take place in a number of scenarios, that will depend on the context in which the VSS Assessment Toolkit was deployed. For example, if a specific agency organized the use of the toolkit, they might become the focal point for discussion.

In the context of the project "Fostering the development of green exports through Voluntary Sustainability Standards in Asia and the Pacific", an earlier version of the VSS Assessment Toolkit was deployed in Lao People's Democratic Republic, the Philippines and Vanuatu, to analyse organic certification in the cases of coffee, virgin

coconut oil and coconut oil respectively. In those pilot cases, the policy options that emerged from the toolkit were discussed in a multi-stakeholder workshop. The discussions were geared towards two objectives. The first one was the validation of the policy options identified by the toolkit. The second one was to build a consensus around a specific action plan that is aligned with the country's sustainable development strategies, and that details steps on how and when to implement the chosen policies. Additionally, as a result of this process, stakeholders: (i) increase their understanding of the impact of domestic and international VSS on "green" exports and sustainable development objectives; (ii) improve their capacity to jointly design, assess and implement strategic options to leverage VSS to develop sustainable exports.

However successful in the pilot cases, multi-stakeholder workshops are not the only path available to translate policy options into concrete action plans. Ultimately, it is up to the actors involved to identify how best to incorporate the findings of the report in their policy choices. It is advisable that this be reflected upon even before deploying the VSS Assessment Toolkit.

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ANNEX

A.1 INTERVIEW GUIDELINES

The following sections provide interview guidelines for Step 2 of the VSS Assessment Toolkit: roles and connections of actors in the value chain, and the challenges and opportunities they face and perceive with respect to the adoption and use of VSS.

In order to minimize bias, when using the guidelines in Table A. 1 and Table A. 2, interviewers should keep in mind to start by asking broad questions (first and second column) and move to more specific questions (third column) only if the interviewee is not sufficiently responsive to broad questions.

In planning for the interviews, etiquette suggests contacting respondents well in advance of the interview to set up an appointment, and whenever possible email them a brief of the case for context. Additionally, on the day of the interview, the interviewer should go over the goals and context of the study and the interview in a clear, concise manner, giving interviewees an opportunity to ask questions. All respondents should be given the option to remain anonymous, should they wish to do so. Respondents should also be given an option to refuse participating in the interview before, or even during, the interview. These principles should also be followed when organizing FGDs.

A.1.1 Questions on value chain roles and connections

Table A. 1: Questions on the organization of the chain

Key topics of interest	Question theme	Probe questions
Value chain actor, role and function	Role and function	<ul style="list-style-type: none"> Kindly describe your role (in the value chain)
<ul style="list-style-type: none"> Institutional capacity and coordination across actors Information asymmetry and transparency in the value chain 	Organization and coordination in your value chain.	<ul style="list-style-type: none"> How do you get information for your production and market (e.g. production methods, market info)? What were the main challenges in collaborating with buyers (and vice versa)? With whom do you discuss your issues or problems? Are these people easily accessible to you? Could you approach extension workers or government agencies easily for help? Kindly give an example. Do you know where your produce goes to? Or what happens to your harvest? Have you seen its final form (in retail)?
Risk bearing	Please describe who bears the risk in your value chain.	<ul style="list-style-type: none"> If the produce gets rejected or does not get sold, what will happen (to the produce/ to prices)?

		<ul style="list-style-type: none"> Who are the losers and winners when produce fail to meet standards?
<ul style="list-style-type: none"> Power¹ Social capital in the relationship 	Can you explain what your relationship with other actors in the value chain looks like?	<ul style="list-style-type: none"> Do you trust other actors? Why or why not? Is your relationship with other actors in the value chain stable? What sort of disputes have arisen during your relationship, if any? Are the prices you receive for your produce fair? Are they stable?

1. Power refers to power over information about the certification process, power to dictate production methods or quality and quantity of harvests; or power to set prices.

A.1.2 Questions for challenges and opportunities of VSS adoption and use

Table A. 2: Questions on perceptions and outcomes of VSS adoption and use

Key topics of interest	Question theme	Probe questions
Barriers to VSS (e.g.: cost, too strict, etc.)	Do you think it is easy or difficult to obtain certification?	<ul style="list-style-type: none"> Are there many or few local producers who are certified in your area? Why is this so? Do you think it is expensive to get certification? Are the certification requirements too strict?
Challenges and who bears the cost of <u>obtaining</u> certification	What do you think are the main challenges of obtaining certification?	<ul style="list-style-type: none"> Please identify up to three challenges (cost, time, lack of capabilities, lack of government support). Kindly motivate your answers. Do you know of farmers who received certification before but are not certified now? If yes, what happened? Who pays for what in maintaining certification? Do farmers pay 100% for the whole process? Kindly explain the process.
Challenges and who bears the cost of <u>maintaining</u> certification	What do you think are the main challenges of maintaining certification?	<ul style="list-style-type: none"> Please identify up to three challenges (cost, time, lack of capabilities, lack of government support). Kindly motivate your answers. Do you know of farmers who received certification before but are not certified now? If yes, what happened?

		<ul style="list-style-type: none"> Who pays for what in maintaining certification? Do farmers pay 100% for the whole process? Kindly explain the process.
Interoperability of standards	Do you think getting one type of certification makes it easier to get another type of certification? Why or why not?	<ul style="list-style-type: none"> Do you know of other local producers who have multiple certifications? For producers, are you interested in getting multiple certifications?
Improvement of the current certification process	Do you have ideas on how to improve the current certification process or how to design a process that could better serve specific actors in the value chain?	<ul style="list-style-type: none"> Kindly give suggestions
<ul style="list-style-type: none"> Link to SDGs (in particular, poverty alleviation, food security, decent employment, gender equality, environmental conservation, global partnership) Credibility of VSS VSS and public policy 	<p>How do you think certification affects you and your community?</p> <p>Does certification impact the community or country? How? In which way?</p>	<ul style="list-style-type: none"> Are the effects of certification positive? To whom? Why? What are the main benefits? Are there disadvantages of being certified too? Have there been farmers who did not benefit from certification? What are the main disadvantages? Going back to benefits, what types of benefits from certification schemes would most likely be important to producers? To other actors in the value chain? Along the value chain, who do you think benefits most from certification schemes or standards? Why? Please explain your answer. How does certification impact the community? Elaborate on social, economic and environmental aspects.
<ul style="list-style-type: none"> Community level impact Links between certified and non-certified farmers 	Do your peers who have certification support your joining such schemes?	<ul style="list-style-type: none"> Are those with certification more respected than those who do not have it? Do you get any support to join certification schemes through peers?
Reasons for stopping to participate in a VSS scheme (for farmers who no longer participate in a VSS)	Why did you stop participating in a certification scheme?	<ul style="list-style-type: none"> What were the main reasons? Did you feel the costs outweighed the benefits?

Multi-stakeholder platform establishment, composition and focus	Creation of a national multi-stakeholder platform for voluntary sustainability standards	<ul style="list-style-type: none"> • Who do you think should be represented in the platform and why? • What should be the first issues that this platform could tackle? How could farmers / other actors in the value chain benefit from this platform? • How do you think this platform should operate? (e.g. where to meet and how often, how often will the representatives be re-elected?)
Gender Equality and women empowerment and VSS	Role of women	<ul style="list-style-type: none"> • Do you think certification will help increase work opportunities for women? • Do you think certification will allow more women to find meaningful work in agriculture?

A.1.3 The Constellation of Priorities (CoP) model

As mentioned earlier, in order to build the CoP model, actors are first asked to list various economic, social and environmental aspects that matter to them (priority indicators). The interviewer should not provide any leading information to respondents, but rather encourage them to state their preferences. If respondents are unable to list their priorities in these areas spontaneously, the following non-exhaustive list can be a useful guide to help them kick start the process:

- Economic: productivity, quality, safeguarding supply, traceability, reputation, income, livelihood diversification, asset accumulation.
- Social: capacity building, farmer organization, food security, freedom of association.
- Environmental: protecting soil, water, forests; biodiversity conservation; organic; carbon sequestration; disaster reduction.

Once respondents have provided a list of priority indicators in each dimension, they are then asked to classify each of them as: important (critical and essential to the livelihood), important but not essential, indifferent/ not very important.

The resulting CoP classification indicates the pre-conceived notions different actors in the value chain have about the adoption of standards and their possible benefits (Krauss and Krishnan 2016). At this stage it is possible to compare across different actors what they consider are the most important priorities when using a VSS. When the priorities

across different actors diverge then there are “spaces of contestation”, while when they converge the system is aligned. Step 4 (Analysis) of the VSS Assessment Toolkit suggests how this information can be visualized and interpreted.

A.2 SURVEY

A.2.1 Sample questionnaire

Available at www.vssapproach.unctad.org.

A.2.2 Sampling strategy

The most usual sampling challenges faced in the context of an agricultural value chain in a developing country stem from two main sources. The first one is that detailed sampling frames are generally not available, e.g. one cannot always obtain an exhaustive registry of farmers for an area or crop. The second one relates to the fact that reflecting some aspects of the structure of the value chain in the sample may be important to the issues under study, but it is not obvious what aspects need to be reflected or how to reflect them. Additionally, and in line with the previous point, in most cases data on the linkages between actors of the value chain are scarce and not exhaustive.

Having a sampling frame allows for the use of probabilistic sampling⁹. This means that when census-like sample frames are not available, it may be advisable to build a sample frame, however imperfect. Sampling frames can be constructed by combining a number of sources: lists kept by local authorities, or by associations or chambers of commerce, different agencies, information obtained during Step 1 of the toolkit (value chain mapping) and even by referral.

If a sampling frame is available, or once one is built, it is possible to use a number of different probabilistic sampling methods. For example, random sampling may be appealing due to its simplicity. Note however that it is ill prepared to capture some aspects of the value chain structure that might be important to the issue at hand (e.g. connection to exporters, concentration of power in some actors, dependence of some actors on others, etc.). Besides the potential shortcomings in reflecting value chain features, random sampling can quickly require large samples, which may rise budget and time concerns.

Other probabilistic sampling methods to be considered are, for example, stratified sampling and cluster sampling. In particular, a sampling method that may be advisable in the context of the VSS Assessment Toolkit is representative multistage sampling, which is commented in detail below based on the experience presented in Krishnan (2018). These methods may be a better fit for the task at hand because they allow the surveyor to choose specific variables

or features around which to define the strata or the clusters, which will better reflect the points of interest in the value chain. Additionally, they often times require simpler sampling frames and smaller samples. While time and budget needs are then lower than for random sampling methods, they may still be prohibitively costly and time consuming.

Often times, lists of actors to be surveyed are simply not available, or budget and time are restricted, and consequently obtaining or building a sampling frame is not possible. In that case, toolkit users can alternatively conduct a non-probabilistic sampling method, such as referral or snowball. Such purposive sampling methods rely on a series of participant referrals to others who share common interests or activities. This method has advantages in terms of finding hidden populations and accessing sensitive networks, as well as low time and cost requirements for data collection. At the same time, it holds a high potential for sampling bias, provides no guarantee of representativeness of the samples, and unavailability of sampling error and statistical inferences.

The discussion below highlights details of two key sampling strategies, one probabilistic and one non-probabilistic: the representative multistage sampling used in Krishnan (2018) to sample Kenyan horticultural producers and the purposive multistage sampling used in UNCTAD (2020) to sample coconut producers. Table A. 3 contrasts their main characteristics. Both procedures are vulnerable bias, however the multi-stage sampling approach can greatly reduce measurement error when compared to purposive methods and costs when compared to conventional sampling methods. Depending on budget, data availability and time constraints, toolkit users may select one strategy over the other.

9. Probabilistic sampling implies that all individuals in the population of interest have a chance of being in the sample, and their probability of being in the sample can be accurately determined. This is what allows for unbiased estimates of the population totals.

Table A. 3: Two sampling strategies

Characteristic	Representative: Multistage sampling	Purposive: multistage sampling
Budget	Cheaper than census-based methods but involves costs of procuring several lists to create a universe of producers to sample from.	Cheaper than a representative sampling strategy and allows more flexibility to purposively sample to target specific issues.
Time	Time consuming, as requires selecting and giving probability weights to producers across multiple lists, then performing stratified random sampling.	Relatively quick to select producers to sample. Primary conducted through stratified random sampling.
Difficulty	Need understanding of slightly more advanced sampling techniques.	Knowledge on basic sampling techniques.
Data Availability	Difficult to find exhaustive lists to sample from.	As it is purposive does not necessarily require lists, can work on snowballing techniques.
External validity (replicability outside the study)	Yes	No
Internal validity (relates to structure of the study)	Yes	Yes

Representative: multi-stage sampling

When data is not readily available in a census format, sampling frames need to be created. This is a process whereby researchers can collect multiple lists of farmers from various value chain actors (who are connected to farmers/ or maintain lists of farmers) in order to create multiple frames. Collecting multiple frames prevents issues related to under-coverage (when a frame is not complete) (Singh and Mecatti, 2011). By putting together multiple lists, we can create a universe or imperfect sampling frame. Lists can potentially be collected from: input suppliers, producers, producer associations, traders, processors, and wholesalers of certified or certifiable produce, agencies and national offices. Similarly, list of producers and producer associations could be obtained from agricultural extension officers or municipal governments. Lists of traders, wholesalers and retailers could be obtained from administration offices

of vegetable trading areas and related associations. Processors lists, supermarket lists and exporter lists could be obtained from chambers of commerce or trade and industry offices. These lists contain information on the location of the farmer, and possibly other information (this varies significantly depending on the information available). The data collected for the value chain mapping, step 1, and interviews conducted (step 2) can also be utilized for creating a universe of farmers who use or have used a standard. Lists can also be developed through referrals or snowball sampling techniques.¹⁰

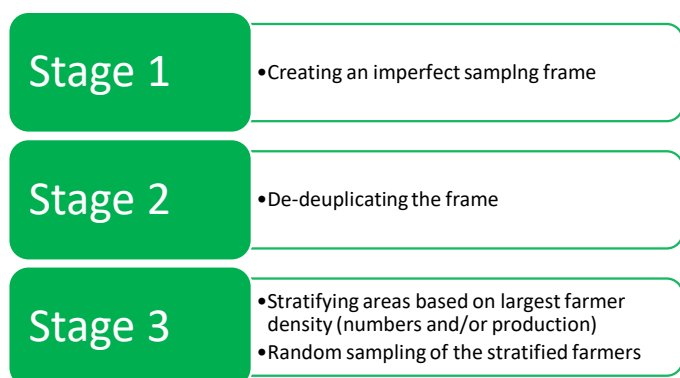
Once, the imperfect sampling frame has been created, the next step requires to de-duplicate producers who appear

¹⁰ Snowballing is a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances. Thus, the sample group is said to grow like a rolling snowball. As the sample builds up, enough data are gathered to be useful for research.

in multiple lists (i.e. those who appear multiple times in the imperfect sampling frame). This is because producers may be counted more than once, because the same producer could be listed in multiple locations. Therefore, there is a need for de-duplication through matching against a producers' name, and any other information that may be available in the list (for example age, land size, address). This de-duplication is done at the stage before sample selection i.e. at the design stage (Gonzales et al., 1998)¹¹.

Once the imperfect frames have been de-duplicated, a multi-stage sampling procedure follows. A simplified process of each stage is depicted in Figure A. 1. The first stage involves finding hotspots of farmer density in specific area from the various lists procured. This is done by stratifying the sample into clusters (largest number in a specific area and/or total production) of farmers. This means taking the sample in such a way that the total sample of large size and total sample of small size farms are proportional to their respective populations in the stratum¹². The last stage involves randomly sampling farmers from these stratified clusters.

Figure A. 1: Simplified representative multi-stage sampling process



To determine the sample size, the researcher needs to know three elements: the population of producers in a given cluster,¹³ the acceptable confidence level and margin of error. Many researches conducting surveys accept a confidence level of 95% and a margin of error of 5%.

11. If de-duplication is not done at the stage of design of the sample, it can be carried out post sampling by using multiplicity weights to each individual along with the inverse probability weights. Details of this process are provided in Mecatti and Singh (2014).

12. The way to do this is to skip the *i*th producer in the systematic random sampling and move on to the next in the list.

13. For proportional sampling among large and small farmers in a given cluster, the population of large and small farmers respectively need to also be known.

To correct for oversampling of producers and draw correct inferences, it is possible to apply a procedure described by Deaton (1997) and use sampling weights calculated as the inverse inclusion probabilities. These inverse inclusion probabilities were calculated at two stages. The first stage involved weighting the sampling areas by total number of farmers (so as to ensure that a proportional sample is selected) and the second calculating a conditional probability (given a specific area) that the farmer selected is either using a VSS or not. The inverse probabilities will enable correcting any oversampling and allow creating a representative sample.

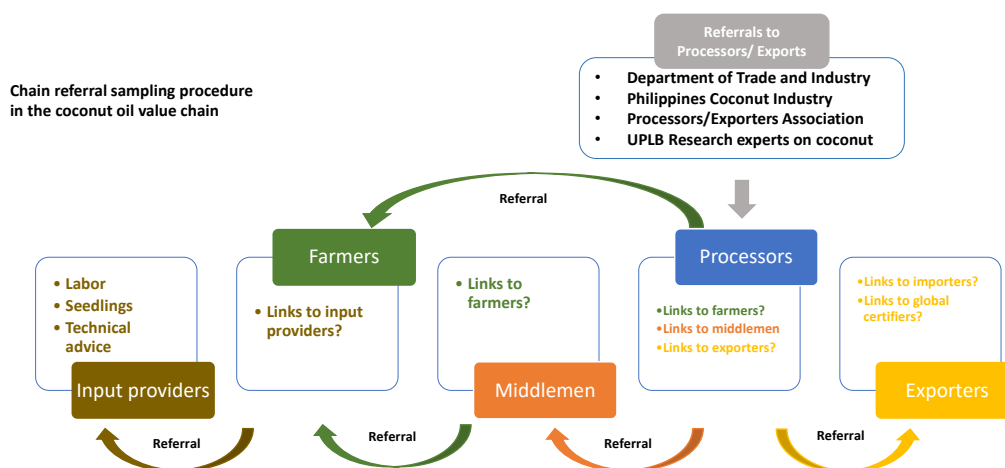
Purposive multi-stage sampling

In some contexts, lists of farmers are not available or may be too time consuming to procure. Thus, users could also conduct a referral or snowball sampling method, if the above-mentioned representative multi-stage sampling procedure is not possible. The purposive sampling method occurs in the following way: if the survey process starts from a farmer or trader, after interviewing them, then move to the next respondent, for instance ask them who is the middleman, then interview the middleman. Next would be to ask the middleman where he brings the produce for processing, then interview the processor, and so on and so forth. This way, one can trace what is happening with the product and how the actors in that value chain network perceive the importance of the VSS. Since it may not be possible to identify the what an adequate sample size for each actor in the value chain is, it is perhaps more useful to interview as many actors along the value chain (e.g. 100) as possible, taking into consideration the budget and time constraints for this activity.

UNCTAD (2020), a study on organic certification for the virgin coconut oil value chain in the Philippines, presents a snowball or referral system to map the value chain and identify farmers in specific regions to be surveyed. In this study, four institutions were found to be key players in the coconut oil value chain: the Department of Trade and Industry (DTI), the Philippine Coconut Authority (PCA), Virgin Coconut Oil Producers and Traders Association of The Philippines, Inc. (VCOP), and experts on coconut research in the University of Philippines Los Baños (UPLB). As shown in Figure A. 2 below, DTI informed selected processing and exporting companies on the survey. In addition, it provided referrals to VCOP, that has access to large- and medium-scale producers and exporters of organic virgin coconut oil

through their membership in the association. PCA directly sent e-mail invitations for the survey to the large-, medium-, and small-scale coconut oil processors in the Calabarzon region, which are not necessarily members of VCOP or other associations. The researchers sent follow-up e-mails to these companies. The UPLB provided referrals to small-scale coconut oil producers that are not members of any association.

Figure A. 2: Purposive sampling process in coconut oil value chains in Philippines



After collecting the referrals from the processing companies and all successive sources of referrals, assessment of the respondents' referral list was conducted to identify who to include in the survey. Only respondents in the Calabarzon region were selected as respondents for the survey. To increase the spread of respondents across the region, they were selected in the three most important coconut producing provinces in the region including Quezon, Laguna, and Batangas. In Quezon Province, "referred" coconut producers whose farms are located in very remote areas (i.e. in the border of the region) were excluded from the survey not only due to budget and time constraints, but also for security reasons.

A.3 ANALYSIS

A.3.1 Interviews

The following is a brief description of some of the more commonly used methods to process and analyse qualitative data:

Coding: qualitative data can be coded into specific themes based on commonalities of points discussed during the

interview, these can either be across value chain actors, or between actors. This is done by identifying common themes across all transcripts, which are usually referred to as "nodes"¹⁴. Each node can further be broken down in various sub-nodes. For example, if a main node identified is power, the sub-nodes can be lead-firm power, farmer power, government power and so on. This process can be done by hand or sometimes also through software. Software programmes such as NVivo are often used to code transcripts and interview data.

Mind maps: the transcript data from interviews and FGDs can also be used to create visual mind maps. This is a way to organize thoughts by allowing the creation of a visual structure of codes from the transcripts. There are several programmes such as Mind View and Atlas.ti that let users locate, code, and annotate findings in primary data material, to weigh and evaluate their importance, and to visualize the often complex relations between them through a mind map.

Process tracing: process tracing is an analytic tool to draw descriptive and causal inferences from diagnostic pieces of evidence, often understood as part of a temporal sequence of events. Process tracing can contribute to diverse research objectives, including: (a) identifying novel political and social phenomena and systematically describing them; (b) evaluating prior explanatory hypotheses, discovering new hypotheses, and assessing causal claims; (c) gaining insight into causal mechanisms.¹⁵

14. Not to be confused with the nodes defined in the value chain analysis section.

15. <https://polisci.berkeley.edu/sites/default/files/people/u3827/Understanding%20Process%20Tracing.pdf>

Transcripts of interviews and FGD data can be processed using any of the above methods in order to systematize the data and nuance findings. Often times, more than one method is used, so as to contrast and validate findings.

A.3.2 Additional data analysis options

Descriptive stats and graphs: Cross tabulations, Frequency, descriptive stats (mean, median), variance, standard deviations, scatter graphs

Significance tests (parametric and non-parametric) – could be used to compare means of two or more groups to see whether they are statistically different from each other. For example, you can compare responses of two groups of farmers in your sample, based on age (old versus young), based on land ownership (farm owners versus tenants), based on land size (large farms versus small farms) or educational levels (with formal education versus no education). This might be useful for formulating tailored policy recommendations later. Examples include: T test (compare the mean of two given sample, when mean and SD are not known); ANOVA (is used to compare multiple (three or more) samples with a single test); Chi square test (is used to compare categorical variables); Pearson Correlation (Tests for the strength of the association between two continuous variables); Spearman Correlation (Tests for the strength of the association between two ordinal variables (does not rely on the assumption of normally distributed data)); Kruskal Wallis test (by ranks, is a non-parametric method for testing whether samples originate from the same distribution. It is used for comparing two or more independent samples of equal or different sample sizes)

Quartiles: A quartile is a type of divides the number of data points into four more or less equal parts, or quarters. A lower quartile, median, and upper quartile – to form four groups of the data set. The lower quartile or first quartile is denoted as Q1 and is the middle number that falls between the smallest value of the data set and the median. The second quartile, Q2, is also the median. The upper or third quartile, denoted as Q3, is the central point that lies between the median and the highest number of the distribution. Using Quartiles to divide the data shows more nuanced/granular differences that may exist between or within users and non-users.

Index creation: An index is useful to provide a dimensionless value that carries all the information in the variables, and which can be compared across various categories (e.g. Filmer and Pritchett, 2001; Branisa et al., 2009). Principal component analysis is commonly used to build indexes.¹⁶ Other methods are also possible, for example geometric means are also used to build indexes (e.g. the Human development index). One advantage of using the geometric mean is that it reduces the level of substitutability between dimensions and at the same time ensures that a 1 percent decline in the index of, say, life expectancy has the same impact on the HDI as a 1 percent decline in the education or income index. Thus, as a basis for comparisons of achievements, this method is also more respectful of the intrinsic differences across the dimensions than a simple average.¹⁷

Cluster analysis: is a multivariate method which aims to classify a sample of subjects (or objects) on the basis of a set of measured variables into a number of different groups such that similar subjects are placed in the same group. Most commonly it is used to segment consumers on the basis of benefits sought from the purchase of the product. It can be used to identify homogeneous groups of buyers. Cluster analysis involves formulating a problem, selecting a distance measure, selecting a clustering procedure, deciding the number of clusters, interpreting the profile clusters and finally, assessing the validity of clustering. Cluster analysis is a useful agglomeration tool to compare groups, for instance it can be used to compare and contrast within and between VSS users and non-users. Furthermore, it can be used as a robustness test complementing any alternative analysis performed (See Abonyi and Feil 2007, Aldenderfer and Blashfield 1984, Everitt and Rabe-Hesketh 1997).

Table A. 4 below provides a guide to the various data analysis tools that can be used per component.

16. See Wold et. al. (1987) for continuous data and Kololenikov and Angeles (2004) for discrete data.

17. <http://hdr.undp.org/en/content/why-geometric-mean-used-hdi-rather-arithmetic-mean>

Table A. 4: List of data analysis per sub-indicator

Component	Relevant dimension	Data analysis
Production challenges and relationships	Buyers and contracts	Descriptive stats, significance tests
	Network embeddedness: information and training access	Descriptive stats, significance tests, index creation, quartiles, cluster analysis
Outcomes	Gender exclusion	Descriptive stats, significance tests
	Economic: Productivity Value addition Income and needs	Descriptive stats, significance tests, index creation
	Environmental: yield	Descriptive stats, significance tests, index creation
	Community: cooperation	Descriptive stats, significance tests,
Risk perception	Perceived Challenges Perceived benefits	Descriptive stats, significance tests,
	Interest in gaining certification perceptions: Motivations	Descriptive stats, significance tests,
CoP	CoP model (Interviews)	Cross tabs of ranking of priorities, scatter graphs to check possible overlaps
Producer Profiling	Farm demographics, assets and land governance Farm structure Crops and buyers	Descriptive stats, significance tests, cluster analysis

*The index will be able to facilitate comparison across economic, social and environmental dimensions.

A.3.3 SDGs and VSS on the ground

Table A. 5 below guides toolkit users in matching the survey (column 3) and interview guidelines (column 4) with the SDGs and their indicators (columns 1 and 2 respectively).

Table A. 5: SDG and VSS assessment toolkit connections

SDG theme	SDG Indicator	Information from structured questionnaire	Survey Question/ sample questions
Food security	Productivity	Sources of additional HH income; income from certified production	Perceptions statements + <ul style="list-style-type: none"> Do you raise livestock for the market? Do you grow fruit trees?
	Meals	Quantity of nutritious food for the family	<ul style="list-style-type: none"> In the last six months, did your family have sufficient quantity of nutritious food for daily consumption?
	Income	HH income	<ul style="list-style-type: none"> Total HH income from certified and non-certified production
Gender Equality	Female participation and	Number of farm workers	How many regular farm workers are women?
	Women empowerment	Number of women in meaningful work	How many women are in supervisory or managerial positions?
Decent employment	Child labour	Incidence	Will certification prevent children in this community to work in farms for salaries (in cash and kind)?
	Safe and secure work	Provision of safe and secure work conditions	Do you think being certified will provide farmers and their workers with safe and secure work conditions in their farms?
		Accidents	How many farm accidents requiring medical attention have occurred on your farm in the last six months?
Environmental conservation	Protection and conservation	-Biodiversity protection and conservation through certification -change in quality	<ul style="list-style-type: none"> Do you think certification will help protect and preserve local forests, soil and water? Have you noticed a change in forest, soil and water quality in your area?

	Biodiversity	Change in biodiversity	<ul style="list-style-type: none"> • Do you think certification will help protect the biodiversity in farmers' villages? • Have you noticed whether the balance of plants and animals in your immediate environment has changed?
	Sustainable practices	-Practice reduction of soil degradation, chemicals leeching into table water or chemical spray particles in the air	<ul style="list-style-type: none"> • In your farming practices, do you consciously try to: reduce soil degradation Y/N
	Climate mitigation		Do you think certification could help slow down climate change?
Global partnerships	Shared technology, finance and expertise	Number of trainings activities	<ul style="list-style-type: none"> • How many agricultural-related training activities have you participated in the last six months?
	Associations	Membership	<ul style="list-style-type: none"> • Member of cooperative before and after certification, • Member of farmers' or producers' association



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