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FRAMEWORK FOR THE VOLUNTARY SUSTAINABILTY STANDARDS ASSESSMENT TOOLKIT

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ACRONYMS AND ABBREVIATIONS

CCC	Clean Clothes Campaign
COSA	Committee on Sustainability Assessment
CSO	Civil society organization
CSR	Corporate social responsibility
GHG	Greenhouse gas
GVC	Global value chain
FAO	Food and Agriculture Organization of the United Nations
FSC	Forest Stewardship Council
GRI	Global Reporting Initiative
GSCP	Global Social Compliance Programme
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
ITC	International Trade Centre
LCSA	Life Cycle Sustainability Assessment
MNC	Multi-national corporation
NGER	National Green Export Review
NGO	Non-governmental organization
ODI	Oversees Development Institute
RCT	Randomized control trial
RISE	Response-inducing Sustainability Evaluation
RSPO	Roundtable on Sustainable Palm Oil
SAFA	Sustainability Assessment of Food and Agricultural Systems
SDG	Sustainable Development Goal
SME	small and medium enterprise
TSC	The Sustainability Consortium
VSS	Voluntary Sustainability Standards
UNEP	United Nations Environment Programme
UNFSS	United Nations Forum on Sustainability Standards
USDA	United States Department of Agriculture
WTO	World Trade Organization

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EXECUTIVE SUMMARY

Over recent decades, consumers' increased awareness of and concern over the economic, social and environmental impacts of production and consumption has led to a growing demand for sustainable products. Voluntary Sustainability Standards (VSS) have emerged as a market-driven tool that allows companies to credibly respond to that growing demand. VSS have since been increasingly mainstreamed, to the point of having become "de facto mandatory" for some products in some markets (Henson and Humphrey, 2010).

VSS can be a tool to support the achievement of the Sustainable Development Goals (SDGs), as VSS directly target economic, social and environmental goals in line with them. Additionally, VSS have the potential to promote trade, provide diversification opportunities, and support the transfer of knowledge and technology, among other indirect effects of their use that can also be linked to the SDGs.

> 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.

However, the trade-offs between different sustainability targets, the cost of VSS, their complexity, the capabilities and investment they require and their lack of coordination with existing policies or local priorities can compromise the potential of VSS to support SDGs, particularly by excluding smallholder farmers in developing countries from participation in sustainable global value chains.

Consequently, results of VSS use on the ground have been mixed and case specific. Therefore, there is a need to understand more systematically how VSS can effectively play a role in green growth and trade, and the achievement of the SDGs.

With this is mind, UNCTAD developed the VSS Assessment Toolkit. The objective of the VSS Assessment Toolkit is to provide a simple, systematic way, to map the motivations, challenges, and outcomes related to the adoption and use of VSS and assist in exploring corresponding policies.

In line with its objective, the VSS Assessment Toolkit is mainly a diagnostic tool to assess VSS adoption, that can be used in combination with other existing VSS analysis tools. The VSS Assessment Toolkit relies on objective and subjective data to develop a holistic analysis, it provides a simple guide to use both qualitative and quantitative data, and it is flexible enough to be adapted to a range of agricultural products and country contexts. The insights gained from the VSS Assessment Toolkit are useful to multiple stakeholders, from policy makers, to NGOs, associations and standard setters.

Identifying motivations, challenges, and outcomes related to the adoption and use of VSS allows for the design of policies able to ward off unintended negative consequences of VSS uptake, paving the way for VSS to unequivocally be a tool for the attainment of the SDGs.

This note complements the publication of the VSS Assessment toolkit itself (available at https://vssapproach.unctad.org). It expands on the rationale for the toolkit by explaining the mixed arguments and evidence around VSS uptake that motivate the different parts of the toolkit. It also places the toolkit in the world of VSS tools, describing what sort of analysis the toolkit is helpful for, and how it can interact with or complement other existing tools.

1. INTRODUCTION

Globalisation and the rise of trade in intermediate goods have led to the growth of global value chains (GVCs). While gains from trade-led growth have helped lift millions out of poverty over recent decades, particularly in the developing world (WB and WTO, 2015), increases in production and trade have also led to overuse of natural resources, increased emissions, and increased inequalities. The rise in consumer awareness about these issues has made sustainable markets grow faster than their traditional counterparts.

In this context, consumers increasingly demand more information about the sustainability of their purchases. Consequently, companies have a need for governance structures that allow them to credibly signal features of their production, even along disintegrated processes.

Voluntary Sustainability Standards (VSS) have emerged as a market-driven response to that need. VSS are mostly private standards that address not only product quality and attributes, but also production and processing methods. They can range from codes of conduct set by MNCs (multinational companies), to civil society organization (CSO)-driven standards (e.g. Fairtrade, Rainforest Alliance, etc.) and multi-stakeholder initiatives, such as the RoundTable on Sustainable Palm Oil (RSPO). While voluntary, in practice VSS have become a requirement to access some markets, as they are being increasingly mainstreamed to address the growing demand for sustainable products, or as a means for MNCs to garner reputational capital (Schönherr et al 2017).

Since they target desirable economic, social and environmental goals, VSS are often directly aligned with the Sustainable Development Goals (UNFSS, 2018). Additionally, VSS can contribute to the SDGs indirectly: they promote trade, as they grant access to international markets, and they can provide diversification opportunities, and support the transfer of knowledge and technology, for example.

Prior research has discussed several potential benefits of adhering to VSS in agriculture including increased opportunities for value addition, increased crop productivity, increase in the number of permanent workers and longer-term contracts, ability to diversify by selling into new markets, and increased livelihood security (UNFSS 2015, 2018). But at the same time, there are several challenges in VSS adoption, such as the high cost of gaining certification, potential environmental degradation caused by monocropping and deforestation, increasing precarity of the workforce, lack of transparency in the modus operandi of some VSS and lack of sufficient extension support (Krauss and Krishnan 2016). Thus, in order to support green transformation and national SDG agendas, there is a need to reconcile the benefits versus the costs of adhering to VSS.

There are several factors that prevent effectively addressing the trade-offs and synergies within VSS, for example the lack of data available across value chains and countries, since lead companies, non-governmental organizations (NGOs) and other implementing organisations do not make these data public. Furthermore, existing studies vary widely across crops, production context, country context and value chains, inhibiting comparisons.

Consequently, there is a need for systematic measures of the trade-offs and synergies of VSS uptake for different GVC actors, particularly in developing countries. This led to the development of UNCTAD's VSS Assessment Toolkit, which allows for the comprehension of challenges, motivations, and social, economic and environmental outcomes associated to VSS adoption. This toolkit uses both objective and subjective data through a mixed methods approach (interviews and survey) to provide a holistic, on the ground, understanding of VSS trade-offs and synergies.

This publication provides a framwork for the VSS Assessment Toolkit: the following sections expand on the motivation to develop it (Section 2); present the structure, design and rationale of the tool (Section 3); and comment on other existing VSS-related tools or frameworks and how the VSS Assessment Toolkit relates to and complements them (Section 4). A detailed, step by step implementation guide is available online, at https://vssapproach.unctad.org, and in the companion publication VSS Assessment Toolkit.

2. ABOUT VOLUNTARY SUSTAINABILITY STANDARDS

This section succinctly reviews what VSS are, how they came to be, and comments on their current standing. It

further discusses some of the opportunities and challenges associated with the adoption of VSS, as well as some of the related empirical evidence. Lastly, it touches upon the links between VSS and SDGs. While not exhaustive, a brief presentation of these points is essential to understand the motivation and the structure behind the VSS Assessment Toolkit.

2.1. VSS: A BRIEF BACKGROUND

What are Voluntary Sustainability Standards?

VSS are standards that require products to meet specific economic, social or environmental sustainability metrics. The requirements can refer to product quality or attributes, but also to production and processing methods, as well as transportation. VSS specify "requirements that producers, traders, manufacturers, retailers or service providers may be asked to meet, relating to a wide range of sustainability metrics, including respect for basic human rights, worker health and safety, the environmental impact of production, community relations, land use planning and others" (UNFSS, 2013).

Box 1: Standards, certifications and labels

Standards: documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions, to ensure that materials, products, processes and services are fit for their purpose. These can include product standards (specifications and criteria for the characteristics of products) and process standards (criteria for the way products are made). Social and environmental standards in agriculture are essentially process standards.

Certifications: certification is a procedure by which a third party gives written assurance that a product, process or service is in conformity with certain standards.

Codes of Conduct: a set of rules outlining the responsibilities of, or proper practices for, a supplier. These are normally set by lead companies and allow generation of preferred supplier lists, which lower the cost of doing business for lead companies.

Labels: a certification label is a label or symbol indicating that compliance with standards has been verified. Use of the label is usually controlled by the standard-setting body. Where certification bodies certify against their own specific standards, the label can be owned by the certification body.

Source: Krishnan and Maxwell (2020).

When discussing VSS, the terms standards, certifications and labels are often used interchangeably. This can lead to confusion with regards to the process of designing, marketing and monitoring a standard, and the actors involved in each of these steps. Please refer to the definitions in Box 1 for clarity.

Types of VSS

As the definition above may hint, VSS come in all shapes and forms. VSS vary greatly, not only in the focus of the metrics they monitor (social, economic, environmental), or the part of the production process they regulate (production, processing, transportation, attributes of the product), but also in terms of who designs, markets, monitors and adopts them.

In most cases, VSS are governed by non-state actors. Some lead companies choose to have their own standard or code of conduct, for example Starbucks' standard CAFÉ. There are also standards that are designed by industry associations or with the support of a consortium of private companies, such as GlobalGAP. VSS can also be run by NGOs, such as Fairtrade. There are public sector-led voluntary standards, such as United States Department of Agriculture (USDA) Organic. They are usually less stringent than industry consortium standards and facilitate public procurement, as well as private procurement by small and medium enterprises (SMEs) in developed countries (Liu 2011). There are also collaborative multi-stakeholder VSS initiatives, such as the Forest Stewardship Council (FSC) and the Roundtable on Sustainable Palm Oil (RSPO). These are run through combinations of stakeholders that provide extension support to actors adopting the standard.

Monitoring is classified into first, second and third party monitoring according to the connexion between the actor adopting the VSS and the monitoring body. First party monitoring is an internal audit that an organization performs on itself; second party is an external audit that an organization performs on a supplier of goods or services; and third party involves an external audit that is conducted by an independent organization upon another organization.

Who designs and markets the standard affects the type of monitoring used. Table 1 summarises this link.[1] The configuration of designer, marketer and type of monitoring can affect in turn whether a standard is considered legitimate or credible by consumers, with NGO designed

1 The typification presented in Table 1 is not meant to be unique or exhaustive, but rather to illustrate that there are very different types of VSS, not only in the dimensions of sustainability they address, but also in terms of who designs and monitors them.

standards with third party auditing usually having the most credibility (Ponte, 2020).

Table 1: Types of VSS

Source: Authors' construction based on UNFSS (2013, 2018) and Lambin and Thorlakson (2018).

Standard designer	Standard	Monitoring	Example
Private sector	Company led standards/ codes of conduct	First, Second party	Starbucks – CAFÉ, Unilever - Sustainable Agriculture Code
Industry consortium of private companies	Industry association or group led	First, second and third party	Global GAP
NGOs	NGO led	Third party	Fairtrade, Rainforest Alliance, Organic
Alliance of NGOs	Group of NGOs come together to develop a standard	Third party	Clean clothes campaign (CCC)
Public sector led standards	Government led standards with support from NGOs and business	Third party	USDA Organic
Collaborative agreements/ multi stakeholder	Jointly governed by NGOs and business	Second and third party	Forest Stewardship Council; RoundTable on sustain-able palm oil (RSPO)

Why are VSS used? Where do they come from?

As awareness of the negative effects that the production and distribution of goods (and the provision of services) can have increases, consumers are becoming more willing to pay mark-ups for products and services that are sustainable.[2]

In general, adopting sustainable production practices entails additional costs for producers and higher retail prices for consumers. But even when consumers are willing to pay a higher price for sustainable goods, it is difficult for them to verify whether a product or service is actually produced sustainably. Without this information, consumers are not willing to pay extra for products or services that claim to be sustainable. If producers are not compensated for additional costs incurred in keeping production processes sustainable, they do not have incentives to switch to sustainable production practices in the first place. This means that if consumers cannot verify sustainability claims, markets for sustainable products cannot exist.

VSS emerge as a mechanism that allows producers to credibly signal the sustainable characteristics of their products. Consequently, VSS also allow consumers to better allocate their expenses according to their preferences for sustainability. By providing credible information to consumers, typically in the form of certifications or labels, VSS generate incentives for companies to adopt production processes that are more sustainable, even if they imply higher costs.

VSS are then a market mechanism (or private sector response) to address a market failure - the asymmetry of information between producers and consumers about the sustainability of production processes.[3] Thus, the existence of VSS systems enables in turn the existence of markets for sustainable products and services.[4]

Note that this explanation refers not only to the link consumer-retailer, but that it applies to all linked actors

2 Measuring willingness to pay is challenging, but survey evidence of 30,000 consumers in 60 countries presented in Nielsen (2015) shows continued increase in self-reported willingness to pay extra for products and services that come from companies that are committed to positive social and environmental impact. This pattern holds across regions, products and cohorts.

3. VSS can also be considered under different frameworks. UNFSS (2018) expands on the argument of VSS as a tool to address information asymmetry, but it also alternatively conceptualizes VSS as a new regulatory form, at the intersection between market-based instruments, regulation by information, and voluntary private governance.

4. Pricing and mark-ups of certified products will be determined by market structures of consumers (and their willingness to pay), producers, standards setters and certifiers.

up the value chain up to the agricultural goods producer and his suppliers. In this sense, the rise of VSS is also closely linked to the increasing economic globalization and offshoring of production of recent decades (Dicken 2008), as VSS are some of the main instruments used to control the quality, safety, and volume of production along very fragmented value chains.

VSS coverage and uptake

Over recent decades, VSS evolved greatly in terms of sectoral and topical coverage, going from an original focus on agriculture, forestry and fair trade in the early nineties to a broad range of issues and sectors nowadays. Today, there are more than 260 active VSS in more than 80 sectors and 180 countries.[5]

The lack of systematic and readily available data on uptake of VSS, coupled with the common practice of using multiple standards simultaneously, makes it challenging to accurately report on the trends related to VSS use (e.g. volume and percentage of certified production, volume and percentage of certified sales, and price).

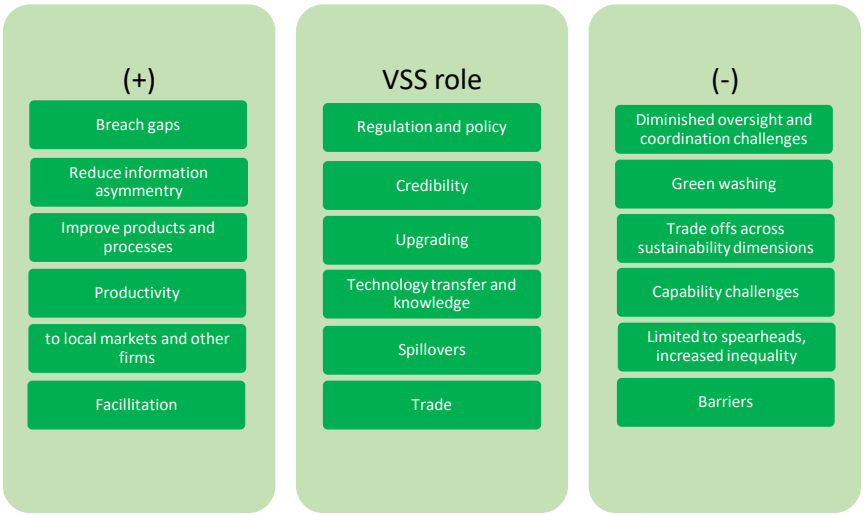
The most comprehensive studies reported continued growth and expanding coverage of agricultural land for 2019 (ITC, 2019). The demand for VSS certified goods and services remains concentrated in Europe and North America, but it is increasingly filled by sustainable exports from developing countries.

Many of the most used VSS apply to agricultural commodities such as coffee, cocoa, tea, bananas, sugar, cotton, soya beans and palm oil, exported by developing countries. And even though retail sales and per capita consumption of VSS products in other regions remain low, VSS are increasingly gaining importance in developing markets as well.

2.2. OPPORTUNITIES AND CHALLENGES OF VSS ADOPTION

VSS can provide incentives for companies to adopt production processes in line with desirable environmental, social and economic objectives, by granting them access to the rapidly growing global "green" markets. At the same time, VSS establish new priorities, constraints and requirements on production processes and use of resources that can have a ripple effect, with both positive and negative unintended consequences. This section comments on a non-exhaustive list of some of them, as summarised in Figure 1, with a focus on the elements that the VSS Assessment Toolkit attempts to capture, as later described in Section 3.

Figure 1: VSS roles and effects



5. As of June 2020, ITC Sustainability Map, available at www.sustainabilitymap.org. Alternatively, Ecolabel Index also maintains a directory of VSS (available at http://www.ecolabelindex.com).

Credibility

As explained earlier, VSS allow companies to build trust and make credible claims with regards to the sustainability of their products, granting them access to the mark-up ethical consumers are willing to pay (e.g. Tait et al. 2016). However, due to the proliferation of multiple standards, the lack of transparency in the criteria some of them apply, and concerns over effective compliance with sustainability criteria, some VSS lack credibility and consequently do not manage to bridge information asymmetries.[6]

It is also of concern that shortcomings and limitations in VSS design can turn them into a tool for greenwashing (Bennet, 2018, Fransen 2012).[7]

Upgrading

VSS adoption may lead to upgrading within value chains in terms of products, e.g. move to more sophisticated, environmentally friendly product lines. Good practices induced by VSS adoption, e.g. reorganization of production systems, use of superior technology, increased efficiency, etc., entail upgrading in terms of processes, and they increase productivity, quality, crop yields, and improve natural resource management techniques (De Marchi et al 2019). However, due to the complex nature of VSS, there exist significant trade-offs across the economic, social and environmental dimensions (Krauss and Krishnan 2016).

This means that that the product or process upgrading implied by a certain VSS, may not entail upgrading in, for example, the social dimension (Ponte, 2020). For instance, while studies across Asia and Africa suggest that farmers have benefited from new sustainable practices that improve yield, there have been mixed implications on their overall social well-being and surrounding environment (Lambin et al 2019). Similarly, Brandi (2017) shows that Roundtable on Sustainable Palm Oil (RSPO) smallholder certification projects in four different provinces of Sumatra generated positive socioeconomic benefits for farmers (e.g. higher incomes, diversification opportunities), while simultaneously creating undesired implications for their natural environment, reducing soil quality levels and the ground water table.

Regulation and policies

In some instances, particularly in developing countries, VSS have come to fill public governance gaps (Bartley 2018, Fernandez-Stark and Gereffi 2019). For example, Pickles et al. (2016) find that the institutional changes triggered by VSS adoption in East Africa aided in the formalization of the fruit and vegetable sector.

Furthermore, in some cases, rather than being directly involved in the standard-setting process, national governments choose to provide basic guarantees and allow NGOs and private companies to establish VSS (Ponte 2020), or they simply follow international VSS, especially for exports of produce to developed countries (Alford and Phillips 2018). For example, the Ministry of Agriculture of Kenya has not created food security and traceability policies for the horticulture sector, but rather relies on VSS, such as GlobalGAP (Barrientos 2019, Krishnan 2018). This provides potential scope for creating more rigorous policies that can be benchmarked to international standards.

As a downside to this, the dependence on non-state actors to develop VSS or the lack of a participation in the design and dissemination of VSS, reduces the accountability of the public sector on these issues, for example in terms of providing corresponding extension services or quality infrastructure. Additionally, it may result in requirements or priorities that are not aligned or coordinated with existing local development strategies and policies. More specifically, this may translate into developed markets imposing policies on developing markets. In some instances, governments resort to the development of national VSS to avoid this, see Box 2.

Technology transfer and knowledge creation

The various control points within a VSS often require new infrastructure and capacities, e.g. soil testing facilities, pesticide control boards, irrigation infrastructure, maintaining records, farm management, etc. (Hoffmann and Grothaus 2015). Consequently, the adjustments and investments made in order to adopt a VSS bring about the opportunity for technological transfer and knowledge creation, which can in turn increase crop yields, productivity, and disposable income (Krishnan et al 2020). For instance, Barrientos (2019, 2014) shows that upon adoption of a VSS in the cocoa sector in Ghana and Ivory Coast, there was significant assimilation of new knowledge of good agricultural practices, and farmers began using precision

6 ISEAL has led consultations on the credibility of VSS, leading to their ISEAL Credibility Principles, available at: https://www.isealalliance.org/credible-sustainability-standards/iseal-credibility-principles. At the time of publication, a consultation of the ISEAL Credibility Principles is underway, available at www.isealalliance.org/credibility-principles-consultation.

7. Greenwashing refers to unsubstantiated claims of sustainability of a product, through misleading information or false impressions, with the aim of attracting consumers willing to pay a mark-up for environmentally friendly products.

sprayers to combat pests. Interestingly, VSS have also recently started to use of blockchain technology[8] and smart contracts[9] , particularly to improve traceability (Maurer 2017). For example, The Programme for the Endorsement of Forestry Certification uses blockchain technology to trace the provenance of around 740 million acres of certified forests all over the world (Rosencrance 2017).

Box 2: Development of national VSS

In part as an attempt to address some of the shortcomings of VSS outlined above, government and industry actors have reverted in some cases to creating their own national sustainability standards (Schouten & Bitzer, 2015; UNFSS 2015: 32-25). The aim is to create a national VSS structure that can act as a local minimum standard for actors to adhere to, to ensure sustainable production practices along with enhanced quality (GlobalGAP 2019). This structure is in turn expected to improve the capabilities of farmers giving them a comparative advantage to sell produce internationally (Krishnan 2018). National standards are expected to have lower costs and be better aligned to local priorities and policies than their international counterparts.

Such initiatives have experienced mixed results, as they require large investments and extended time horizons to build reputation and credibility. For instance, KenyaGAP was developed in 2004 and benchmarked to GlobalGAP, but attuned to local conditions. The Fresh Produce Exporters Association of Kenya (FPEAK) was a key partner in formalizing and developing this standard. However, KenyaGAP experienced difficulties to take off due to the lack of uptake or support from international retailers (Ouma 2016, Krishnan 2017).

However, the inhibitive costs of new technology, as well as the lack of codification and complexity to adopt and use it, may become significant obstacles to the effective transfer of technology. Many developing countries are resource scarce, making the adoption of new VSS technology impossible without international support from donors, retailers or NGOs. Additionally, the use of capital intensive rather than labour intensive technology may lead to the loss of quality jobs (Banga and TeVelde 2018).

Spillovers to the local economy

The experience of VSS adopters may lead to spillovers in the local economy, both through the increased availability of sustainable products and the transfer of knowledge to non-adopters. For example, in the cases of sweet pepper in Thailand and green beans in Kenya, the adoption of a VSS by some value chain actors led to the emergence of quality products sold at a premium in local economies, along with an increase in sharing of appropriate techniques to grow those commodities for exports (Krishnan and Foster 2018, WDR 2020).

This may not necessarily be the case though, as in most instances the investment and capacities required for adoption of VSS limits it to a select group of market leaders, generally not smallholders or micro- and small- sized companies, and the resulting sustainable products only made available to export markets.

Market access

Many of the preceding points play a role in determining whether VSS facilitate trade or are a barrier to it. In as much as international markets demand sustainable products and VSS reduce information asymmetries, decrease transaction costs through harmonization and mutual recognition and enhance competitiveness through upgrading and new technologies, VSS can facilitate trade. For instance, Giovannucci et al. (2008) show that VSS have increased the income and volume of green exports from five countries while also supporting diversification to other products. Conversely, as VSS rapidly become “de facto mandatory” (Henson and Humphrey, 2010) the initial cost and time needed to adopt VSS; the capabilities, technology and infrastructure they require; the frequent renewal schedules they impose; their complexity and their lack of coordination with local authorities may turn VSS into market access barriers, in particular for developing countries and/or smallholders. For instance, several research studies conducted in Sub-Saharan Africa found that inhibitive VSS certification costs, yearly renewal requirements and expensive audit costs, along with the high levels of rejection of products for export and slow payment procedures led to the marginalization of farmers from global value chains (e.g. Chiputwa and Qaim, 2016, Smith et al 2019, Potts et al 2017).

Regarding this point, it is important to mention that while the World Trade Organization (WTO) considers VSS to be private schemes – i.e. outside of its remit -, this has long been a source of disagreement. Critics have argued that if enough retailers adopt VSS and they consequently become a de facto requirement for market access, they should be subject to multilateral regulation. The potential for trade

8. Blockchain technology is a distributed database of records or shared public/private ledgers of all digital events that have been executed and shared among blockchain participating agents (Crosby et al. 2016). Blockchain technology differs from most existing information systems designs by including four key characteristics; non-localisation (decentralisation), security, auditability (Baker and Steiner 2015), and smart execution.

9. Smart contracts, as written rules stored in the blockchain, can help to define network actor interaction amongst each other and within the system. Smart contracts influence network data sharing between supply chain participants and continuous process improvement (Tian 2017).

distortion that VSS uptake entails has also been much debated. Please see UNFSS (2018) for a detailed treatment of the compatibility of VSS with the WTO trading system, the utilization of VSS in trade agreements, and other trade implications.

On the empirical evidence

It is difficult to draw patterns related to the effect of VSS adoption from the available empirical evidence. As illustrated by the references provided in this section, the empirical evidence on the effects of VSS adoption is mixed (additional examples are presented in Annex A.1). This is to be expected: while VSS are meant to reconcile environmental, social and economic objectives, the trade-offs between these dimensions, the cost and complexity of VSS, and the capabilities and coordination required for them, make the simultaneous achievement of these objectives challenging. In addition to the mixed nature of the observed outcomes, empirical studies on the topic are scattered and case specific, making any generalization of their conclusions challenging.

VSS and SDGs

VSS can be instrumental in the achievement of the Sustainable Development Goals (SDGs) through a number of channels. The most direct one is that many VSS control points can simply be mapped to various SDGs. For example, carbon emission standards, such as the GHG Protocol Product Standard, ISO 14067 or PAS 2050, can be linked to indicator 9.4.1 of SDG 9.[10] Annex A.2 presents a detailed example on how the key control points of GlobalGAP are clearly linked to various SDGs. More broadly, UNFSS (2018) was devoted to identifying such links. Using the Sustainability Map database[11], the requirements of 122 VSS were mapped to 10 SDGs, identifying strong overlaps, particularly in the areas of decent work (SDG 8), responsible production and consumption (SDG 12), and life on land (SDG 15).

Indirect links between VSS and the SDGs can also be established via the unintended consequences of VSS, some of which were explored earlier in this section. In particular, in as much as VSS facilitate trade or act as trade barriers, they can support or hinder progress towards SDG 17.

10. Indicator 9.4.1 is "CO2 emission per unit value added".

11 ITC Sustainability Map, available at www.sustainabilitymap.org.

3. THE VSS ASSESSMENT TOOLKIT

In the context of the background described in Section 2, UNCTAD developed the VSS Assessment Toolkit. This section presents its objectives, target users and the rationale of its structure. A brief comment on its implementation is also included, but further details can be found in the VSS Assessment Toolkit itself.[12]

3.1. OBJECTIVES

As discussed in Section 2, VSS are a market-driven tool that is increasingly demanded and used across the globe, to the point of having become "de facto mandatory" (Henson and Humphrey, 2010). VSS target desirable economic, social and environmental goals, in line with the SDGs. Additionally, VSS have the potential to promote trade, provide diversification opportunities, and support the transfer of knowledge and technology, among other indirect effects of their use that can also be linked to the SDGS. However, the trade-offs between different sustainability goals, the cost of VSS, their complexity, the capabilities and investment they require and their lack of coordination with existing policies or local priorities can compromise their potential, particularly by excluding smallholder farmers from developing countries from participation in sustainable global value chains.
On the ground, the resulting tension between the aims and unintended effects of VSS use has led to mixed and case-specific evidence in terms of sustainability outcomes. Therefore, there is a need to understand more systematically how VSS can effectively play a role in green growth and trade, and the achievement of the SDGs.

With this is mind, UNCTAD developed the VSS Assessment Toolkit. The objective of the VSS Assessment Toolkit is to provide a simple, systematic way, to map the motivations, challenges, and outcomes related to the adoption and use of VSS and assist in exploring corresponding policies. Identifying these factors allows for the design of policy able to ward off the potential unintended negative consequences of VSS uptake and use, paving the way for VSS to unequivocally be a tool for the attainment of SDGs.

12. Available at www.vssapproach.unctad.org.

3.2. USERS

The insights gained from the VSS Assessment Toolkit are useful for a number of actors, as follows: Local, national and regional government agencies: the toolkit can help government agencies to outline the challenges and outcomes faced by value chain actors when using VSS, to understand the extent to which VSS can act as a regulator, to determine whether VSS can be a source of upgrading and to identify leverage points within the value chain. Overall, the VSS Assessment Toolkit can inform policy making on how to increase local capacities to effectively adopt sustainable production practices, increasing the effectiveness of VSS.

International organizations and donors: the toolkit can help them support informed local policy dialogue on VSS and better target their fund allocation to initiatives that specifically address the relevant issues identified by the toolkit.

Local and international NGOs and local associations: the toolkit can validate and systematise the anecdotal evidence NGOs and associations observe. This can help them target their efforts in support of farmers, and support a case for further initiatives linked to improving the efficacy of VSS.

Private sector: the toolkit can be used to monitor the outcomes and challenges faced by farmers with regards to VSS and plan corresponding actions, which can improve, or add legitimacy to, the sustainability reports required sometimes of the private sector.

Academia: the toolkit can support primary data collection for academic research to complement VSS studies. The interview guidelines, the sampling process and the survey questionnaire have been developed using various key academic texts along with empirical studies.

Standard setters/standards systems: the toolkit can assist in the design or redesign of VSS by identifying challenges and bottlenecks. It can also help standard setters better understand the partnerships involved in implementing VSS. This information can be used to alter arrangements for diffusion of VSS, as well as to strengthen the partnerships established by standard setters on the ground.

Cooperatives of farmers: while farmers themselves are already aware of the challenges they face, the toolkit may be of assistance in organizing the information and providing a larger value chain perspective, thus giving cooperatives more agency in their decision making and their positions in multi-stakeholder meetings or negotiations.

3.3. STRUCTURE

The VSS Assessment Toolkit was designed to capture some of the issues that can affect whether VSS adoption has a positive or a negative impact, as outlined in Section 2. To that effect, the structure of the VSS Assessment Toolkit is meant to help address questions such as:

- What are the benefits of VSS adoption for this particular value chain? Do they originate in...
  - ... the prices obtained?
  - ... new markets or new buyers secured?
  - ... productivity gains? value addition, differentiation?
- How are those benefits, and associated costs, distributed along the value chain?
- How do different actors become VSS compliant? On their own, or through others (e.g. processors or associations)?
- What factors of VSS-related cost, complexity and required capabilities may hinder VSS adoption or continued use?
  - fees, transition period, lack of finance, short validity of certification
  - lack of information, strict technical or administrative requirements, etc.
  - multiplicity of standards available for the same commodity
- How do actors tackle those factors?
  - How do actors access finance, training, etc.? On their own, through others (other actors or associations)?
- What VSS-related rules, policies and programs exist or existed in this value chain? Are they coordinated?

In order to address these questions, the VSS Assessment Toolkit gathers information on a number of topics related to value chain mapping, production challenges, perceptions on VSS benefits and challenges, and priorities, as listed in Table 2.

Table 2: Topics explored in the VSS Assessment Toolkit

Component	Topics
Map	Crops, actors, activities
	Demographics, assets and land governance
	Rules, regulation, programmes
Production challenges and relationships	Power relationships and governance
	Buyers and contracts
	Network embeddedness: information and training access
	Group effectiveness
	Gender exclusion
Outcomes	**Individual**
	Economic
	Productivity
	Value addition
	Income and needs
	Social
	Participation in farmer groups
	Gender empowerment
	Environmental
	Yield
	Community
	Cooperation
Risk perceptions	Economic, social and environmental priorities
	Perceived Challenges of VSS adoption and use
	Perceived benefits of VSS adoption and use

It is important to note that the topics or dimensions included in the VSS Assessment Toolkit are not meant to cover all possible aspects of VSS adoption effects. Topics were selected with the goal of identifying factors that could limit the potential of VSS to contribute to the achievement of SDGs, in particular factors that could entail the exclusion of smallholder farmers from markets. The selection of topics to be included took place under the project "Fostering Green Exports through Voluntary Sustainability Standards in Asia and the Pacific", and was based on selected literature, as reflected in Section 2.2, three case studies and consultation with experts.[13]

The varied nature of the topics in Table 2 requires a wealth of sources to address them. Whereas some of the information needed may be readily available in existing data and documents, some of the queries can only be addressed by key value chain actors themselves, such as government officials, representatives of associations and farmers, processors and exporters. At the same time, considering that we are particularly concerned about the possibility of some groups being excluded from VSS adoption or benefits, e.g. farmers and SMEs, it is important to obtain a representative impression of the value chain, beyond the views of specific single actors. In order to take stock of existing information, gain in-depth knowledge from specific actors and seize the perspectives from groups potentially excluded from benefits, the VSS Assessment Toolkit combines desk research, interviews and a survey that are aimed at addressing the questions raised above.

One last point to note is that the toolkit was designed to rely on objective and subjective data, more specifically perceptions about VSS adoption and use, to develop a holistic analysis. Perception data not only provides a means to substitute, triangulate or validate objective data, it complements it.[14] Subjective data is critical to comprehend the behaviour of actors when participating in value chains, something that is not always revealed by objective data. It additionally provides a means to highlight potential tensions underlying what different actors find "important" or "necessary" when adopting a VSS. In line with this, the toolkit enquires about actors' perception on some aspects of the challenges, benefits and effects of VSS adoption and use.

In summary, the VSS Assessment Toolkit is structured to use desk research, interviews and a survey to gather objective and subjective information on a number of dimensions of value chain characteristics that enable or limit the potential of VSS to support SDG attainment.

13. The three case studies were organic coffee in Vanuatu, organic virgin coconut oil in the Philippines and organic coconut oil in Vanuatu. These studies are available at: www.vssapproach.unctad.org. The consultation with experts took place on March 28th, 2019 in Geneva. A summary of the discussion and related documents are available at https://unctad.org/en/pages/MeetingDetails.aspx?meetingid=2098.

14. The importance of subjective data in this context has been extensively documented in the literature. For instance, Rigby et al. (2001) find that perception data gathered through interviews with experts have allowed the creation of objective measurements of agro-ecological effects that are similar to data gathered through sensors and satellite data. In the same vein, Farber et al. (2002) and Van der Werf and Petit (2002) argue that perceptions help bring to the forefront the revealed expectations of the critical outcomes along with psycho-cultural aspects that are not easily portrayed through any other form of data collection.

3.4. IMPLEMENTATION

In order to operationalize the objectives and structure presented in Sections 3.1 and 3.3, the VSS Assessment Toolkit was organized in 5 steps, as presented in Figure 2. These steps are meant to be deployed for a specific case: a value chain, area and VSS are to be selected before using the toolkit.

This section provides a brief overview of the 5-steps. Detailed implementation guidance is provided in the VSS Assessment Toolkit itself. Note that users are encouraged to modify or adapt the interview and survey parts of the VSS Assessment Toolkit based on their own context and experience.

Figure 2: the 5-steps of the VSS Assessment Toolkit

Step 1: Value chain mapping

The first step is to map the value chain in detail, identifying all relevant actors and their activities, 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.

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. In order to capture: (i) challenges and value chain relationships, (ii) outcomes, and (iii) risk perceptions and priorities, the questionnaire covers different elements: buyers and contracts, network embeddedness, input costs, output and productivity, income, value addition, and perceived challenges and benefits of adopting and using VSS.

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 provide an overview of the relationships and power imbalances between value chain actors, outline the challenges and benefits that actors perceive in connection to VSS, suggest the level of technology transfer and possible knowledge creation opportunities; and give a picture of the capabilities and current practices followed in the value chain.

Step 5: Policy options

The final step, Step 5, is dedicated to exploring what policy options are most suitable to address the issues identified in the previous step. The final outcome of the toolkit is a set of evidence-based policy options that can be used to inform policy dialogue and eventually specific action plans.

In the context of the project "Fostering the development of green exports through Voluntary Sustainability Standards in Asia and the Pacific"[15] the policy options identified by the toolkit were discussed at multi-stakeholder workshops, but other sharing and validation formats are also appropriate. Actors that use the VSS Assessment Toolkit are encouraged to consider how best to incorporate its findings to their policy choices even before implementation.

4. OTHER TOOLS FOR VSS ANALYSIS

Besides the VSS Assessment Toolkit, there are several analytical tools or frameworks that were developed for VSS analysis or that are highly relevant to it. They were designed for different objectives and users than the VSS Assessment Toolkit, and they analyse other aspects of VSS. This section

15 More information about the project available at https://vssapproach.unctad.org.

identifies some of them and it illustrates how they can complement the VSS Assessment Toolkit.

To understand the complementarities between VSS related analytical tools or frameworks, it is useful to first consider the lifecycle of a VSS in three stages: from design and adoption to impact (see Figure 3). In the design stage, various actors, from the private sector to collaborative multi-stakeholder initiatives, identify key areas of economic, social and environmental sustainability and create benchmarked normative control points, i.e. the requirements VSS adopters must adhere to.

Following that, in the adoption stage, actors considering the potential for adoption of a VSS, such as cooperatives, processors, exporters or government officials, wage several factors. They must consider demand aspects, i.e. the willingness of local and international markets to pay for "green" products. Similarly, they must consider their own potential to produce and export specific "green" products. Together with this, it is also necessary to understand what VSS available, which ones are most demanded by which market, and what adopting them entails in terms of costs and requirements. These factors need to be contrasted with the situation on the ground: what are the capacities of the adopters, are support institutions in place, are extension services appropriate, etc. This informs the implementation of the VSS.

number of forms, among them:

- outcome studies that use non-experimental data (before and after VSS intervention studies),

- impact evaluation studies that use randomized controlled trials (RCTs) or other types of quasi experimental data; and

- sustainability reporting through company corporate social responsibility (CSR) reports or through standardized reporting initiatives.

The VSS Assessment Toolkit is situated mainly in the adoption, and to a lesser extent in the evaluation stage. Within the adoption stage, it can be used to diagnose the implementation challenges and motivation, once the demand and potential for a specific VSS have been determined. In the evaluation stage, it can be used as an initial approach to outcome (non-experimental) studies, since VSS user and non-users are interviewed and surveyed.

Figure 3: Analysis across the VSS lifecycle

After a VSS scheme has been used for some time, it is important to understand what the consequences of adoption have been. The final stage of the lifecycle is then that of evaluation of the VSS scheme. This may take a

Table 3 lists some of the VSS tools and frameworks available for each of the aspects mentioned in Figure 3. As mentioned earlier, the structure of Figure 3 is helpful to understand the complementarities between different tools.

Table 3: Summary of other VSS tools and frameworks

VSS lifecycle		Name of tool	Purpose of the tool
Adoption	**Green export potential diagnosis**	UNCTAD's National Green Export Reviews	Identify untapped potential to diversify exports into green products
		ITC Export Potential	Identify untapped potential for export and diversification
		ODI Export Competitiveness Matrix	Revealed comparative advantage of products and export stability
	Potential demand	Cost benefit analysis; choice experiments	Understand the willingness to pay of markets
	Benchmarking	ITC standards map	Take stock of existing VSS schemes and compare control points
		Ecolabel Index	Catalogue ecolabels in a global directory
	Implementation	Global Social Compliance Programme (GSCP)	Harmonise existing efforts across multiple VSS schemes
		FAO SAFA Tool	Global reference framework for the assessment of sustainability along agriculture, forestry and fisheries value chains
	Outcomes	ISO 14040 and ISO 14044	Guidelines and science-based target methodologies to measure changes after the standard is adopted
		The Sustainability Consortium (TSC)	
	Impact evaluation	ISEAL Impacts Code of Good Practice 2.0	Create indicators for socio-economic-environmental evaluation of the value chain
		Committee on Sustainability Assessment (COSA)	
		Response-Inducing Sustainability Evaluation	
	Sustainability reporting	Global Reporting Initiative (GRI)	Harmonized sustainability reporting model

For example, UNCTAD's National Green Export Review and ITC's Standards Map can be used to determine a value chain of interest and what VSS would be appropriate for it.

Once those issues have been settled, the VSS Assessment Toolkit can be deployed to have a better understanding of what the uptake difficulties or benefits could be for that value chain and that VSS. If some actors have already adopted the VSS, the comparison of outcomes between VSS users and non-users that results from the VSS Assessment Toolkit can provide an initial, non-causal, evaluation of the effect of the VSS, which can later guide impact assessment tools, such as the ISEAL Impacts Code of Good Practice 2.0. Please see Annex A.3 for a brief description of these and other tools and frameworks available for VSS analysis.

5. FINAL REMARKS

The preceding sections motivated and presented UNCTAD's VSS Assessment Toolkit. In a nutshell, VSS can be a tool that supports the achievement of the SDGs, both directly and indirectly, but a number of challenges and trade-offs inherent to their adoption and use can effectively lead to the opposite impact. This has become more and more relevant as the increasing demand for sustainable products has led VSS to be "de facto mandatory" to access some markets (Henson and Humphrey, 2010). The VSS Assessment Toolkit is then necessary to identify and understand such challenges and trade-offs and suggest appropriate policies to address them.

The VSS Assessment Toolkit is designed to capture information on several aspects of benefits and costs of VSS adoption and use, their distribution along the value chain, and existing actions and policies that address them. In order to better reflect the multiple dimensions relevant to VSS adoption and impact, the VSS Assessment Toolkit accounts for both objective and subjective data and uses a mixed-methods design: guidelines for desk research, interviews, and a survey were developed to uncover potential benefits, challenges and trade-offs, but also to validate and complement each other.[16]

In line with its objective, the VSS Assessment Toolkit is mainly a diagnostic tool to assess VSS adoption, that can

16. The guidelines are available at www.vssapproach.unctad.org

be used in combination with other VSS analysis tools that assist in understanding what products hold potential for VSS, the different standards available, etc. Secondarily, it can be considered informative of impact, as it does collect information on outcomes that could guide causal evaluation.

While great care was placed in selecting the relevant aspects of VSS adoption to be captured by the VSS Assessment Toolkit, it is natural that the relevance of different aspects of the issue may depend on each context (country, region, product, standard, etc.). The structure of the VSS Assessment Toolkit is flexible enough for some topics to be included or excluded as necessary.

The VSS Assessment Toolkit is particularly appropriate to facilitate a holistic understanding of trade-offs and synergies across economic, social and environmental dimensions of VSS. This understanding helps actors in general to design specific strategies to abate the potential unexpected effects of VSS adoption. In particular, the insights gained from the VSS Assessment Toolkit can help policy markets link the results of VSS to their SDG agendas.

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ANNEXES

A.1 EXAMPLES OF EMPIRICAL EVIDENCE

This section presents some examples of literature that reflect the existence of trade-offs between economic, social and environmental VSS-related outcomes. For instance, Brandi (2017) shows that RSPO certification in the Indonesian palm oil sector led to an improvement in economic outcomes - oil palm yields and improvement in quality of oil palm fruits; while simultaneously causing environmental degradation through large scale deforestation and soil erosion. Henders et al (2015) studied the production of palm oil, soy and wood in seven countries, and found that while there was an increase in overall smallholder incomes, this came at a cost of a 40% growth in global deforestation between 2000-2011 (Henders et al 2015). Similarly, Krishnan (2017) found that Kenyan horticulture small-scale farmers were able to achieve positive economic outcomes in terms of yield increase and value addition, as well as positive social outcomes in terms of improved hygiene practices; but experienced negative impacts on their environment, reducing soil quality and ground water. Table 4 presents a summary of eight recent studies that attempted to unpack the economic, social and environmental implications of VSS on small-scale farmers in developing and less developed countries. Results indicate that VSS still face significant challenges to achieve positive social, economic and environmental outcomes simultaneously.

Table 4: Summary of VSS outcomes

Source: authors, compiled from papers in column 3 of the table

Type of VSS	VSS name	Study	Economic	Social	Environmental
Multi stakeholder	RSPO	Indonesia Palm Oil (Brandi 2017)	Positive: income and value addition	NA	Negative: deforestation, ground water table
Multi stakeholder	RSPO	Seven East Asian countries Palm oil (Henders et al 2015)	Positive: income, diversification	NA	Negative: deforestation
CSO	Fairtrade	Cocoa Ghana (Barrientos 2019)	Positive: marginal increase in income	Mixed: increase in permanent contracts, gender exclusion	NA
Industry consortium	GlobalGAP	Kenyan horticulture (Krishnan 2017)	Positive: increase income and value addition	Mixed: improved health and hygiene, gender exclusion	Mixed: increase in yields in short term, long term mono-cropping causing soil degradation
Industry consortium	GlobalGAP	South African fruit (Alford 2016)	Negative: no change in incomes	Negative: increase in precariousness of farmers/workers in fruit farms	NA
CSO	Rainforest Alliance, Fair Trade, Organic	Tea value chains- Nepal, Sri Lanka and Kenya (Mohan 2016)	Positive: increase price received by farmers,	Negative: lower empowerment	NA
	Organic	Coffee in Colombia	Negative: Fall in income but improved quality	NA	Positive: Improved use of sustainable soil and water management
	Fairtrade and local standards	Coffee in Indonesia (Vicol et al 2016)	Negative: Increased prices captured by local elites and roasters	Negative: lack of support for cooperative formation, lower empowerment requirements	

A.2 AN EXAMPLE ON VSS AND THE SDGS

Table 5 presents the links between the control points of the GlobalGAP standard and different aspects of the SDGs.

Table 5: GlobalGAP control points and SDGs

The items in brackets are the main control point as per GlobalGAP control point criteria, the items outside the bracket are the specific sub-point within the main control point.

GlobalGAP control point	Connection to SDG	Connection to SDG goals
Increase crop productivity (site history and site management)	Goal 2. End hunger, achieve food security and improve nutrition and promote sustainable agriculture	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
Responsible water management (irrigation/ fertigation)	Goal 6: Ensure availability and sustainable management of water and sanitation for all	6.3 Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally 6.4 Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity 6.b Support and strengthen the participation of local communities in improving water and sanitation management
Soil and substrate management	Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

Hazardous waste management (Environmental issues)	Goal 12. Ensure sustainable consumption and production patterns Goal 3. Ensure healthy lives and promote Well-being for all at all ages	12.4 Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
Protecting labour rights (worker health, safety and welfare)	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

A.3 EXAMPLES OF OTHER VSS ANALYSIS TOOLS

As stated earlier, the VSS Assessment Toolkit can be used jointly with other existing VSS analysis tools and frameworks, to complement its focus. This section briefly presents a non-exhaustive list of other tools according to the aspect of VSS they aim to capture (adoption, impact, etc.).

Adoption - demand

Local and international demand

One commonly used way to assess demand is through the calculation of the Willingness to pay (WTP), the maximum amount an individual is willing to pay to procure a product or service. There are various methods through which this is elicited, for instance through cost-benefit analysis or through choice analysis).[17]

For instance, research by Pelsmacker et al (2005) found that the average price premium that Belgian coffee consumers were willing to pay for a fair-trade label was 10%. In a study conducted by Didier and Lucie (2009) it was found that 50% of consumers (from a sample of 102 consumers in France) were insensitive to the presence of organic and Fairtrade labels on a product. Basu et al (2008) found that the WTP for Fairtrade labelled coffee in Germany and the United States of America exhibits an inverted U shape: the willingness to pay is positively related to the use of labels of Fairtrade, but only up to a threshold. A study by Xu et al (2012) indicated that Chinese customers purchasing seafood from supermarkets had higher WTP for green-labelled seafood for the protection of individual health benefits.

Adoption - Export potential

National Green Export Review (NGER) - UNCTAD: the

17 Prices are assumed to be defined exogenously by the market, and agents are considered as price takers that make choices that maximize consumer surplus, i.e. the difference between the price that consumers pay and the price that they are willing to pay (Bennett and Blamey 2001).

NGER uses a green product space[18] approach to identify the growth potential of existing and new green sectors. This green export potential diagnostic tool was developed by UNCTAD to assist developing economies to design and implement green economy policies and establish regulatory and institutional frameworks and cooperative mechanisms to strengthen the capacity, efficiency and competitiveness of their green sector.[19]

Export Potential Map - ITC: this database identifies untapped potential for export diversification across countries. To identify diversification opportunities, a country's current revealed comparative advantages are linked to potential new products using the product space concept (Hausmann and Klinger, 2007; Hausmann et al., 2007 and Hidalgo et al., 2007).[20]

ODI Export competitiveness matrix: this method determines competitiveness classifying products as "sunrise" (relatively new products in the export mix, relatively high stability, and high export specialisation), "cash cows" (older products in the export mix, high stability and export specialisation), "intermittent" (new products in the export mix, with low export specialisation and low stability) and "laggards" (old products in the export mix, with low stability and export specialisation).[21]

Adoption - Benchmarking of standards

Standards Map ITC: this prominent tool is an inventory of VSS, which now counts over 230 programs that are active in a wide range of countries and products (ITC 2019).[22] The Standards Map also provides a comparison tool to study various VSS schemes across key control points. This is an essential tool to gauge the broad variety of VSS that exist and the key criteria that are required to comply with them. It also shows in which regions and products the standards are most active.

Ecolabel Index: this database is also a global directory of ecolabels, currently tracking 463 ecolabels in 199 countries, and 25 industry sectors.[23]

Evaluation

Outcome studies: outcome studes are based on rigorous methodologies to assess production processes and implications for producers, even when they do not necessarilz identify a causal link.

ISEAL Impacts Code of Good Practice 2.0: this document provides detailed guidance to assess the impact of standards based on 10 principles: Sustainability, Improvement, Relevance, Rigour, Engagement, Impartiality, Transparency, Accessibility, Truthfulness, and Efficiency. [24]

Committee on sustainability assessment (COSA): provides a harmonized evaluation tool for farmers and farmer communities through a master list of indicators that unpack social (community, living conditions, human rights and equity), environmental (water, biodiversity, climate change) and economic (livelihoods, resilience, competitiveness) aspects. Tools to monitor performance across dimensions such as gender, food and water, revenue and business development are also provided.[25]

Response-Inducing Sustainability Evaluation (RISE): is a tool for holistic sustainability assessment at the farm level. It was developed by Hani et al (2003). The model covers ecological, economic and social aspects by defining 12 indicators for Energy, Water, Soil, Biodiversity, Emission Potential, Plant Protection, Waste and Residues, Cash Flow, Farm Income, Investments, Local Economy and Social Situation. The authors develop "state" (current condition of the specific indicator) and "driving force" (measure of the estimated pressure the farming system places on the specific indicator) parameters. The overall results are summarized and displayed in a sustainability polygon (Hani et al 2003).

Evaluation - Sustainability reporting

18. Based on the "product space" model pioneered by Hidalgo and Hausmann (2009). For more details on the methodology, see https://unctad.org/en/PublicationsLibrary/webditcted2018d1_en.pdf.

19. https://unctad.org/meetings/en/SessionalDocuments/NGER%20Brief.pdf.

20. See https://umbraco.exportpotential.intracen.org/media/1089/epa-methodology_141216.pdf for details on the methodology

21 The basic elements to classify products are: (i) the new-ness of a product (how recently it came into the export mix), (ii) the stability of exports to the United Kingdom of Great Britain and Northern Ireland, which is the coefficient of variation (iii) and export specialisation. Export specialisation is defined by modifying Balassa (1965 and 1979): a country has an export specialisation in a particular product if it exports more than its "fair" share to a specific market. The "fair" share is the ratio of the share of a product in a country's total exports to the share of this product in imports to specific markets or partners. See https://set.odi.org/wp-content/uploads/2018/07/SET-EPC-Kenya-Export-Promotion_Final.pdf for more details.

22 Available at http://www.standardsmap.org.

23 Available at http://www.ecolabelindex.com.

24 Available at https://www.isealalliance.org/sites/default/files/resource/2019-06/ISEAL_Impacts_Code_Version_2.0.pdf

25 Available at https://thecosa.org/performance-monitoring-indicators

The Golbal Reporting Initiative: this is a globally harmonized sustainability reporting model. It is used to measure, understand and communicate economic, environmental, social and governance performance, and then set goals, and manage change more effectively. These are often used by the private sector to voluntarily disclose achievement of corporate goals and their contribution to the SDGs.[26]

Sustainability assessment of food and agricultural systems (SAFA): this tool is a holistic global reference framework for the assessment of sustainability along the agrocultural, forestry and fisheries value chains. SAFA was developed as an international reference document, a benchmark that defines the elements of sustainability and a framework for assessing trade-offs and synergies between all dimensions of sustainability. The SAFA Framework begins with the high level, overarching dimensions of sustainability: good governance, environmental integrity, economic resilience and social well-being. These dimensions are broken into 21 themes and 58 sub-themes. Each of the indicators are given accuracy scores depending on the quality of the data which is factored into the final index. The final index is developed through a rating of indicators method based on criteria such as target, practice and performance (SAFA 2018).

Life cycle sustainability assessment (LCSA): refers to the evaluation of all environmental, social and economic negative impacts and benefits in decision-making processes towards more sustainable products throughout their life cycle (UNEP 2013). Several companies perform a life cycle analysis across each task in the value chain by comparing and contrasting pre-VSS (baseline data) to post-VSS data. For instance, ISO 14040 and ISO 14044 are LCA guidelines.[27] Another example is the Sustainability Consortium (TSC) which offers LCA methodologies which are visualized and developed through key performance indicators for each product. These indicators are science-based and stakeholder-informed, including input by companies, academia, civil society organizations, and government agencies.[28]

26. https://www.globalreporting.org/information/sustainability-reporting/Pages/default.aspx

27 These international standards focus mainly on the process of performing an LCA, following a product's impact from cradle to grave. There are other permutations including ISO 14024 (Type I label), which is a voluntary, multiple-criteria based, third-party program developed for a specific product or products; ISO 14021 (Type II label), for any written or spoken environmental claim; and ISO 14025 (Type III label), which concerns Product Category Rules (PCRs) and Environmental Product Declarations (EPDs). Meanwhile the GHG Protocol product standard is largely in compliance with ISO 14040/44, but is specifically focused on greenhouse gas (GHG) accounting (https://www.pre-sustainability.com/news/lca-standards-and-guidelines-a-recent-overview).

28. https://www.sustainabilityconsortium.org/what-we-offer/thesis/#av_section_6

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