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APEC Compendium of Best Practices: Mainstreaming Voluntary Sustainability Standards (VSS) to Trade in the APEC Region

APEC Sub-Committee on Standards and Conformance

February 2022

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Contents

1. Executive Summary

The United Nations' Sustainable Development Goals (SDGs) explicitly highlight the importance of sustainable consumption and production. Initiatives which certify products against a set of social and environmental standards play a central role in this regard. Since its emergence in the late 20th century, Voluntary Sustainability Standards (VSS)[1] were heralded as innovative new instruments to help address some of the most pressing sustainability challenges. Today, VSS have been propelled from specialty niches into mainstream markets due to rising demand among consumers, buyers and producers to address socio-economic, environmental and food safety concerns.

Achieving sustainable consumption and production will not only deliver SDG 12, but simultaneously contribute to the achievement of almost all the other SDGs, directly or indirectly. VSS in this regard, have been referred to as ´trade-related sustainability assurance schemes´ by the European Commission, and as a communication vehicle to recognize its support for sustainable development through consumers' purchasing decisions. In addition, the 2030 Agenda for Sustainable Development recognizes international trade as an engine for economic growth and an important means to achieve the SDGs, and that VSS offer explicit strategies to link trade with better production and consumption practices.

This compendium aims to provide global best practices in the interest to facilitate VSS as a market development and trade tool aligned to the SDGs. While the challenges of VSS, especially on small scale producers and developing economies may be perceived to roll back the attainment of the SDGs, it is a fact that the emergence of VSS have become a market reality and the only way forward is to facilitate its advent in the most inclusive and sustainable manner.

The first chapter of this compendium discusses the APEC trade landscape and its reliance on the agricultural sector. Asia Pacific Economic Cooperation (APEC) is an important global value chain setting, and the exchange of goods is an integral part of this cooperation. However, economies are diverse within the APEC region thus, it is important to identify some of the sustainable (and unsustainable) hotspots from an aggregated perspective as a sustainable outcome in one or more economy can foster a snowball effect throughout the entire region.

VSS on the other hand is not a new phenomenon in the APEC region, but its implementation and degree of uptake can be better improved in order to achieve sustainability in the most inclusive manner. The global best practices identified in the second chapter aims to ameliorate the challenges of mainstreaming VSS that have been mentioned in section 1.2.2 and triumph the opportunities of facilitating VSS mentioned in section 1.2.1.

The best practices that have been illustrated in this compendium are categorized under three key themes for governmental consideration, with the exception of the Aquaculture, which is an equally fundamental source of food trade in the region:

1. Promoting awareness and understanding and market development
2. Advocating practices through sector specific and multi-stakeholder approaches
3. Turning insights into impact with the power and governance of data
4. APEC´s case for Aquaculture

[1] The United Nations Forum on Sustainability Standards (UNFSS) defines Voluntary Sustainability Standards (VSS) as "standards specifying 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 impacts of production, community relations, land use planning and others". Read more: https://unfss.org/wp-content/uploads/2012/05/unfss-report-issues-1_draft_lores.pdf

Understanding the types of Voluntary Sustainability Standards

Generally, one can derive to the understanding of sustainability standards as a standard that incorporates social and environmental requirements to reduce the negative impacts of global economic activity on the society and the environment. Besides the term sustainability standards, label, eco-label, or certification are also widely used. The World Bank for example, differentiates the labels between Eco-Label and Social-Label as the former focuses on the environment and the latter focuses on social standard (World Bank, 2019).

- Eco-Label – Overall environmental preference of a product of service based on life cycle costing (e.g European Flower certifies good environmental quality, guaranteed technical performance, and that the product/service generates less environmental impacts over life cycle cost).
- Social Label – Focuses on social standards (e.g the Fair-trade label certifies sustainability through job creation and enterprise development; regulated labor conditions and trade and development).

VSS typically aim to promote sustainability in global value chains through standard-setting and monitoring practices. Most of these standards try to cover all dimensions of sustainability – social, environmental, and economic – although some VSS schemes focus only on certain specific dimensions of sustainability. While most of VSS have been developed by the private sector, UNEP (2012) differentiates between public and private VSS. Private VSS, implemented mainly by NGOs, industry groups or multi-stakeholder groups, typically provide indications on the social and environmental aspects of products. Public VSS on the other hand have emerged from public sector initiatives.

Table 1: (Henson & Humphrey, 2009) Forms of standards

	Public	**Private**
Mandatory	Regulations	Legally mandated private standards
Voluntary	Public voluntary standards	Private voluntary standards

Complementing UNEP (2012), Henson & Humphrey (2009) explicates that the implementation of private standards which are typically set (created) by commercial or non-commercial private entities, including firms, industry organizations and NGOs are voluntary or mandatory depending on the form and level of power wielded by entities adopting those standards; that is the nature of the entities requiring the standard be implemented by another entity. Private standards can be adopted by non-state actors; even if they become *de facto* mandatory in commercial sense through adoption by dominant market actors, there is no legal penalty from non-compliance. However, private standards may be adopted by state actors and invested with statutory power. In this case, compliance is mandatory – which is referred to as legally-mandated private standards mentioned in Table 1.

With respect to public standards, Henson & Humphrey (2009) stated that the most familiar form is the regulations promulgated by governments that are mandatory within the sphere of competence of the government. However, governments also promote standards that are voluntary.

VSS, as standard setters, develop standards which form the basis for a VSS certificate. Certificates are being issued upon a compliance assessment carried out by independent third-party auditors. Such auditors form part of a certification body. The work done by certification bodies is checked in an accreditation process and by an accreditation body which is appointed by a VSS. The accreditation office verifies whether the certification bodies are competent to perform the conformity assessment.

The certification body awards the certificate to the standard-taker (producers, owner of natural resources) if the latter complies with all the standards.

1.1 Key Findings of VSS in the APEC Region

1.1.1 APEC Agriculture Trade Landscape

The APEC region is as diverse as it is large compared to other regions and its economies range from low income to high income. The region is rapidly urbanizing, due to the rapid changes of middle-income economies, but is advancing rapidly as well in low-income economies. With an average per capita income in the region anticipated to grow at almost 5 per cent per annum over the next decade, China and Viet Nam for example, are projected to grow 5 to 6 per cent per annum, Thailand and Indonesia at around 3 per cent per annum. The share of primary agriculture and fish value added in the economy is currently about 6 per cent and has been declining. Rapid economic growth has also reduced the share of food in household expenditures to around 15 per cent in 2017 to 2019, implying considerable impact of prices and incomes on consumers (OECD/FAO, 2020).

Agriculture is the backbone of most APEC member economies, and the issues of food security and food safety, and sustainable agricultural development are of critical importance to the region.[2]

Figure 1: Author´s calculation - Share of APEC Agri-Export to the world in (%) in 2020
Source: WITS using UN COMTRADE data

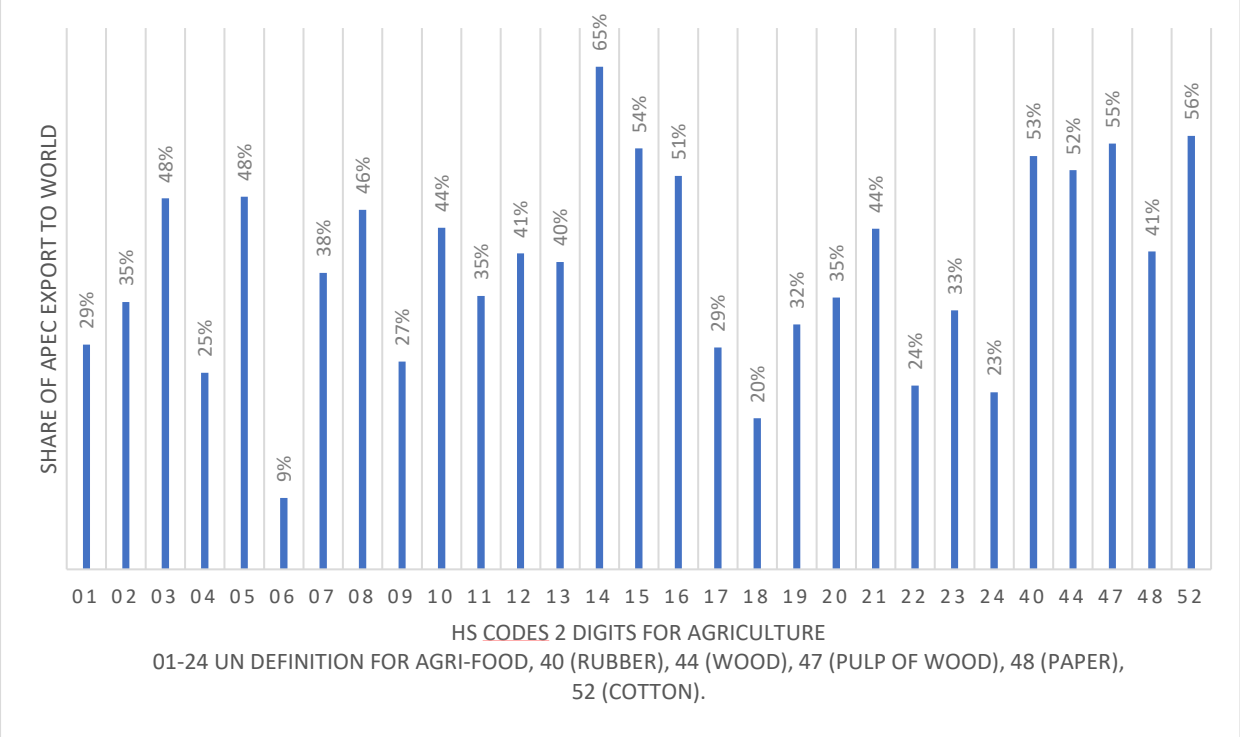


Figure 1 illustrates the data extracted from the UN COMTRADE through the World Integrated Trade Solution (WITS) and found that the share of APEC Agriculture export to the world is significant for the following products (using 2-digit HS Codes):

- HS 14 Vegetable plaiting materials; vegetable products not elsewhere specified (n.e.s)
- HS 15 Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes

[2] https://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Agricultural-Technical-Cooperation

- HS 40 Rubber and articles thereof
- HS 47 Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard
- HS 52 Cotton

The value APEC exports for HS14 Vegetable plaiting materials; vegetable products not elsewhere specified (n.e.s) is US$954M in 2020 which is 62.1% of share in world exports that year. Indonesia is the key exporter of HS14 in the APEC region accounting for 20.9% of share in world export, followed by China (15.6%), Malaysia (6%) and Mexico (5.3%). However, even with a higher share in world exports, in value terms, this product exports much lower than the other key products identified in Figure 1 above. Thus, there may be potentials to consider premium quality and diversification of this product to increase its market value.

The vegetable component of HS 15 Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes includes soy-bean oil, groundnut oil, olive oil, palm oil, sunflower-seed, safflower or cotton-seed oil, coconut "copra", palm kernel or babassu oil and rape, colza or mustard oil.

In 2020,

- the value of world export of soy-bean oil and its fractions is US$9.84M. APEC's market share is 19.1% and that Argentina, a non-APEC member leads this product with 39.5% global market share.
- the value of world exported palm oil is the most compared to the other equivalent vegetable oil, amounting to US$32.21B in 2020. APEC itself contributes 87.1% of the share of palm oil world export, with Indonesia leading the sector at 53.9% of the market share and Malaysia at 30.4%, making this product very significant in the APEC region.
- the world export value of sunflower-seed, safflower or cotton-seed oil is US$13.41M for 2020 with APEC's share at 20.6%. In APEC, the Russian Federation leads the export of this product with 18.4% share but is still very far from its Ukraine (non-APEC) counterpart whose market share of export is 39.7%, making this product insignificant to the APEC exports market.
- coconut oil is another product of significance in the APEC region given its share in world exports amount, 82.5% and the value of the world export is US$4.67B in 2020. Like palm oil, coconut oil's key exporters are Indonesia contributing 40.2% of market share, Malaysia 19.6% and Philippines 16.6%.
- Papua New Guinea is present in both the palm oil and coconut oil sector contributing 1.5% and 1.8% respectively. However, palm oil is only a mere 3.4% of its export value compared to petroleum gas (US$3.98B, 36%) and gold (US$2.57B, 23.3%) in 2019.
- Canada is the leading exporter of rape, colza or mustard oil and fractions thereof, with a world export market share of 36.2% and value of US$7,78M in 2020. The aggregated APEC's share is 49% for this product.

The world export of natural rubber in 2020 is US$11.48M. APEC's share of this product on world exports is 72.4%, US$8.31M. Thailand (30.3%) and Indonesia (26.2%) are the leading exporters of this product, making this product significant within the APEC exports market. Malaysia contributes to 6.8%, and Viet Nam 6.6% to the share of world's export.

The aggregated share of world exports for pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard in APEC in 2020 is 52.5%, of which the key export markets are the United States (18.9%) and Canada (12.3%), in comparison to non-APEC market Brazil (14.8%). In value terms, APEC exports US$21.2B of this product in 2020 but the larger bulk of it comes from the more developed markets. In all the HS 4-digit level sub-categories of HS47 Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard, the key export markets are mostly made up of developed economies with some exceptions of emerging markets.

Even so, the share of exports from the emerging markets are still far from their developed market counterparts, except for HS4703 Chemical wood pulp, soda or sulphate (excluding dissolving grades) which is led by a non-APEC economy, Brazil.

The share of APEC's export of cotton, in value terms is considerably high and comparable to palm oil. APEC's aggregated value of export of cotton in 2020 is US$24.4B of which the key markets are China (23.9%) and the United States (15.2%). While China and the United States export the most in aggregated level of cotton, its sub-categories such as HS5205 Cotton yarn other than sewing thread containing >= 85% cotton by weight (excluding that put up for retail sale) and HS5206 Cotton yarn containing predominantly, but < 85% cotton by weight (excluding sewing thread and yarn put up for retail sale) includes other key APEC economies such as Viet Nam, Hong Kong, China and Indonesia.

1.1.2 APEC Voluntary Sustainability Standards Landscape

Findings from the 4th Flagship of the United Nations Forum on Sustainability Standards (UNFSS)[3] reported that the largest number of VSS can be found in the agricultural sector, a trend that can be observed in the existing literature on VSS, which finds a significant focus on agricultural commodities (UNFSS, 2020). The report also provided economy-level data as a relevant proxy to analyze VSS adoption, since it gives some insight into where VSS are active, and potentially enables an identification of some economy-level parameters that influence VSS adoption.

Table 2: Degree of VSS adoption by APEC member economy (UNFSS, 2020)[4]
Source: ITC Standards Map Data

Global Rank	APEC Economy	VSS adoption score (%)[5]	Income Group[6]
2	The United States	43.85	High
3	China	43.08	Upper middle
5	Indonesia	41.92	Lower middle
6	Mexico	41.15	Upper middle
7	Peru	39.23	Upper middle
10	Viet Nam	38.08	Lower middle
11	Thailand	37.31	Upper middle
19	Canada	34.23	High
23	Chile	31.92	High
30	Malaysia	31.15	Upper middle
31	Australia	30.77	High
35	Japan	29.23	High
44	Philippines	27.69	Lower middle
62	Russian Federation	24.62	Upper middle
63	New Zealand	24.23	High
70	Republic of Korea	23.08	High
72	Singapore	22.69	High
86	Papua New Guinea	20.00	Lower middle
181	Brunei Darussalam	11.15	High

[3] UNFSS (2020). "Scaling Up VSS through Sustainable Public Procurement and Trade Policy". The United Nations Forum on Sustainability Standards, Geneva.

[4] As this study was initially conducted for economy-level, data for Chinese Taipei and Hong Kong, China have been consolidated with China.

[5] The data derives from the ITC Standards Map where the degree of VSS adoption of a selected economy is measured as the percentage of active VSS in that economy in relation to the total number of active VSS worldwide.

[6] The income classification follows the World Bank economy and lending groups - https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

Based on Table 1, the degree of VSS adoption of a selected economy is measured as the percentage of active VSS in that economy in relation to the total number of active VSS worldwide. The theoretical maximum for such a score is 100, corresponding to an economy where all existing VSS are active. These adoption scores are then tested against economy-level trade, governance, development, and globalization parameters in order to identify factors that influence VSS uptake.

There are four observations that can be drawn from this table:

1. It appears that VSS is present in all the APEC economies, but there is considerable variation between economies, which can be expected on the basis of the size of the economy. The United States, China, Indonesia, Mexico for example are leading in VSS adoption, within the APEC region, with more than 40 per cent of all existing VSS active in their respective economies. Singapore, Papua New Guinea and to a larger extent, Brunei Darussalam are lagging behind due to the fact that they are relatively smaller in terms of the economic size of agricultural sector.

2. On a global scale, the variation in adoption scores appears to be more or less aligned with income levels (when considering all 192 economies studied in the UNFSS 4th Flagship Report). However, this is not the case for the APEC economies, as we observe an economy like Japan, despite being the third largest economy in the world, the economy only ranks 35th. Thus, the size or income level of an economy is therefore not the only determinant of the extent of VSS adoption within an economy.

3. Instead, some low-middle income economies such as Viet Nam and Indonesia are ranked in the top 10, (UNFSS, 2020) which confirms that income level does not necessarily predict the VSS adoption ranking. Rather, the well-scoring lower-middle income economies are typically economies that are led by agricultural and agri-food exports.

4. Lastly, the low-income economies that score relatively high are also economies that export highly traded commodities such as coffee, which can be certified by multiple certificates.

The report has also identified the indicators that are strongly correlated with VSS adoption level ($|r| > .5$), namely overall globalization, export concentration, net imports and net exports. Moderately correlated to VSS adoption level ($.3 < |r| < .5$) are the following indicators: doing business, global competitiveness, GDP, governance (i.e., government effectiveness and rule of law), trade freedom, population size and the Human Development Index.

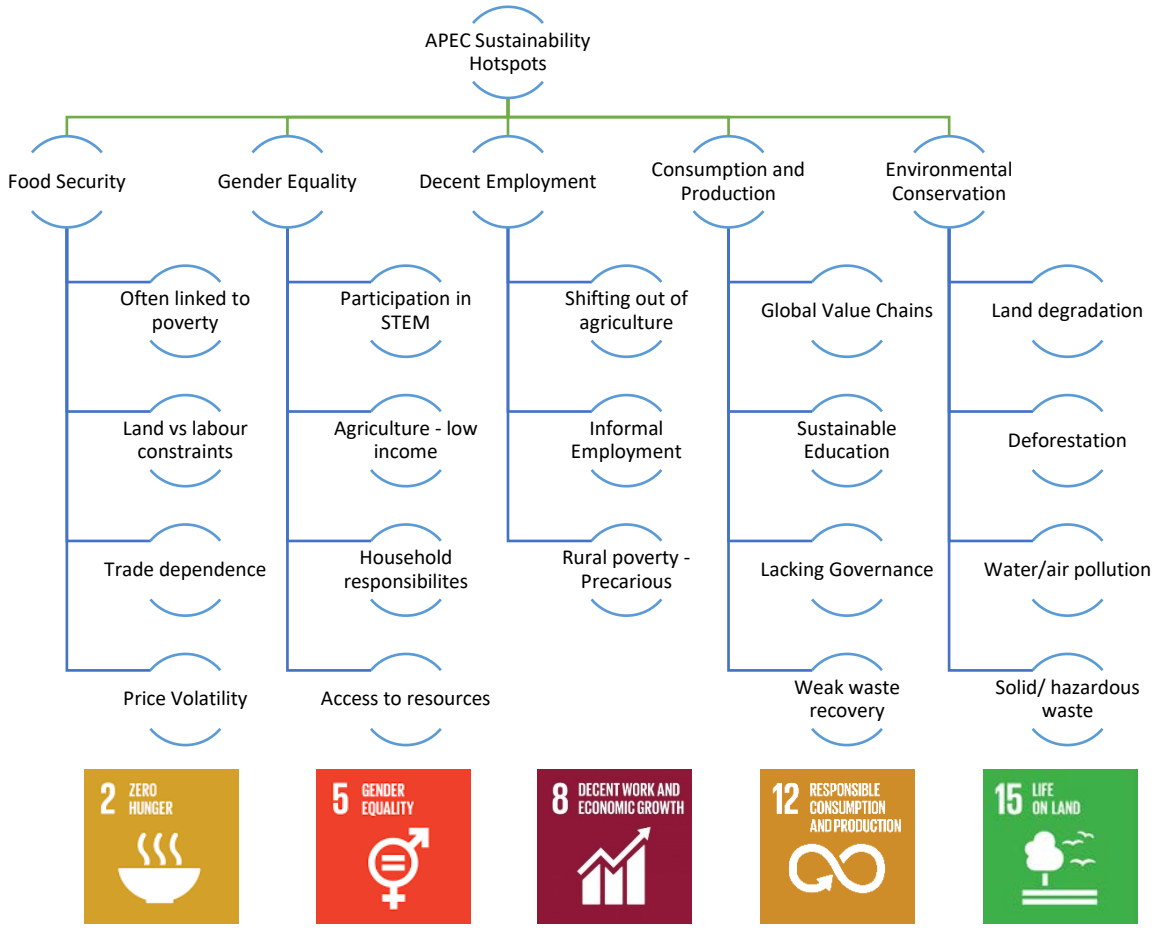
In summary, there are many determinants to the extent of VSS adoption within APEC and these factors are interrelated with each other.

1.1.3 APEC Sustainability Hotspots

The UNFSS (2018) conducted a benchmarking analysis of a selection of 10 out of the 17 Sustainable Development Goals (SDGs) to which VSS and business actors are best positioned to directly contribute. The 10 goals and their associated targets contains some 800 indicators, organized in 5 sustainability hotspots areas: Environment, social, economic, quality management and ethics/integrity. 294 sustainability criteria were identified that directly relate to the 10 goals and which are covered by at least one VSS from the sample of 122 trade focused VSS studied. This goal-to-goal comparison between VSS and the SDG indicators found that VSS are best positioned to contribute to SDGs 8 Decent Work and Economic Growth, SDG 12 Responsible Consumption and Production and SDG 15 Life on Land. In the interest of APEC´s food security agenda, the SDGs identified also includes Zero Hunger

(SDG 2) and Gender Equality (SDG 5), another relevant SDG benefited through the UNCTAD VSS Assessment Toolkit.[7]

Figure 2: APEC Sustainability Hotspots in reference to the identified Sustainable Development Goals
Source: Author, gathered from several sources cited in the section thereafter.



Food Security

In reference to the World Bank Data, there is a general trend that the population of undernourishment has been declining over time. By taking the aggregated benchmark of the Sub-Saharan Africa region with the highest percentage of population being undernourished, APEC economies such as Indonesia, Philippines, Viet Nam, and Thailand's percentage of population being undernourished is relatively high compared to the other APEC economies (Refer to Appendix 1). There are however no data available for Papua New Guinea.

The poorest and most food insecure people are those who lack decent work, who have low levels of health and education and who generally have few economic opportunities. Since the mid-1960s, Asia and the Pacific have benefitted from a remarkable boost in agricultural output. The main way of increasing productivity, either land or labor, whichever is in shorter supply. In Australia for example, the greater constraint is labor, so one of the main priorities has been mechanization. However, in most

[7] These factors were adapted from the UNCTAD VSS Assessment toolkit which were raised by value chain actors in the presence of VSS. These factors were also referenced against the UNFSS´s benchmarking exercise of VSS to the SDGs. To learn more visit - https://unfss.org/vss-and-the-sustainable-development-goals/

of tropical Asia, the major constraint is land. The priority, therefore, has been to raise productivity of land – through biological improvement, irrigation, and more intensive use of fertilizers.

Parallel to food production, the growing population has also contributed to food insecurity as demand for food increases. At the same time, while populations were growing, so too were their incomes which meant that these larger numbers of people were also in a position to buy more food. A further consequence of this increased income was that people could buy different, better-quality food while the poorest people generally buy the cheapest available carbohydrates. But with more money, they can buy more fruits and vegetables, along with meat, dairy goods and eggs. To meet this demand, farmers have to feed more corn and other grains to cattle, poultry and other livestock.

Food availability depends not just on production, but also on international trade. A number of economies have at times aimed for national food self-sufficiency. However, in many cases, a more realistic objective is what was termed food self-reliance – which means being able to earn sufficient foreign exchange from other exports so as to be able to import food.

Economies which aim to deliver food security through self-reliance – by exchanging their exports for a sufficient amount of food – need to be concerned about the terms of trade – the ratio of export-to-import prices. In the past, the region´s successful exporters of manufactured goods might have presumed they had little to worry about. However, recent price shocks and the potential for future food price volatility now make some of these self-reliance strategies less secure.

Gender Equality

The case for gender equality is founded in both human rights and economic arguments. As such, closing gender gaps must be a central part of any strategy to create more sustainable and inclusive economies and societies. Greater education participation, from an early age onwards, provides better economic opportunities for women by raising the overall level of human capital and labor productivity. Mobilizing hitherto underutilized labor supply and ensuring higher female employment will widen the base of taxpayers and contributors to social protection systems, which will come under increasing pressure due to the ageing population. More gender diversity will help promote innovation and competitiveness in business. However, achieving greater gender equality remains a big challenge, notwithstanding the important gains that have been made in women's education and employment outcomes in recent history. Labor markets still exhibit "gender gaps", which means that women in the developing economies of the Asia and the Pacific region are more likely to experience poverty and deprivation (OECD, 2014).

Some of the findings found in the OECD (2014) report on gender equality in the Asia and the Pacific region include:

- Education participation is improving. Almost half of the children in the Asia and the Pacific region now participate in formal early childhood education and care (ECEC) facilities, and enrolment in primary education is almost universal. Also, around 15% of adults have completed tertiary education. In contrast to most OECD economies, there are still more men than women who have completed tertiary education, but as in OECD economies women in the Asia and the Pacific region are less likely than men to graduate in science, technology, engineering, and mathematics (STEM). In general, gender gaps in education are most noticeable in low-income economies across the region.
- Gains in educational attainment contribute to narrowing gender gaps in labor force participation, and in most economies, gender pay gaps have declined. In low-income economies, the vast majority of women work in the agricultural sector, while in advanced economies, they are most likely to be in service sector employment.

- Women carry out most of unpaid work, providing care to children, elderly, and sick or disabled family members as well as doing other unpaid household work. In the Asia and the Pacific region, the gender gap in unpaid work is about three hours per day (compared to 2.5 hours for the OECD).
- In the Asia and the Pacific region, about 40% of men and women hold bank accounts with a financial institution – compared to 80% across the OECD. These indicators suggest that there is a considerable potential for the development of female entrepreneurship and its contribution to inclusive and sustainable economic growth.

In terms of agriculture, the situation is bleakest for rural women in the region. Rural women find it more difficult to get access to a range of resources such as credit, land, agricultural inputs and extension services and employment, both within the community and the household. Such discrimination has an obvious bearing on food for women, in terms of both availability and access, particularly if the men have migrated or stopped working in agriculture.

Decent Employment

Much of Asia's success is based on its exceptional export performance and the pace of integration into global investment flows. Despite the 23% decline in Foreign Direct Investment (FDI) flows at the global level in 2017, FDI held steady in the region, attracting an impressive 33% of FDI inflows(UNCTAD, 2018). Important factors in the region's positive growth record is expanding intra-regional trade and investment particularly between China, Japan and South-Eastern Asian economies, and also the growing consumption base (ILO, 2018).

However, despite the growing consumption base, ILO (2018) stated that there has been a remarkable shift away from employment in agriculture over the past two decades in the region. Employment in agriculture shrank by as much as 205 million jobs between 2000 and 2017, while there was a small gain of 52 million jobs in the rest of the world (without Asia and the Pacific). Most of the loss in agriculture work was taken up by the increase in employment in the service sector, although in South-East Asia and the Pacific and in Southern Asia, employment in the industrial sector manufacturing, mining, utilities, and construction, also increased by a small amount over that same period.

The decline in agricultural employment can also be due to the fact that workers in agriculture are the most at risk of informal employment. In the region, informal employment shares by sector were: 94.7% in agriculture, 68.8% in industry and 54.1% in services (ILO, 2018). Informal employment is closely linked to vulnerable employment because contributing family workers are by definition informal. Workers in informal employment are likely to work excessive hours because they are outside of the labor law protection.

For the lower-middle income of the Asia-Pacific region, while there has been some positive labor market outlook such as an incremental of decent work and high productivity, the informal sector remains large and rural poverty continues to be a challenge. The "near" working poor are likely to maintain a precarious position above the poverty threshold, especially as household debt for consumption purposes is on the rise.

Consumption and Production

The region´s rising incomes and lifestyle changes and continued resource-intensive growth patterns are expected to further exacerbate resource depletion and ecosystem degradation. The region is fast becoming the largest market in the world with the strongest economic growth of all regions, driven by infrastructure development, increasing domestic private consumption and intra-regional trade. However, this growth remains largely founded on unsustainable consumption and production patterns that exacerbate inequality and environmental degradation, intensifying existing risks and vulnerabilities in a changing climate.

The region plays a central role in global value chains, but at low rates of resource efficiency, presenting significant opportunities for circular economy practices. The large material footprint and weak waste recovery and prevention systems in the region are some of the causes of concern. One of the major reasons is that many economies are becoming global production centers which is in addition to the pressures of domestic consumption due to the population and increasing middle-income group. However, broadly the technology and behavior shift for sustainable consumption and production is not yet at par with many developed economies.

In developing Asian economies, environmental problems and social issues tend to be deeply intertwined and need to be addressed in an integrated manner. For example, development projects that degrade the environment, cause pollution, and deplete natural resources often harm local communities and undermine the prospects of future wellbeing and prosperity. Similarly, environmental conservation projects that risk depriving low-income communities of their livelihoods often become politically contested and need to be complemented with support measures for those affected. Such tensions are much more direct and felt more strongly in the developing Asian economies than in the more developed economies where polluting and degrading extraction, processing and manufacturing can more easily be outsourced to far-away locations.

Environmental Conservation

The APEC's economic growth has been accompanied by serious environmental effects. These adverse ecological and public health impacts have not diminished the appetite for further growth in the region, as evidenced by ongoing efforts to advance an ambitious program of trade and investment liberalization. But growth is not – and must not be – APEC´s sole concern. Its members aspire to promote economic policies, cooperation and growth which support global efforts to comprehensively address all environmental challenges, including climate change, extreme weather, and natural disasters, for a sustainable planet" – APEC Leaders´ Declaration for Putrajaya Vision 2040.[8]. In other words, the maximization of social welfare more broadly over time. APEC member economies can achieve this goal only if they improve their environmental performance through a commitment to sustainable development.

From Santiago to Seoul, Manila to Mexico City, Bangkok to Beijing, the environmental problems of the Asia Pacific are legion. Across the region, the environmental consequences of economic success – blackened skies, fouled water, sterile land, ravaged forests, depleted fisheries, and destroyed ecosystems – indisputably impose public health and ecological costs, representing real social welfare losses that must be offset against the material gains from economic growth (Dua and Etsy, 1997).

- Land degradation – In many APEC economies, large population eke out a living from a limited supply of productive land. Agricultural land per capita is projected to decline from its 2012 level of 0.22 hectares to 0.18 hectares in use per person in 2050, while the proportion of the population living in urban areas is projected to rise from 50% to 70%.[9] This means that even under ideal conditions, it would be difficult to produce enough sustenance. And conditions throughout the region are far from ideal. The agricultural productivity of large areas has fallen, and some previously productive tracts of land have been rendered completely sterile. Land degradation also results in declining incomes for agricultural populations, increased frequency of natural disasters like floods and landslides, and habitat destruction that translates into a loss of biodiversity.
- Deforestation – Land clearing for mining and agricultural purposes, commercial logging and timber cutting for fuelwood, livestock grazing, and the construction of roads and dams represent the primary sources of deforestation in the APEC region. Logging and the sale of forest products

[8] https://www.apec.org/Meeting-Papers/Leaders-Declarations/2020/2020_aelm/Annex-A
[9] https://www.apec.org/Groups/Other-Groups/Policy-Partnership-on-Food-Security

provide substantial employment and export revenues in many APEC economies. Indiscriminate tree cutting results in hydrological disturbances that can cause inland water problems, such as low stream flow and deterioration of water quality. A loss of ground cover also creates greater risks of soil erosion and desertification. Shrinking forests further exacerbate the problems of climate change, by diminishing the stock of plant life that can absorb carbon dioxide from the atmosphere thus partially offset the accumulation of greenhouse gases.

- Water pollution and scarcity – Many of APEC's Asian members suffer from severe problems of water quality and quantity. Pathogens and organic materials, emitted into local streams and rivers every day. Across APEC, solid and toxic wastes from the industrial, agricultural, and domestic sectors have caused further deterioration of surface water and groundwater quality.
- Air pollution – Much of the air pollution problem can be attributed to the increased burning of fossil fuels caused by expanded industrial activity, a rapid increase of cars and congestion. Plenty of measures were taken to control air pollution and thus improve the air quality in Beijing and its surrounding areas during the APEC meeting in 2014. The revelation from "APEC Blue"[10] indicates that air pollution is preventable and controllable, but long-term improvement for the air quality cannot rely on short-term means and it should require long-term measures, while the transformation of the economic growth pattern and vigorous law enforcement supervision are particularly important.
- Solid and hazardous waste – Many of APEC´s developing economies lack the capacity to dispose wastes properly. Not only is comparatively little waste collected but it is disposed haphazardly (Dua and Etsy, 1997). Uncollected garbage blocks drainage channels in many Asian cities, increasing the risk of waterborne diseases. Poor waste practices can also lead to vermin-generated disease or to air pollution from open burning garbage. Across the Asia-Pacific, large corporations appear to be improving their hazardous waste management and disposal, but small and medium-sized enterprises- unable to pay for appropriate hazardous waste management remain an important source of dangerous waste. The threat to unmanaged garbage poses marine ecosystems and the lives and livelihoods of tens of millions of people that depend on them has prompted central and municipal government officials from APEC member economies to team up with the private sector to build their waste management capacity.[11]

1.2 Opportunities and Challenges of VSS

Divergent views about the appropriate stringency of environmental standards represent a major potential flash point within APEC. Developing economies in the APEC region see the prospect of having to meet high (developed economy) environmental standards, especially Production Process or Method (PPM) requirements, as an obstacle to market access (Dua and Etsy, 1997). More important, they view such standards as violation of their sovereignty and a breach of their right to set their own standards consistent with their own judgements about how to trade off environmental quality against their goals (ibid.).

On the other hand, officials in some APEC's industrialized economies fear that lax standards will confer an unfair competitive advantage on enterprises operating in low-standards economies, resulting in a "political drag" on their environmental policymaking process that will make it hard to maintain or elevate standards (even if it is clear that higher standards would be socially optimal) and difficult to sustain the momentum for deeper integration. Similarly, they worry that "mutual recognition" obligations related to product standards will expose their consumers to environmentally harmful goods that happen to meet developing economy requirements (Dua and Etsy, 1997; Chp 9).

[10] https://thediplomat.com/2014/11/beijing-smog-the-day-after-apec-blue/
[11] https://www.apec.org/Press/News-Releases/2017/0406_Oceans

The skeptical attitude in developing economies have, of late, given way to more nuanced perspectives. Increasingly, developing economies want to participate in shaping the evolution of VSS according to their domestic priorities and development needs (UNFSS, 2018).

1.2.1 Opportunities

Demand for agricultural products that comply with a VSS has increased. ITC (2020) stated that the driving forces behind this growth include:

- Consumer preferences for healthier and sustainably grown products – To meet this market demand, value chain actors, such as commodity traders, food processing companies and retailers, have defined sustainable sourcing commitments, pledging that a certain percentage of their commodity purchases will come from sustainable sources by a target year. Some of these actors provide periodic updates on their progress in achieving these commitments, while others have yet to do so.
- The implementation of risk management strategies by private companies that source commodities from developing economies – These strategies are motivated by either ensuring the volume of supply (supply risk) and the integrity of the products sourced (i.e., organic cotton) and/or by mitigating reputational risk (for example, environmental and social concerns involving soybean or palm oil production). There is also a growing trend towards creating corporate sustainability schemes, instead of relying on independent third-party schemes.
- Regulatory frameworks in both producing and consuming economies that establish commodity sourcing conditions – Examples of regulatory frameworks for commodity sourcing include the Soybean Moratorium for deforestation-free soybean and the European Renewable Energy Directive for palm oil. To comply with these regulations, value chain actors' source VSS-compliant commodities when feasible.

On the governmental implementation of VSS, the role of VSS has expanded in international trade, their integration in public policy is becoming more evident. D´Hollander and Marx (2014) describes the following:

- They enable governments to transcend the scope of their national regulatory capacities.
- These policy objectives can be reached without having to commit additional costs and resources to reforming the national regulatory framework and setting up necessary verification mechanisms.
- It allows governments to bring new social and environmental criteria into the economy without forcing them on the private sector. While these standards are voluntary and are subject of soft law, there are various ways in which governments can support their adoption, gradually making them semi-voluntary or mandatory in time.

Against this background, the way VSS impacts the identified APEC sustainability hotspots are the following:

VSS and Food Security

SDG 2 aims to end hunger, achieve food security and improved nutrition and promote sustainable agriculture.

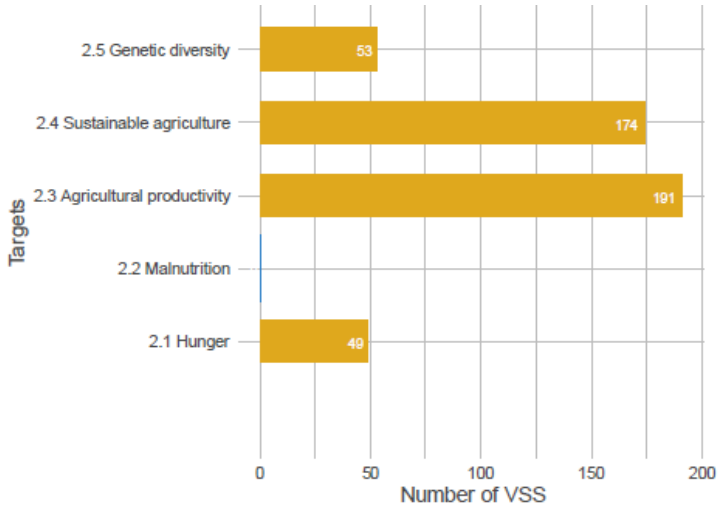
Schleifer, P. and Sun, Y. (2020) identified three main causal mechanisms that link sustainability certification to food security in commodity producing economies – economic effects, land use and land rights effects, and gender effects. Using this framework to review 67 studies, they found that most of them focus on certification´s economic effects, leaving the other two mechanisms empirically little explored. Thus, food security, according to the authors remains a blind spot in the

literature on sustainability certifications and its impacts. Existing evidence points to a positive, albeit weak and highly context-dependent, relationship between certification, farmers´ income, and local food security. From a policy perspective, there should be more critical reflection about the role of VSS in global and local governance.

However, an earlier study developed by the Sustainable Trade Initiative (IDH) for the Netherlands Ministry of Foreign Affairs also found that certain VSS schemes that focuses on utilizing price premiums, can reinvest in local community programs. This have led to investments in educational facilities, infrastructure improvements and increased access to water, sanitation, and hygiene (IOB, 2014; 39).

From a theoretical perspective, a study conducted by Bissinger, K et al. (2020) that links voluntary standards to the SDGs, found that there was a very high number of VSS that are linked to SDG 2.

Figure 3: SDG 2 targets – related to VSS. (Bissinger, K et al., 2020)
Source: ITC, UNCTAD, EUI, UvA, DIE



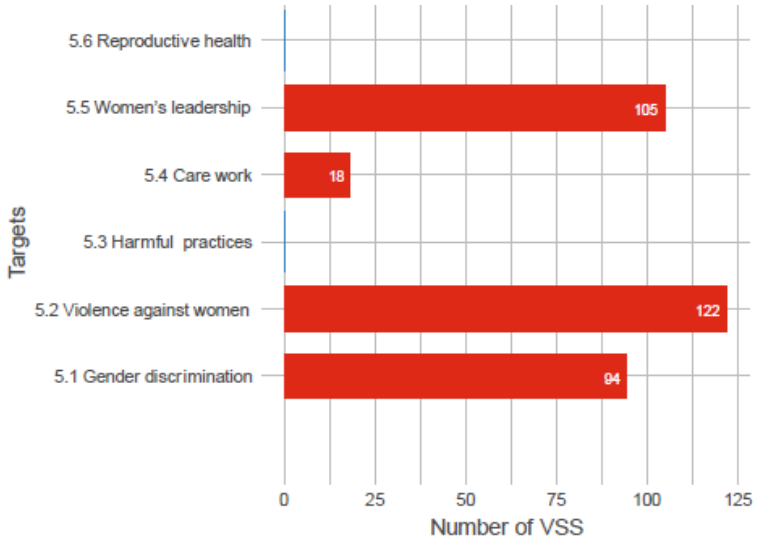
Out of 232 VSS analyzed for this study, 191 VSS are linked to target 2.3 – on improving the productivity and livelihoods of small-scale food producers and 174 linked to target 2.4 on sustainability and resilience in food production and agriculture. There are 53 VSS with links to target 2.5, which seeks to maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals, and 49 VSS linked to target 2.1 on ending hunger and ensuring access to safe, nutritious and sufficient food. There are no VSS that address malnutrition (2.2).

VSS and Gender Equality

SDG 5 mainly focuses on gender equality and empowering women and girls.

According to the International Institution for Sustainable Development (IISD), VSS can contribute indirectly to household food security and gender equality in food access through sustainable production practices that contribute to a diverse and nutritional diet, and that contribute to higher incomes generated from certification. Financial supports provided through certification, such as pre-financing or premiums, can contribute to women´s ability to access productive inputs and credit, when producer organizations support these measures enhancing women´s rights to productive agricultures resources. Certification through VSSs can alleviate some of women´s domestic labor burdens through financial support for labor-saving investments, equipment, and technologies. (IISD, 2019)

Figure 4: SDG 5 targets – related to VSS. (Bissinger, K et al., 2020)
Source: ITC, UNCTAD, EUI, UvA, DIE



Following Bissinger, K et al. (2020), out of 232 VSS studied, there are 122 VSS that address target 5.2, which seeks to eliminate violence against all women and girls. In addition, 105 VSS cover target 5.5, which calls for women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life. Moreover, 94 VSS cover target 5.1 on ending all forms of discrimination. Only 18 VSS focus on issues raised by target 5.4 regarding the value of unpaid care and domestic work. VSS do not cover targets 5.3, which calls for ending practices such as child, early and forced marriage and female genital mutilation, and 5.6 on sexual and reproductive health. These targets are largely beyond the scope of the type of private governance embodied by VSS.

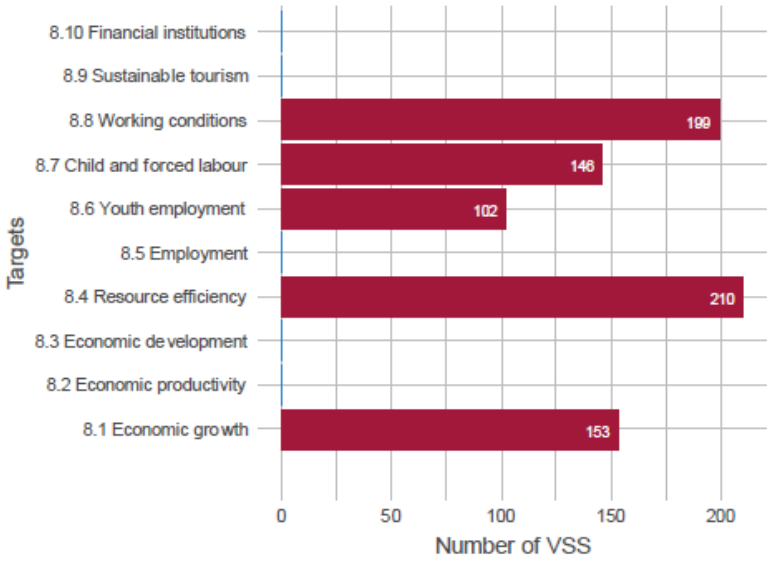
VSS and Decent Employment

SDG 8 sets ten targets to promote decent work and enhance economic performance.

VSS work with partners typically to support farmers and workers gain more from trade through training and increased knowledge. Certification often improves access to higher-value markets and credit lines for SMEs and can increase productive efficiency. The ISEAL is the global membership organization for sustainability standards referencing to the Codes of Good Practice.[12] ISEAL members´ standards typically embody core International Labour Organization (ILO) conventions and work with businesses, national governments, and NGOs to improve working conditions in many sectors. Standards are supported by independent assurance mechanisms including regular audits to check compliance and support continuous improvement of labor conditions on certified sites. Reducing the incidence of child labor, including rescuing children from hazardous work and helping put them back into school are also some of the criteria defined in the codes of practice.[13]

Figure 5: SDG 8 targets – related to VSS. (Bissinger, K et al., 2020)
Source: ITC, UNCTAD, EUI, UvA, DIE

[12] https://www.isealalliance.org/get-involved/resources/iseal-codes-good-practice
[13] https://www.isealalliance.org/sites/default/files/resource/2019-05/ProductiveEmploymentAndDecentWork_SDG8_FINAL.pdf



Bissinger, K et al. (2020) study of 232 VSS found that the high number of links mainly reflects targets 8.4 on resource efficiency in consumption and production and 8.8 on labor rights and safe working environments. For example, there are 210 VSS that seek to promote resource efficiency by demanding environmental management instruments. Moreover, there are 199 VSS related to labor rights and working conditions, often referencing standards of the ILO.

There is also a relatively high number of VSS that link to SDG 8 targets 8.1 on economic growth, 8.7 on forced labor, human trafficking and child labor and 8.6 on youth employment. For instance, VSS requirements regarding support for economic development of local communities can help spur growth and contribute to achieving target 8.1. VSS requirements regarding forced labor and child labor can contribute to attaining target 8.7 and VSS criteria for hiring and employing young workers can help promote target 8.6.

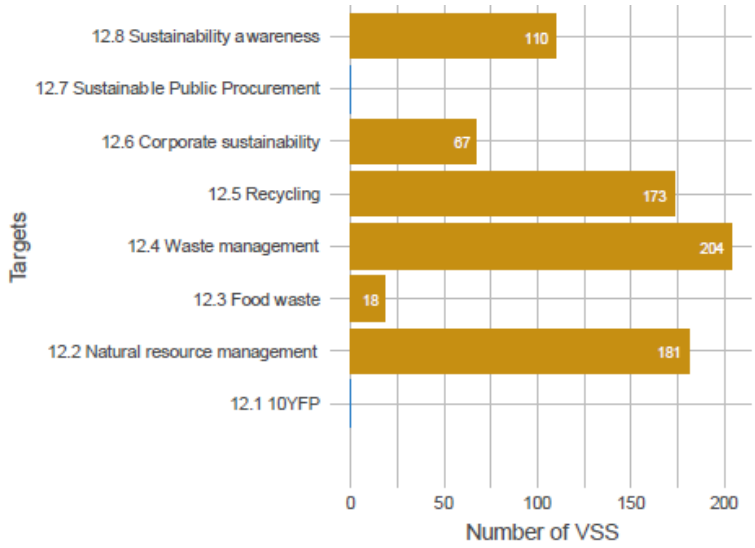
VSS do not cover the other SDG 8 targets – 8.2, 8.3, 8.5, 8.9.and 8.10. This is mainly due to the nature of
those targets. For example, strengthening the capacity of domestic financial institutions (8.10) is beyond the scope of VSS. There are also no VSS requirements in the analyzed sample that relate specifically to target 8.9 because it refers to the development of policies that promote sustainable tourism. Given that VSS can only contribute very indirectly to technological innovation (8.2), economic development (8.3) and full employment (8.5), there was no significant link found.

VSS and Consumption and Production

According to the UN, SDG 12 can be achieved "by educating consumers on sustainable consumption and lifestyles, providing them with adequate information through standards and labels and engaging in sustainable public procurement, among others".[14] VSS are highly relevant to SDG12. In an analysis that studied 122 VSS, there are complementarities between these VSS and SDG. In general, the finding that VSS are highly relevant for achieving SDG12 is not surprising as the requirements in these VSS with the highest coverage mainly address issues related to waste management, the use of chemicals, the training of staff on sustainability issues, and the development of environmental and social management systems, among others. Linking these requirements back to the 8 targets of SDG 12, the analysis finds a high level of complementarity between the 232 VSS in the sample and targets 12.2, 12.4, 12.5 and 12.8.

[14] https://in.one.un.org/page/sustainable-development-goals/sdg-12/

Figure 6: SDG 12 targets – related to VSS. (Bissinger, K et al., 2020)
Source: ITC, UNCTAD, EUI, UvA, DIE



There are 13 VSS with requirements that can help attain target 12.3, which seeks to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses. There are no VSS directly relevant to achieving targets 12.1 (national programs on sustainable consumption and production) and 12.7 (sustainable public procurement). VSS can contribute to implementing green procurement policies (such as the EU public procurement directive) and are relevant for national programs on sustainable consumption and production. However, their requirements do not promote specific public procurement practices or address such national programs.

Drawing closer to the producer and end consumer relationship, agri-food value chains provide a more relatable rationale as to how VSS can foster sustainable consumption and production. First, by understanding that the activities involved in agri-food manufacturing often contributes to carbon emissions and that the imbalanced market power often leaves smallholder farmers in poverty, VSS can be considered as vital instruments to facilitate the global governance of this sector to be more sustainable. Second, consumers today look for products that can help them live a more sustainable, socially responsible life. According to Accenture´s consumer research, consumers in more developed markets tend to be more fearful of the economic impact of COVID-19 than for their health. From their findings, the outbreak has pushed consumers out of their normal routines by adopting habits and behaviours that many anticipate will continue in the long term. One of the trends is the rise in conscious consumption. Consumers are striving to limit food waste, shop more consciously and buy more sustainable options that have minimal impact on the environment.[15]

VSS & Environmental Conservation

In parallel, Smith et al. (2019) found significant potential for environmental and production efficiency improvements across the global sugarcane sector with the implementation of Bonsucro VSS. This is largely driven by the VSS adoption shifts from arid ecosystems where annual freshwater use exceeds the water use indicator. The environmental benefit of this shift is most notable in areas identified as high to severely water stressed. Also, any level of sugarcane expansion under the Bonsucro VSS adoption shifts expansion toward managed lands, thus sparing the direct conversion of

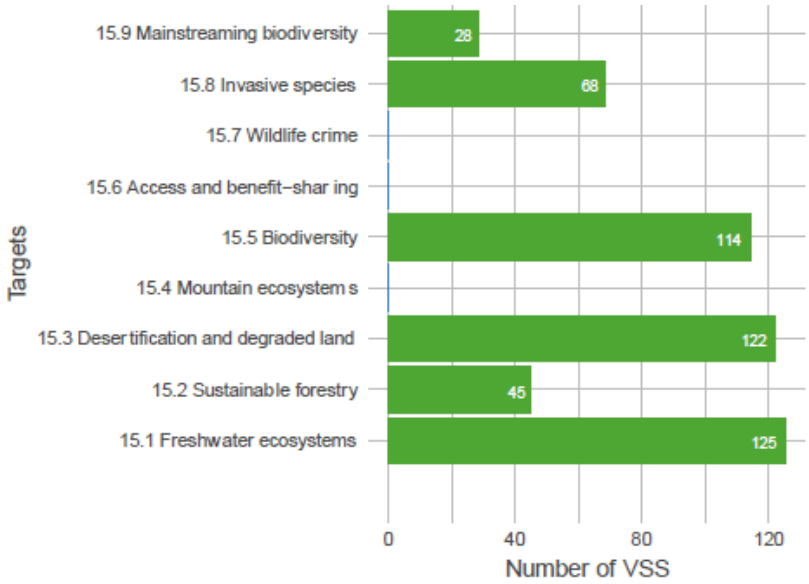
[15] https://www.accenture.com/_acnmedia/PDF-134/Accenture-COVID19-Consumer-Behaviour-Survey-Research-PoV.pdf#zoom=40

high carbon density natural ecosystems. That expanded production under the Bonsucro VSS (the BON scenario) prevents the direct conversion of natural lands, including forest and savanna ecosystems, is especially important given the growing trend of “deforestation-free” or “land conversion-free” commitments by the private sector. In addition to meeting “conversion-free” policy goals, incremental or universal Bonsucro VSS adoption also promotes production intensification and improves water and climate mitigation outcomes, thus highlighting the value of multicriteria standards to help deliver multiple outcomes and the potential shortcomings of developing and promoting single-criterion VSS (e.g., zero-deforestation) to achieve net environmental benefits over multicriteria VSS schemes, like Bonsucro. However, the net environmental gain of implementing the Bonsucro environmental VSS criteria would surely be less than gross due to the indirect land use change impacts of adopting and complying with the criteria. Expansion of sugarcane into existing managed lands would push some existing agricultural production into available natural lands. This trade-off is most notable in areas identified as biodiversity hotspots.

Agriculture is responsible for 70% of projected losses in terrestrial biodiversity due to widespread land conversion, pollution and soil degradation. This is why developing effective biodiversity conservation policies for the agricultural sector is crucial. One of the most promising efforts of VSS is their work toward adopting a landscape approach to enabling VSS-compliant production. This would allow effective approach to conserving biodiversity, as it would enable the protection of required natural habitats. It would also allow VSS to better address specific agricultural commodity sectors´ impacts on biodiversity, enabling more coordinated efforts to conserve areas that may protect a variety of species. VSS protecting biodiversity at the landscape level can be more effective especially if there are complementary to government biodiversity conservation efforts.[16]

Figure 7: SDG 15 targets – related to VSS. (Bissinger, K et al., 2020)
Source: ITC, UNCTAD, EUI, UvA, DIE

[16] https://www.iisd.org/articles/voluntary-standards-biodiversity



In reference to Bissinger, K et al. (2020) study of 232 VSS, there are links between VSS requirements and six of the nine SDG 15 targets, namely 15.1, 15.2, 15.3, 15.5, 15.8 and 15.9. Examples of relevant requirements are criteria for monitoring and protecting high conservation value areas (linked to 15.1 and 15.5).

Targets 15.1 (terrestrial and freshwater ecosystems), 15.3 (desertification and soil degradation) and 15.5
(biodiversity) have the highest number of VSS with at least one relevant requirement (125, 122 and 114 respectively). Requirements linked to other targets (invasive alien species, forests and ecosystem and biodiversity values) are covered by fewer schemes.

While there are relatively few VSS linked directly to target 15.2 (forest protection and management), there are a number of forest focused VSS, such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC), that are relevant to this target. Therefore, the private and the public sector have several VSS they can use to work together in protecting and maintaining forests, helping to achieve SDG 15.

1.2.2 Challenges

VSS can affect trade in different ways (Elamin and Fernandez de Cordoba, 2020). UNFSS (2018) shows that VSS affect trade through their effect on the structure of the market, and global value chain participation and structure. According to the literature, VSS can be catalysts or barriers to trade. On the one hand, VSS can lead to increased exports, as VSS provide a competitive advantage to complying producers and signal sustainable production practices that facilitate their market access to foreign markets. On the other hand, some suggest that the expansion and increased influence of VSS have become an increasing concern for suppliers, in particular those in low-income economies.

VSS practitioners have identified potential barriers that inhibit the continued growth of VSS, and more importantly that could pose potential problems to lasting changes in sustainability practices. These challenges include: (UNFSS, 2016)

- Ensuring that VSS benefit those who need it most – There are fundamental questions about whether broad-based implementation of VSS can bring a wide swath of producers out of extreme poverty. To date, certification benefits have typically gone to larger, more organized producers in regions that have more developed production capacities.

- Proliferation of standards and lack of interoperability – The rise in the number of standards has brought up questions related to the credibility of VSS, given the range of claims and the confusion that they create for producers, buyers and consumers. Furthermore, the multiplicity of VSS schemes has led to a situation in which each individual standard seeks to increase its own market share, creating competition among certification schemes and ultimately weakening their interoperability.
- Applicability of VSS in local operating contexts – International VSS are sometimes perceived to be too top-down in that their norms or regulations are not universally applicable thus difficult to implement in some contexts.
- Costs of VSS implementation – A major challenge of VSS implementation is the cost of certification. For particular commodities such as cocoa, the cost of certification can be prohibitively high such as in certain contexts in West Africa, where 70% of global supply chain is sourced. When the cost of certification is covered by buyers, it often leads to power imbalances in the relationships between buyers and sellers.
- Credibility, legitimacy and accountability of standards – There has been some debate as to whether VSS can demonstrate its credibility and legitimacy internally. i.e., how the VSS system is developed and implemented within the value chain, and externally i.e., how the VSS systems are accepted by companies, communities, consumers and governments.
- Ability to generate transformational impacts – Some analysts have noted that commodity-specific schemes may prove to be difficult to achieve transformational impacts via VSS. The Roundtable for Sustainable Palm Oil (RSPO) for example develops a set of environmental and social criteria for companies to produce certified palm oil. While its objective is to minimize the negative impact of cultivation on the environment and communities, RSPO has been criticized as not effectively serving to limit deforestation, monoculture and GHG emissions. Some analysts have also highlighted the failure of VSS to appropriately engage governments in their development.

The lack of support in general, and open hostility at times by governments can lead to the collapse of VSS at the national level (Vandergeest and Unno, 2012).

2. Charting the way forward: Role of Government and Recommended Best Practices

Even though VSS were typically created outside of the public policy processes, it has been an important tool to help the public sector to promote green growth policies. For governments, VSS will allow them to be aligned to the international norms or multi-stakeholder decision-making precursors and include internationally recognized best operation practices. This essentially allows the public entities to outsource some of the more burdensome aspects of policy implementation. By adopting VSS, governments are being transformed to utilize sustainability systems that are already adhering to the best practices to date and provide the major products for exports greater credibility and international recognition.

Some economies have also recognized the potential of VSS to increase market access for exported products and services. In economies where governments have taken a prominent role in developing national certification schemes, the rationale for doing so explicitly acknowledges the promise that such schemes offer increased international market access for domestically produced goods.

Rather than acting as de facto trade barriers, these governments recognize that VSS are a response to increasing consumer awareness of sustainability issues and market demand for sustainably produced goods.

Indonesia for example, developed the Indonesian Standard for Palm Oil (ISPO) after a number of years working with the Roundtable for Sustainable Palm Oil (RSPO) because the government saw palm oil regulation as something that should be within its own sphere of influence and responsibility and a point of national pride (Wijaya and Glasbergen, 2016). The same could be inferred with the Malaysian Sustainable Palm Oil (MSPO). The government also saw that creating its own standard could lead to increasing opportunities in emerging markets where the demand for certified palm oil is strong.

In contrast, governments of developed economies, whose markets have become reliant on imports of sustainably produced products, have identified VSS as a useful mechanism for managing the negative social and environmental externalities that are often embedded in imported primary or manufactured goods. They see an increasing use of VSS by major businesses as a welcome opportunity for controlling the risk of having non-sustainable practices in their supply chains.

Therefore, even with the recognition of challenges that VSS face, governments may be motivated to play certain roles to help increase the positive aspects of VSS in line with their own policy objectives. This section provides some of the role governments can consider.

2.1 Promoting awareness and understanding

2.1.1 Facilitating VSS Uptake

APEC member economies need a coherent strategy to manage VSS. The manner of demonstrating compliance to regulations is changing worldwide and more and more regulators are giving cognizance to voluntary initiatives by the industry. However, in some cases there has been a conflict between the regulation and VSS that have resulted in confusion among stakeholders. In such a scenario, the challenge is how the governments can play a role in these standards.

One view may be to completely let the market determine compliance to VSS. Such a scenario may complicate the matters domestically. In majority of the developing economies, the consumers tend to be price conscious. Unless consumers are well informed about the benefits of sustainably produced products in relation to a VSS, the consumer may not be willing to pay an extra price.

The second view can be that the government can play an active role in these standards and try to bring them for discussion into trade negotiations. If the second view is followed, then the following actions are suggested:

2.1.1.1 Governments should engage with business and civil society to proactively address VSS as neutral brokers for VSS development and implementation;

2.1.1.2 Explore ways to increase their uptake by referencing the “common good” benefits while mitigating their deficiencies;

2.1.1.3 Increase uptake can be through sustainable public procurement, government adoption/ endorsement of VSS as well as raising consumer awareness campaigns;

2.1.1.4 Create joint efforts to harmonize the fragmented VSS landscape to ensure and prove the inclusiveness of schemes in parallel; and

2.1.1.5 Provide necessary assistance (technical, fiscal, developmental) to ensure the VSS can be complied with by negotiating parties.

Box 1: Peru and Forest Stewardship Council (FSC): Incentivising Responsible Timber Exports[17]
(Private standards as an extension of Public Policy)

With over half its land area covered by the sprawling tropical forests of the Amazon, Peru has the ninth largest forest resource in the world, and the second largest in South America. The Amazon boasts unparalleled biodiversity, stores huge amounts of carbon, is home to numerous indigenous communities, and provides livelihoods for many lowland Peruvians.

However, the forest contributes less than 1% of Peru's GDP. The World Bank estimates that 80% of Peru's timber exports are illegal, while Peruvian government statistics suggest that 39 million cubic meters of wood were extracted from unauthorized areas in 2015, representing some 170,000 hectares. Illegal logging depresses national markets and lowers prices, making legal and sustainable logging less economically viable. Peruvian wood is regarded by US officials as high risk, with investigations conducted by the Peruvian customs office revealing illegality rates in exports to the US of 95%. Because of this, it is often shunned by importers. In 2016, Peruvian timber exports to the US were only US$23.7 million, representing just 0.37% of total US wood imports.

Under Peruvian law, forests are part of the patrimony of the nation, placing the responsibility for ensuring responsible forest management onto the state. Protecting the rainforest has been a major priority for the Peruvian government since the 1980s. The government passed a Forest and Wildlife Law (2000), which introduced forest concessions and mandatory management plans. Increased pressure from timber-importing economies to curtail illegal logging has led to a revised Forest and Wildlife Law (2011) which sets out more stringent regulations on forest governance. In addition to combatting illegal deforestation, the new government framework aims to scale up sustainable forest management.

As FSC has grown its presence in Peru, it has consulted with stakeholders to develop a National Standard to better align with the needs of concession holders and local communities. FSC has also proactively introduced new rules to better align the standard with anti-deforestation legislation, like the US Lacey Act and similar legislation in Australia and the EU. This has allowed FSC to grow in Peru, with over 800,000 hectares of FM certified forested land at the start of 2018.

The use of standards like FSC in the Peruvian government's forestry policy demonstrate how private standards and certification systems can operate as an extension of public policy. Concession-holder compliance with FSC standards, which are more stringent than government regulations, is monitored through FSC's assurance mechanisms, reducing the burden of monitoring for governments.

Governments with limited capacity or expertise in forest management auditing can be confident in the FSC system, as it is carried out by independent, accredited certification bodies that publicly report annually on certified forest operations worldwide. For policymakers, tax benefits and subsidies – such as reductions in lease payments – for certified producers can nudge concession-holders towards sustainable and responsible forestry. As both legal and sustainable timber becomes the norm, economies which manage to develop sustainability policies around this will also enhance their industry's global competitiveness. Incentivizing FSC certification also allows the Peruvian government to demonstrate to international trading partners that they are taking real action to tackle deforestation and illegal timber.

[17] https://www.isealalliance.org/sites/default/files/resource/2019-05/ISEAL_FactSheet_Peru.pdf

Box 2: Malaysia's governmental efforts to drive sustainable palm oil[18]
(Public Mandatory Standards)

The oil palm industry is Malaysia plays an important role in the growth of the agricultural sector in the economy through its contribution to the Gross Domestic Product (GDP), foreign exchange, and employment. The palm oil industry is the largest agriculture sector and utilizes more than 70% of the economy's agricultural land. Mostly used in the food industry, cosmetics and cleaning products, palm oil has also been proven to be the fittest candidate among all vegetable oils as the source of biodiesel production. High yield of oil and low manufacture cost are two main factors that made this vegetable oil suitable in terms of economics and environment. However, there are negative issues concerning this crop area denting its image as an eco-friendly vegetable oil such as its alarming effects on deforestation of natural habitat, extinction of biodiversity and global climate.

International interest in sustainable agriculture needs a reevaluation of how the oil palm estates have progressed in warranting that palm oil is manufactured according to the set standards of accountable production practices. The Roundtable for Sustainable Palm Oil (RSPO) was founded to encourage sustainable agriculture and concentrate on the environment effect of the oil palm. RSPO certification was established by the oil palm business fraternity, while Malaysia Sustainable Palm Oil (MSPO) and the Indonesia Sustainable Palm Oil (ISPO) are both government initiatives to assist the industry to comply with the international sustainability requirements.

Since 2009, Indonesia has surpassed Malaysia as the largest producer of palm oil. This is due to support and assistance from Indonesia Palm Oil Producers Association (GAPKI) and government-sponsored Indonesia Palm Oil Board in implementing its sustainability scheme. Indonesia Palm Oil Commission has waived the fees for ISPO certification for small and medium size companies and smallholders which contribute to 40% of Indonesia palm oil production volume.

MSPO was officially announced at the Malaysia Palm Oil Board (MPOB) Palm Oil Congress (PIPOC) in 2013. With the pressure on the oil palm industry to incorporate sustainability in their day-to-day business, it is imperative that Malaysia developed its own sustainable standard based on local agriculture and operation. There are a lot of different factors to influence independent smallholders to implement MSPO. Among the factors identified associated with the implementation of MSPO are stallholder's age, smallholder's education level, knowledge towards MSPO, perceived benefits of MSPO, cost needed for MSPO implementation and government support for MSPO. The government has since been providing incentives to smallholders to implement MSPO certification, including the cost of certification, MSPO-related training, provision of chemical storage racks and supply for personal protective equipment. In fact, the entire cost of the MSPO certification for independent smallholders is borne by the government. The government has also announced an allocation of RM20 million in the 2021 Budget to continue MSPO certification.

To date, 88.10% of oil palm cultivation in Malaysia have obtained the MSPO certification. Meanwhile, all 162 Sustainable Palm Oil Clusters (SPOC) nationwide involving 79,623 independent smallholders have obtained the certification. SPOC was established by MPOB and the government to facilitate the participation of independent smallholders as a cluster in getting the MSPO certification. The implementation of the MSPO will create greater opportunities for all, reduce inequalities, raise basic standards of living and promote integrated and sustainable management of natural resources.

[18] This case study gathered information from https://www.nst.com.my/opinion/columnists/2020/11/641988/mspo-certification-key and https://hrmars.com/papers_submitted/2495/Factors_Influencing_the_Implementation_of_Malaysia_Sustainable_Palm_Oil_(MSPO)_Among_Oil_Palm_Smallholders_in_Malaysia.pdf

2.1.2 Developing Sustainable Market Development in APEC

Rather than perceiving VSS as potential trade barriers, APEC economies can establish a mandate that recognizes VSS as a market response of the consumer's changes in their purchasing behavior in alignment with sustainability complexes, and the increasingly referenced trade provisions requiring the compliance of basic sustainability in the way the goods are produced. Some of the potential drivers APEC surveyed respondents[19] would consider when integrating VSS into public policies include global value chains and market access, alignment of international sustainability norms and principles, economic cooperation to drive the SDGs and aligning the public agenda to the SDGs. However, this is largely challenged by the lack of access to adequate information and the lack of awareness, two of the most problematic scenario APEC surveyed respondents have selected as constraints to integrate VSS in public policies.

With the extension to which the governments promote consumer education and awareness of certified products, promotion of certified products through annual local and international trade fairs, market promotion and matching activities with active participation from multistakeholder groups/ organizations, these economies will be able to advocate its networks to push for certified products in the local and international markets.

2.1.2.1 Attracting local retailers: Opting for a regular (i.e., monthly) nation-wide farmer's market to promote certified local produce; and

2.1.2.2 Attracting regional/global retailers: APEC may assist on an annual trade fair to be hosted in any one of the APEC member economies on a rotation basis. These trade fairs will allow APEC economies' producers to feature some of their most popular products that have been certified by VSS schemes to regional/global buyers.

By organizing attractive trade fairs for certified products among the APEC economies, producers will be more inclined to ascertain VSS as market facilitators within the APEC region. Economies are also recognized with more active participation in the sustainability trajectory for the agriculture market. For APEC economies to promote certified products, its export markets must demonstrate competencies in sustainable production along its supply chains.

2.1.2.3 Creating an online presence for APEC economies to provide information about their certification procedure and infrastructure with regular updates, mandates, case studies etc.;

2.1.2.4 Realizing each economy's unique story behind its sustainable production and impact on the ground that distinguishes it´s produces from competitors elsewhere;

2.1.2.5 Investing in personal partnerships by inviting potential buyers for a personal visit to the economy's production. Offering samples of micro-lots they can test themselves, demonstrate on the field knowledge and control of the value chain; and

2.1.2.6 Implement "out-of-the-box" promotion strategies for example, promoting specialty products through leveraging ethnic cuisines to other economies.

[19] The survey was disseminated before the APEC workshop held on 4-6 September 2021 to gauge the understanding and awareness of VSS among representatives from the APEC member economies.

Box 3: Japan Ministry of Agriculture, Forestry and Fisheries (MAFF) initiative to further spread the appeal of Japanese food to the world[20]

MAFF has been making effort to promote sales led by ministers, transmitting information via overseas media, organizing Japanese-food related events and improving the export environment in order to convey accurate information to the world about the appeal of Japanese food and food culture while proactively expanding exports of Japanese food.

The Japanese "FBI Strategy" was formulated as an initiative to respond to the demand and rising Japanese presence in the world markets. This strategy aims to promote the spread of Japan's food culture and improving the food export structure of the whole economy. The strategy also aims at integrally undertake three activities, namely, promotion of the use of Japanese food as ingredients of world cuisines (Made From Japan), overseas expansion of Japanese food culture and food industries (Made By Japan) and promotion of the export of Japanese agricultural, forestry and fishery products and foods (Made In Japan). The FBI strategy derives its name for the first letters of "From", "By" and "In". Under this strategy, MAFF aims to raise the export value of agricultural, forestry and fisheries products and foods from 611.7 billion yen in 2014 to 1 trillion yen in 2020.

Part of this strategy also include activities to motivate farmers to be more competent with the progressive agriculture methods amid economic and social changes. Promoting the incorporation of agricultural management entities is an effective means of increasing the number of business-minded farmers. This initiative will also have to consider initiatives of encouraging new famers to increase the number of young farmers to ensure the sustainable development of agriculture, promoting active roles for women farmers, establishing a strong agricultural structure, strengthening the agricultural infrastructure, boosting domestic consumption, realization of smart agriculture, utilization of ICT and looking beyond the next-generation greenhouse horticulture.

The MAFF also promotes initiatives for increasing the number of tourists to Japan and to link their "desire" to eat real Japanese dishes in Japan with and expansion of agricultural, forestry and fishery products and foods. With the public and private sectors working together, MAFF also created a rural landscape and local cuisine system that links local foods to the appeal and stories of landscapes for the purpose of spurring desire of overseas tourists to visit Japan while also communicating the appeal of Japanese food and its food culture.

2.2 Advocating practices

2.2.1 Formation of sectoral committees for sector-specific VSS

Globally there are a variety of commodities ranging from food to non-food items that are traded. Each of the goods and its associated sector be it food, electrical, heavy engineering, electronics, software

[20] https://www.maff.go.jp/e/data/publish/attach/pdf/maff_2016-1.pdf

have their own unique issues. As a functioning economy, it is recommended to address sectoral issues by forming sectoral committees.

Organized sectors are a vital force in pushing for alternative development agenda, programs and projects. With the formation of sectoral committees with various representing organizations who have been the vanguards of mainstreaming sustainability best practices based on common interests and visions, they can be the vehicles of mainstreaming the uptake to VSS at the local level.

With a sectoral committee, economies may consider:

2.2.1.1 Facilitating and promoting widespread uptake of certifications and build the right infrastructure that is accessible for the producers to learn and implement the standards;

2.2.1.2 Upgrading and/or implementing national/regional Quality Infrastructure, aligned to the food safety and security measures;

2.2.1.3 Setting underlying conditions for effective VSS implementation, i.e., providing adequate regulatory frameworks that also includes benefits to the local communities – livelihoods and reduced vulnerability and environmental degradation; and

2.2.1.4 Tailoring VSS for local applicability. For developing economies, increased participation in localization efforts can help dispel concerns that VSS cause undue pressures and act as barriers to trade for their local producers. China and Chile for example, created ChinaGAP and ChileGAP which benchmarked their local standards to the GlobalGAP standards. These standards look to bring about local ownership and ensure local relevance, while also enabling increased export market access for certified products.

Box 4: Chile Conscious Origin (Chile Origen Consciente)[21]

The program seeks to strengthen global competitiveness of the Chilean agri-food industry by setting standards that will allow companies to demonstrate their compliance with sustainability.

On Thursday, April 8, as part of the "Chile Conscious Origin" (*Chile Origen Consciente*) program, a pilot program on sustainability standards for poultry and pork producers was launched via Zoom. It was attended by representatives from the Chilean Meat Exporters' Association (ChileCarne), the Pork Producers Trade Association (Asprocer), and the International Trade Center, as well as producers and government officials.

"Chile Conscious Origin" seeks to position the economy both in international and local markets as a supplier of safe, healthy, and sustainable food products. In addition, it promotes sustainability in the Chilean agri-food sector through four pillars: definition of sustainability standards by production sector, assessment of sustainability performance, a public-private partnership, and dissemination of results.

The initiative is led by the Office of Agricultural Research and Policies (ODEPA), part of the Ministry of Agriculture, and funded by CORFO, the Chilean Economic Development Agency, through a line called Public Goods for Competitiveness. During the pilot phase, the program covers the pork, poultry, and dairy production subsectors. The project is governed by a Strategic Advisory Committee made up of representatives of the public and private sector, including the Agency for Sustainability and Climate Change (ASCC), the Ministry of the Environment, ProChile (Chilean Exports Promotion Bureau), Imagen de Chile Foundation, the Undersecretariat for International Economic Relations (SUBREI), Asprocer, Wines of Chile, the Dairy Consortium, and ChileCarne.

"This initiative opens up great opportunities for the agri-food sector, but it also poses great challenges, particularly today, given the difficult scenario posed by a health crisis that has affected the entire world in many aspects. There is also the major issue of ecosystem biodiversity loss, its effects on production systems, and possible solutions. Regarding the challenges facing this sector, the loss of products and energy has found a solution in the circular economy, as well as the challenge to adapt and respond to changes in consumer behavior and consumption patterns. Therefore, the Ministry of Agriculture has developed a strategy that balances social and economic interests in order to work collaboratively," said Daniela Acuña, Sustainable Production Systems Officer of ODEPA's Sustainability and Climate Change Department.

She added that the program is based on both international models and the Chilean experience. "We started in 2018 by developing various tools as part of a series of instruments that support the concept of sustainability in companies and help them improve weak spots in production and performance, as well as manage risk according to the producer's own priorities," Acuña explained. "The sectorial approach is key because it allows us to move forward. It allows everyone to win, gain experience, and improve on these issues," she concluded.

[21] http://www.chilecarne.cl/en/chile-conscious-origin-chilean-pork-and-poultry-industry-will-have-sustainability-standards-for-the-sector/

2.2.2 Enhancing Competences through Capacity Building

It is recognized that labor is a major component of agricultural production but the present capacities and skills of the farm workers, especially in developing economies are still inclined to conventional farming. Knowledge can empower producers of certified products in the value chain. They need to be informed about the value of VSS certification for them, their communities, and the environment. Farmers and other producers can receive seminars from the standards-setters through the support of processors applying for certification. But if the farmers – or even other actors in the value chain- are not convinced of the economic benefits of certification for themselves, they will not be motivated to participate in these seminars. Thus, building knowledge of sustainable practices do not have to be a requirement for certification but be part of a more general initiative to inform farming communities of their roles in certified value chains. Training will then target each community or group of farmers regardless of their interest or participation in sustainability certification.

In this regard, APEC economies may consider:

2.2.2.1 Facilitating quality assurance training workshops, for example some products like cocoa requires a special continuous quality check/assurance in all the production stages as a well as during storage and transportation;

2.2.2.2 Establishing a platform to educate the exporters in search of regional/global buyers in terms of defining the product in measurable terms – product description, exact quality, quantity, relevant technology, certificates, process, and delivery terms, and to create a unique selling proposition;

2.2.2.3 Consider implementations of product packaging that are sustainable with clear labels and go-to links (i.e., QR codes) that allows consumers to learn more about the way the product is produced;

2.2.2.4 Organizing capacity building workshops to address issues like transparency and traceability;

2.2.2.5 Organizing regular knowledge exchange dialogue among the APEC member economies to share concerns and best practices and take part in the UNFSS National Platform and Initiative Cooperation (NPIC) Network; and

2.2.2.6 Setting tighter collaboration with certification systems on the ground to leverage group certification/ cooperatives etc. that reduces the burden on producers.

Box 5: A Path to a Sustainable Coffee Community in Viet Nam[22]

Simexco Dak Lak Ltd, a state-owned company founded in 1993, is recognized as one of the leading coffee exporters of Viet Nam, the largest Robusta producing economy in the world. Annual exports of Simexco Dak Lak range from 1,3 to 2 million bags (60 kg) of coffee, representing 8% of coffee production in Viet Nam.

Since joining the 4C programme in 2010, Simexco Dak Lak Ltd has involved 4605 farmers in the 4C verification and then, starting from 2018, the certification system. The participating farms, which were selected for the improvement of agricultural and fair trade practices and to create a sustainable coffee community, are located in company´s main sourcing areas: the communes of Eakao, Buon Trap, Eatoh, DlieYang, Ea Hiao, Eadrong in Dak Lak Province, Viet Nam´s Central Highlands.

Founded in 1993, Simexco Dak Lak Ltd has built a dynamic purchasing network directly from the farm gates and plantations and invested in modern coffee processing factories and staff capacity building. Implementation of the sustainability criteria towards more responsible coffee set by 4C Code of Conduct contributed to the improved production methods and better farmer livelihoods.

Simexco Dak Lak Ltd´s Sustainable team highlights that "since joining 4C, the company has seen positive impacts on farmers´ lives with regards to economic, social and environmental aspects". They are optimistic about future development, recalling the progress achieved so far: "the general awareness of farmers has greatly improved. Today farmers are confident about applying fertilizers according to the usage criteria and handling pesticide bottles and containers properly to prevent harming the environment. They have successfully applied good agricultural practices on their coffee farms and already experience multiple advantages of sustainable farming."

Apart from water conservation, farmers have also participated in trainings for gender equality and female empowerment. Women now work on the farm together with their husbands. They have appropriate financial management plans, directly participate in trainings with the rate up to 50%, have additional access to technologies, and are able to further self-learn and share information with each other. Women actively voice their opinions and raise issues for discussion together. Trainings have also increased men´s ability to take responsibility for childcare, housework and household management.

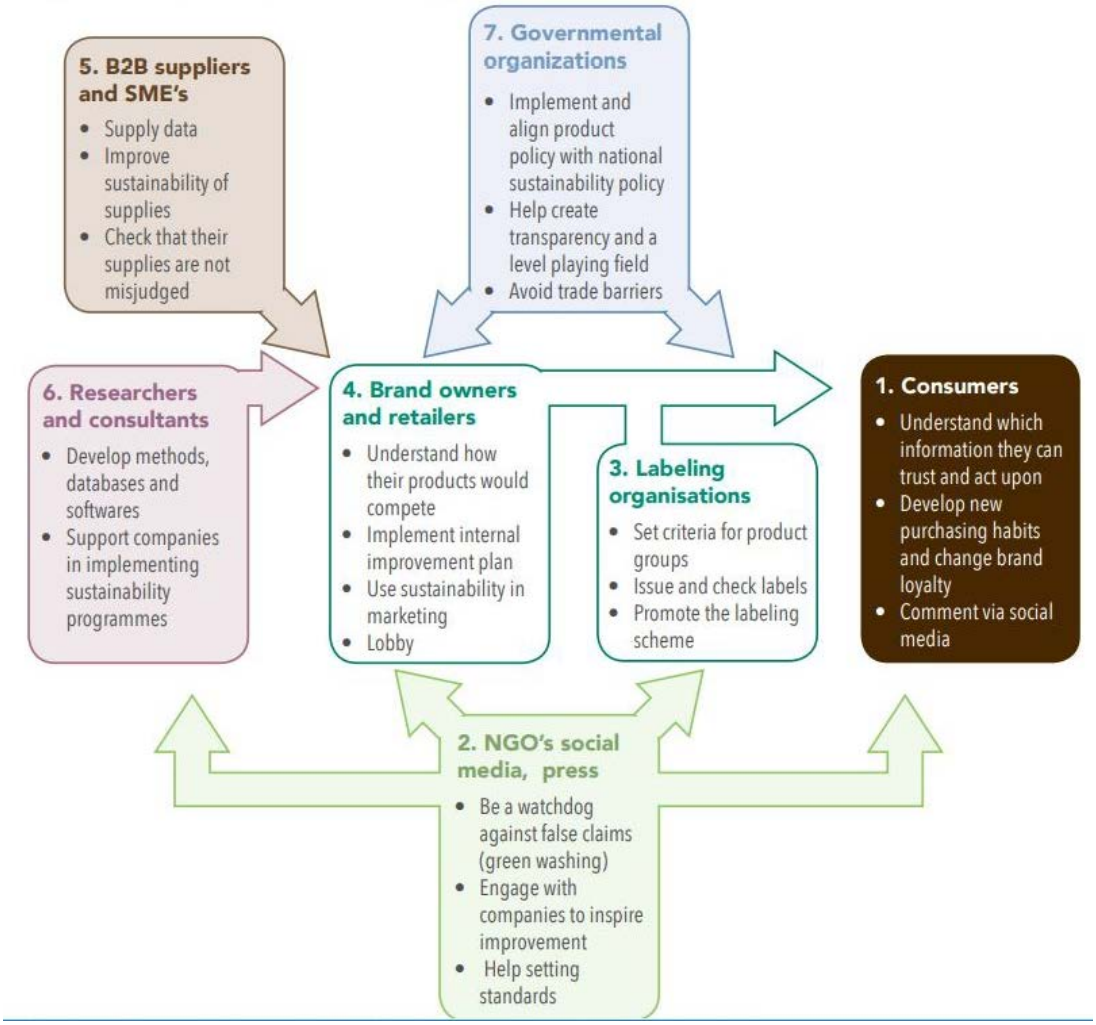
The farming environment has also significantly improved with balancing the microclimate in the garden through intercropping of coffee and other crops resulting on improved farmer income through years of participating in the sustainable coffee production programme. The increased environmental and social consciousness of farmers participating in the 4C programme also has a positive spillover effect, affecting non-programme farmers and contributing to their motivation to engage in the more sustainable production of coffee as well.

[22] https://www.4c-services.org/4c-a-path-to-a-sustainable-coffee-community-in-vietnam/

2.2.3 Increasing Stakeholder Participation

Rather than taking individual actions, governments can join forces with the private sector and civil society to amplify the sustainability benefits of VSS. Public-Private Partnerships have the potential to serve many functions.

Diagram 1: Simplified stakeholder map and their main roles (UNEP, 2015)[23]



Various stakeholders in the field of product sustainability have unique, and sometimes overlapping vested interests. They can have differing influences with varying levels of intensity on the process of creating and communicating information. Public-private partnerships have the potential to serve many functions:

2.2.3.1 Increasing government financial support for VSS systems to help extend the reach of schemes and provide necessary trainings and incentives for local smallholder producers;

2.2.3.2 Launching new joint initiatives that tailor VSS in ways that address localization concerns;

2.2.3.3 Providing non-biased platform or space for dialogue that brings together a range of stakeholders; and

2.2.3.4 Adding domestic legitimacy for VSS systems and their aims.

[23] UNEP (2015). Product Sustainability Information. State of Play and Way Forward. https://www.oneplanetnetwork.org/resource/product-sustainability-information-state-play-and-way-forward

A major advantage of increased government interaction in VSS schemes is the legitimacy that public sector engagement confers. For example, the development of the European Union Organic Regulation directly involved the International Federation of Organic Agriculture Movement (IFOAM), a leading VSS on the topic with deep expertise on organic issues. IFOAM's involvement at the very beginning of the regulation development not only points to how VSS can gain increased legitimacy by playing a role in regulation development, but also legitimizes the role of VSS more broadly. The European Union Organic Regulation's reliance on, and explicit support for, VSS further ensures this outcome. Government's active involvement in improving key governance features lends an increased legitimacy to the schemes that benefit the public.

It is widely recognized that multi-stakeholder partnerships (MSPs) are effective means for scaling up innovation, resources, and action to deliver the Sustainable Development Goals (SDGs). The UNFSS identified the National Multi-stakeholder Platforms as one policy intervention to encourage the implementation of VSS through informed policy dialogues. The main objectives of MSPs based on their objectives include:

2.2.3.5 Knowledge-sharing: Sharing information is critical to development, because while the solutions to problems already exist, information about solutions are not shared and the ability to replicate them at scale is lost.

2.2.3.6 Standard-setting: Aim to design, strengthen and enforce norms and standards that addresses the different stakeholders' obligations, internal verification and compliance procedures and formality.

2.2.3.7 Service-providing: Seek to address market failures by efficiently allocating goods and services such as voluntary collective actions to mobilise resources or enable innovation and the development of products and markets.

Box 6: Organic Banana Cluster of the Piuria Region of Peru[24] - A successful multi-stakeholder approach

Mostly produced by the small producers of the region, the Organic Banana Cluster of the Piura Region, has proved to be a good example of involving the private initiative of small producers who individually have very little power, the action of an NGO and the support of public institutions. This formula of joining forces has had a successful impact on improving the economic, social and environmental aspects of banana cultivation, thus becoming the leading exporter of this fruit in Peru.

Main Stakeholders include, the Private sector made up of ten producer associations involving more than 9,000 banana producers, a Non-Governmental Organization (NGO) and an international non-profit organization, Solidaridad, in partnership with the Public institution, Universidad Nacional de Piura, the Regional Government of Piura and Innóvate Perú (a program of the Ministry of Production of Perú).

In 2017 the Organic Banana Cluster Project was awarded by the Cluster Support Projects of Innóvate Perú. In 2019, by receiving financial support from Innóvate Perú, the process of organizing the cluster started in the Piura Region, with the involvement of the first 1,000 local organic banana producers. Since then, the Cluster has worked to identify the gaps, both social and technological, along the organic banana value chain, defining and implementing a concerted strategy of actions to increase the level of production and competitiveness. The NGO Solidaridad has ensured the permanent coordination of the process and the Cluster, having a vision of environmental, social and economic sustainability, has reinforced in particular the following key aspects:

- Expansion and articulation of the Cluster's management group. With the support of the actors that have promoted the process, such as the Regional Government of Piura, the University of Piura, producer associations and Innóvate Perú, the Cluster has broadened participation along the entire value chain by creating a partnership of producer associations, exporters, importers, certifiers, transport and logistics companies, suppliers, workers associations. This management group defines the strategies in a concerted manner and the activities to be carried out with the participation of all involved actors.
- Strategic differentiation of organic bananas through Carbon Neutral and environmental footprint Certifications, in order to diversify the offer and position the product in new markets. It has also worked to ensure the Organic Certification of the product.
    - 100%of their banana producers have an Organic Certification that certifies that they have undergone a control process that guarantees the organic quality of what they produce, according to the corresponding regulations and the destination market in which they will sell it.
    - 60% of their banana producers, affiliated to associations with a democratic structure, carry the Fairtrade Certification Mark, which means that their products are fairly priced and that they also receive an additional amount of money, the Fairtrade Premium, to invest in the development of their communities.
    - 95% of their producers are Global GAP certified, a voluntary standard that guarantees Good Agricultural Practices (GAP) and provides both retailers and consumers with peace of mind that their organic bananas meet acceptable levels of safety and quality, and have been produced sustainably, respecting the health, safety and welfare of workers, the environment and animal welfare.

[24] https://www.clusterbanano.pe/

- Strengthening of organic banana's quality, through a range of projects for training producers to develop their skills, through technical assistance to improve productivity per plot, through research and development initiatives.
    - Development of adequate structures to improve access to water and logistics.
    - Installation of 10 pilot plots for production of improved organic banana seeds.
    - Training in the prevention of the main pest that threatens the crop, the tropical fungus Fusarium Raza 4.
    - Implementation of a pilot recycling plant for the recovery of plastic packaging used in banana transport, in a circular economy approach.

The Cluster exports 200 containers of organic bananas per week, sent to different markets around the world, earning US$150 million per year. In December 2020, the Peruvian press highlighted in different news the extraordinary results. Plans for the future of the Piura Organic Banana Cluster are to further expand the alliance of participants and to continue generating shared strategies and actions. They are working to include more institutions, universities, importers and more than 15 associations and companies, reaching 70% of the local producers.

The Organic Banana Cluster of Piura represents an exemplary and replicable practice, articulating the action of local actors with the support of national institutions to boost the competitiveness in international markets, while improving the living conditions of producers and generating broader results of economic, social and environmental impact in the territory.

2.3 Turning insights into impact

2.3.1 Increasing Transparent Repository of Information in APEC

Increasing information and transparency on VSS to local stakeholders gives room for them to be proactively engaged in the topic. The ITC Standards Map[25] and the Ecolabel Index[26] are two of the largest global directories of VSS. It helps users to identify the VSS available in the market and better understand the sustainability initiatives landscape.

The Swiss State Secretariat for Economic Affairs (SECO) is one of the key governmental bodies in support of the Evidensia[27] platform. With growing commitment by governments and businesses to tackle sustainability challenges, there is a need for understanding what approaches work where, why and how. Evidensia helps practitioners and policymakers to access and interpret credible research on the sustainability impacts and effectiveness of supply chain initiatives and tools. It does this through a growing and credible research repository and features that allow users to work with evidence, understand key gaps, locate research geographically and summarize review research visually. Evidensia also aids linking sustainability tools and corresponding research to the SDGs as all features allow to search for and use evidence relevant to the SDGs.

While these portals are referenced globally, it may lack the engagement of local APEC communities to target the issues closely relevant to them. Thus, APEC economies may consider developing its own repository platform to:

2.3.1.1 Provide free and easy access to resources and facilities specific to APEC needs i.e., by establishing the APEC region- wide or economy-specific Sustainability Compass;

2.3.1.2 Establish a repository system for all VSS-related information. This repository will help identify issues concerning VSS, create a collection of best practices for standards setting, facilitate compilation of information on small producers' experiences and perception with VSS, and lead to an active agenda-setting for capacity building for sustainability certification;

2.3.1.3 Conduct supply chain actors mapping for each sector and use the UNCTAD VSS Assessment Toolkit[28] standardized framework to develop a holistic analysis of the context of VSS uptake on the ground. (The pilot study has been done for the Philippines and Vanuatu Coconut Oil sector and coffee for Lao PDR[29]);

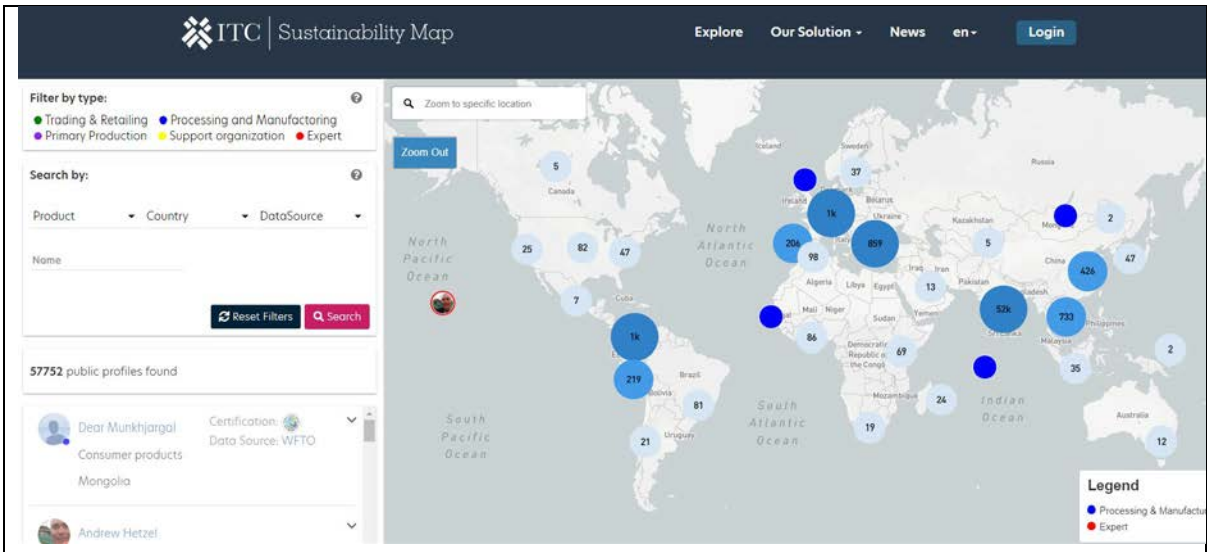
2.3.1.4 Consider referencing VSS as a sustainability pre-requisite in Public Procurement Process by listing the legal frameworks needed for implementation;

2.3.1.5 Establish a VSS comparison tool and/or self-assessment tool to offer the possibility to analyze, compare and find labels corresponding to selected criteria and legal requirements; and

2.3.1.6 Leverage the ITC Sustainability Map Virtual Network (or create a platform specific for APEC) as a producers' network platform to connect global buyers to local producers.

Box 7: ITC Sustainability Map Network[30]

[25] https://www.standardsmap.org/en/home
[26] http://www.ecolabelindex.com/
[27] https://www.evidensia.eco/
[28] https://vssapproach.unctad.org/toolkit/
[29] https://vssapproach.unctad.org/fostering-green-exports/
[30] https://www.sustainabilitymap.org/network



The ITC Sustainability Map is a platform that allows users to review and compare requirements and audit procedures of voluntary sustainability standards (Fairtrade, Organic etc.) as well as for producers to gain visibility and get connected to potential buyers and clients.

The Sustainability Network is a virtual marketplace that allows users to share their business and sustainability profiles with buyers, traders, standards organizations, certification bodies, financiers, and others. Meanwhile, the marketplace creates a better environment for business engagement with value chain partners by enabling farmers, processors and manufacturers to share diagnostic reports with buyers looking to source sustainable products and services.

<u>For Smallholders and SMEs – understanding compliance and boosting visibility</u>
Sharing their profiles on the Sustainability Network enables producers to link up to traders, international buyers and others in the global value chain that prioritize sustainable sourcing. Those on the demand side of the value chain can contact specific businesses based on their Sustainability Business Profiles.

<u>For Buyers and retailers – sustainable supply chain management</u>
Buyers and retailers access the Sustainability Network to engage with their value chains. They invite existing or potential suppliers and business partners – future Sustainability network users – to connect in the platform. With this functionality, the Network creates an easy-to-navigate environment to exchange information on sustainability practices and, ultimately, to do business.

<u>For Decision-makers – data analytics</u>
The Sustainability Network gives buyers, retailers, standards organizations and policymakers access to unique sustainability information and intelligence. Aggregate analytics can be generated focusing on particular product groups or areas by using geographical data. It helps them make decisions tailored to solving various sustainability-related issues and challenges.

2.3.2 Develop Data Strategy Governance

The effectiveness of VSS schemes relies upon government functions, such as statistical and data collection services. The absence of reliable data will not help the market properly assess the impacts VSS schemes are generating.

Data governance is the collection of practices and processes used to ensure formal management of data assets within an organisation. Organisations with good data governance document procedures

describes who can take what actions, with which data, including when and under what circumstances and using what methods. In other words, measuring what matters to whom and how.

The Food and Agriculture Organisation of the United Nations (FAO) highlighted three main government actions that can enhance the effectiveness of VSS. They include: [31]

2.3.2.1 Supporting the development of measurement and monitoring systems that can provide evidence that the VSS is having a positive impact;

2.3.2.2 Raising awareness about small producers' needs and providing information and insights about the local context; and

2.3.2.3 Strengthening the scientific verification of standards and advising on the content of VSS.

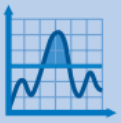
Collecting timely and accurate market data on VSS to facilitate policy and investment decisions is a key priority for policy makers, market actors and donors. In order to facilitate the collection of relevant data, the following best practices are recommended:

2.3.2.4 Develop a public database that tracks agricultural and forestry land in the economy that are certified with VSS with a clear methodology i.e. indicators, unit of measurement, definitions, quality check to validate the data received, data year, etc.;

2.3.2.5 Focus on key commodities and its related VSS that are present in the economy; and

2.3.2.6 Reference data collection frameworks from international institutions to harmonize analysis against the global VSS profiles.

Box 8. ISEAL Sustainability Benchmarking – Good Practice Guide[32]

Benchmarking Model	Purpose	Distinguishing Features	Pros	Cons	Example
Threshold 	To qualify entities that meet or exceed a threshold. Often used for recognition	Performance bar set at level of acceptable practice	Simplifies message about which entities are acceptable to use	If poorly designed, can recognise poor performers without differentiating better performers	*CGF Sustainable Supply Chain Initiative (SSCI); Global Sustainable Seafood Initiative (GSSI)*
Ranking 	To compare performance of similar entities through a ranked evaluation	Entities are scored against performance topics and compared	Public communication of results creates incentive for entities to improve	Potential subjectivity in how entities are ranked, particularly if based only on public information	*World Benchmarking Alliance (WBA)*
Peer comparison 	To conduct an internal comparison of an entity's own performance against its peers	The reference benchmark is the practices of the benchmarking entity itself	Effective for understanding strengths and challenges compared to peers	Starting with own performance may neglect key issues addressed by others	*CSR Hub is one example enabling companies to compare CSR performance with peers*
Improvement 	To encourage improved practices by showing progress toward good practice	Aspirational performance bar set beyond current practice to provide direction and incentive	Encourages improved performance over time	Can have narrow focus on benchmarking programme's topics of interest	*WWF Certification Assessment Tool (CAT)*

[31] Page 9: https://unctad.org/system/files/official-document/unfss_2nd_2016_en.pdf
[32] https://www.isealalliance.org/about-iseal/our-work/benchmarking

Companies, governments, and civil society are seeking tools they can use to evaluate sustainability performance and to recognize and reward good practice. For stakeholders wondering which tools to use and approaches to take, the landscape can seem both bewildering and challenging to navigate. One response to this challenge has been the development of benchmarks to evaluate, compare and qualify sustainability tools and company performance. A benchmark is a reference point against which something is evaluated. Sustainability benchmarks can evaluate a wide variety of entities, from the sustainability performance of companies to the rigor of sustainability standards and certification.

Benchmarking programs define a specific reference point and carry out evaluations of sustainability policies, practices and tools against it. In this way, benchmarking programs chart a path through the wilderness, providing users with comparable information about the benchmarked entities that then allows those users to choose between them. The challenge with benchmarking is that there has been little guidance on how to develop and implement a credible benchmarking program, leading to a proliferation of efforts of varying rigor, transparency and effectiveness. This is significant because it means that these programs have the potential to recognize and reward lower performers, potentially limiting the effectiveness of our collective response to today's sustainability challenges.

The guidance covers benchmarks developed by any type of organization, including companies, governments, NGOs, sustainability standards and others. A few sections, identified in the guidance, have been developed to support benchmarking of sustainability standards and certification specifically and do not apply to benchmarking of other entities. The guidance does not propose criteria or requirements to be used in a benchmark but sets out considerations for developing those requirements.

2.3.4 Unlocking the power of data for impact

The power of data can be largely enhanced by widespread harmonization and accessibility. Only when sustainability data is open, consistent and comparable across companies, sectors and economies, it becomes an effective and reliable source in decision-making for governments and business.

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. The UNCTAD VSS Assessment Toolkit for example, 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.

The table below lists some of the VSS tools and frameworks developed by international institutions.

VSS Lifecycle		**Name of Tool**	**Purpose of the Tool**
Adoption	Export Potential Diagnosis	ITC Export Potential https://exportpotential.intracen.org/en/	Identify untapped potential for export diversification
		ODI Export Competitiveness Matrix https://set.odi.org/	Revealed comparative advantage of products and export stability
	Benchmarking	ITC Standards Map https://www.standardsmap.org/en/home	Take stock of existing VSS schemes and compare control points
		Ecolabel Index http://www.ecolabelindex.com/	Catalogue of ecolabels in global directory
	Implementation	Sustainable Supply Chain Initiative (SSCI) https://www.theconsumergoodsforum.com/social-sustainability/sustainable-supply-chain-initiative/key-projects/benchmarking-recognition/global-social-compliance-programme/	Harmonise existing efforts across multiple VSS schemes
		FAO SAFA Tool https://www.fao.org/nr/sustainability/sustainability-assessments-safa/safa-tool/en/	Global reference framework for the assessment of sustainability along agriculture, forestry and

VSS Lifecycle		Name of Tool	Purpose of the Tool
			fisheries value chains
		UNCTAD VSS Assessment Toolkit https://vssapproach.unctad.org/toolkit/	Provides 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
Evaluation	Outcomes	ISO 14040 and ISO 14044 https://www.iso.org/standard/37456.html https://www.iso.org/standard/38498.html	Guidelines and science-based target methodologies to measure changes after standard is adopted
	Impact evaluation	ISEAL Impacts Code of Good Practice 2.0 https://www.isealalliance.org/defining-credible-practice/iseal-codes-good-practice	Create indicators for socio-economic-environmental evaluation of the value chain
	Reporting	Global Reporting Initiative (GRI) https://www.globalreporting.org/	Harmonized sustainability reporting model

2.3.4.1 Make relevant data accessible to analysts, research, policymakers, industry professionals;

2.3.4.2 Promote transparency by collecting and presenting a wide range of harmonised data;

2.3.4.3 Leverage digital technologies for example, Geographic Information Systems (GIS) to improve audits, Blockchains for traceability and transparency of global supply chains, etc.;

2.3.4.4 Use data for benchmarking assessments to systematically evaluate the sustainability performance of existing VSS in their respective value chain or sector; and

2.3.4.5 Use data for benchmarking assessments that links the VSS attributed to the respective value chains or sector to the attainment of the Sustainable Development Goals (SDGs).

Box 9: The UNCTAD VSS Assessment Toolkit[33]

The UNCTAD VSS Assessment Toolkit is an example a diagnostic tool that has been designed to capture the issues in a form of data collection that can affect whether VSS adoption has a positive or negative impact.

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 economies, since lead companies, non-governmental organizations (NGOs) and other implementing organizations do not make these data public. Furthermore, existing studies vary widely across crops, production context, economy 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 economies. 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.

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.

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.

Note: The VSS Assessment Toolkit has been utilized in the supply chains of coconut oil in Vanuatu and the Philippines as well as coffee in Lao PDR. Visit https://vssapproach.unctad.org/fostering-green-exports/ to read the economy reports and fact sheets.

[33] https://vssapproach.unctad.org/fostering-green-exports/

2.4 APEC´s case for Aquaculture

Aquaculture was in fact not part of the deliberation of this project. The focus was mainly to capture the importance of VSS as a trade tool in the agriculture sector. However, the capture fisheries and aquaculture sectors are of equally fundamental importance to the APEC region in terms of food security, revenue generation and employment.

According to the APEC 2019 Ocean and Fisheries Working Group (OFWG), aquaculture is a well-developed production in the APEC region since the 21 economies that make up APEC represent more than 80% of global aquaculture production, and more than 65 per cent of the world´s fishing. In many economies, catching or farming resources forms a vital part of rural people's livelihoods. In cultural terms, aquatic resources mean more than a source of income or food supply; traditional fishery products such as fish sauce and fish-based condiments are important ingredients of people's daily diet which are not easily substituted. People utilize all sizes and types of fish and there is very little discard or wastage of this valuable resource.

2.4.1 Access to developed markets

Fisheries products are highly traded in the APEC region, bringing valuable foreign exchange earnings to exporting economies. However, in many parts of the region, this industry may be causing many harms i.e., poorly planned development of seaweed crop may increase damages on coral reefs and sea grasses that when healthy, provides habitat to abundant marine life. Overfishing is another problem that needs to be addressed as it can change the size of fish remaining, as well as how they reproduce and the speed at which they mature, causing massive depletion of fish stock.

Fish farming or aquaculture can be part of the solution for overfishing affecting global fisheries. However, fish farming may cause water pollution and contamination of water supply. The effluent also includes pesticides and veterinary drugs to treat pests and diseases that afflict fish in these concentrated waters. Such chemicals affect the entire aquatic ecosystem, as well as the advisability of eating fishery products in such environments.

If aquaculture is produced in an economically, socially and environmentally responsible manner, it contributes to long-term food security and nutrition, healthy ecosystems and improves the living standards of all, especially the poorest. Thus, VSS may be an efficient method in managing these problems based on the following underlying principles:

- Legal compliance with international and local regulations
- Preservation of biodiversity, ecosystems and diversity of the wild population
- Preservation of water resources and quality
- Responsible use of feed and other resources
- Fish health and responsible use of antibiotics and chemicals
- Socially responsible farms for workers and communities

For most developed markets, it is important to consider the obligatory fulfilment of their regulations. Mandatory requirements like the Non-Tariff Measures may include criteria such as primary responsibility for food safety resting with the food business operator, food safety is ensured throughout the food chain, general implementation of procedures based on the HACCP principles, as well as application of basic hygiene. Other regulations may include maximum residue levels, chlorate levels, labelling, etc.

For these reasons, some recommendations for sustainable aquaculture practices through the implementation of VSS should consider these factors:

2.4.1.1 Proof that harvested fish and seafood come from legal sources;

2.4.1.2 Consider a new system for geographic origin certificates;

2.4.1.3 Understand the requirements for niche markets;

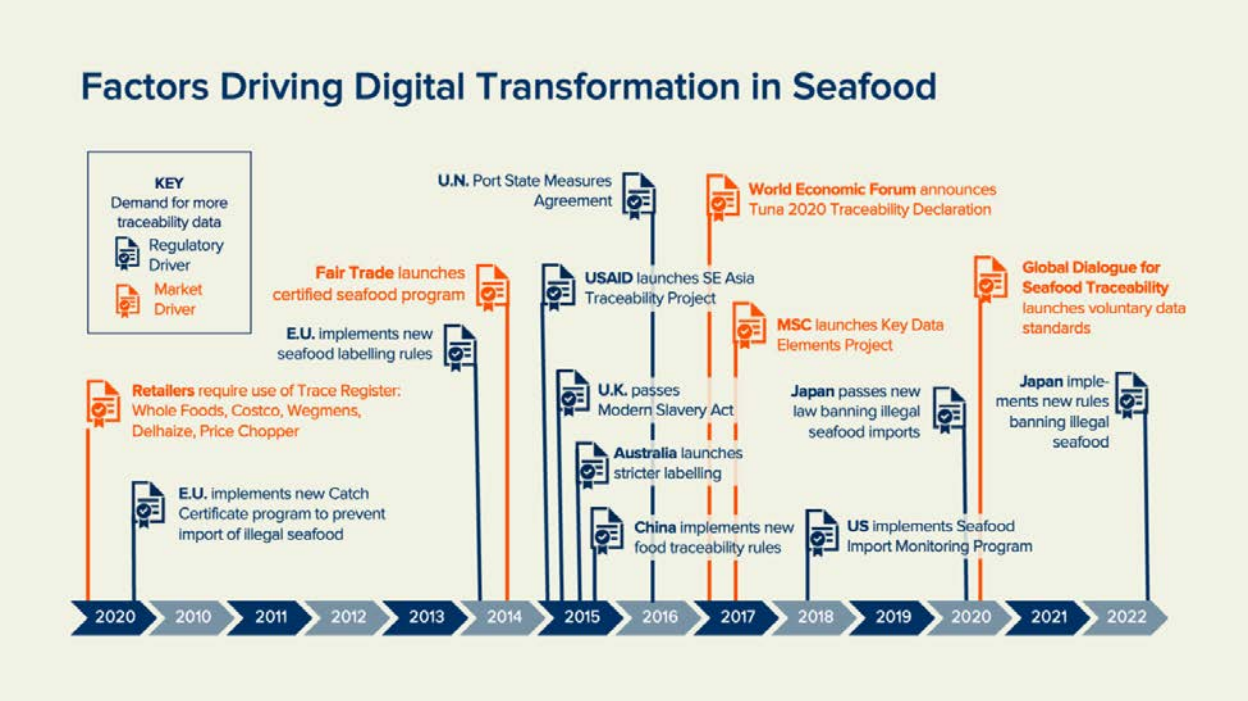
2.4.1.4 Ensure traceability in wild and farmed fish and seafood supply chains; and

2.4.1.5 The organic seafood market requires a certification for proof.

2.4.2 Digital Transformation

With reference to the recommendations in 2.4.1, the power of data for digital purposes may be considered to track, trace, and monitor the aquaculture sector. The diagram below illustrates the factors driving the digital transformation in the sector.

Diagram 2: Factors driving digital transformation in seafood. *Image source; This fish, https://this.fish/news/roi-of-digital-transformation-what-is-the-cost-of-doing-nothing/*



Social Impact: Ensuring that food is safe and originate from sustainable production for consumers is a key option, in a world where consumers especially from developed economies demand for food safety and sustainability in the production of the food they eat. The socio-economic importance of the fisheries and aquaculture sector to APEC economies cannot be underestimated: it generates a significant source of revenue to economies across the region; it provides employment in remote locations where there are few employment opportunities; and it supplies a vital source of animal protein to food-deficit economies, therefore playing a key role in the food security of APEC economies.

Quality: the challenges facing aquaculture development has transitioned from production orientation to quality orientation. Consequently, sustainable aquaculture production that considers environmental, economic and social issues is far important than quantity-oriented aquaculture, in the bid to continue access to global fish and seafood markets.

Digitalization: with rapidly advancing technology, it is a challenge for APEC economies to invest in digitalization and to transform their businesses to data-driven ones. Opportunities come with

digitalization. This includes using data for monitoring production of aquaculture or fisheries, opportunities provided by e-commerce platforms, new technologies to aid their production and sales, as well as digital trading solutions to connect with buyers.

Recommendations for digitalisation in the seafood sector, both in fisheries and aquaculture include:

2.4.2.1 Production/Fishing: the most common way to go digital is data gathering and analysis. In the seafood sector, knowledge is key and a useful tool to maximize the production output, predict trends, and manage risks. Smart apps, farm activity or fishing activity tracking apps are used. Also drone technology to monitor aquaculture farms or fishing activities. To make this possible, data monitoring is done by means of data digitalization, artificial intelligence (AI) or Internet of Things (IoT). Mobile applications to make data analysis faster, easier, and more convenient are also widely available. To see how fishing industries interact with the ocean, or promote sustainable fishing practices, SkyTruth[34] can be a good platform to study. This allows commercial fishing companies to monitor vessel activity and they can also use this platform to promote their own fishing activities.

2.4.2.2 Processing: new technologies can contribute to more efficient processing, such as the use of AI, robotics, automation or software solutions. Citing some examples, there are platforms that uses species recognition (FishFace[35]), tuna quality and tuna grading inspection (TunaScope[36] and GoMicro[37]), as well as electronic monitoring of fishing activity (SnapIT[38]).

2.4.2.3 Logistics: digitizing logistical operations is key to secure the documentation of products. Proper labels or certifications attached to the product are also important and can be made easier through digitized CATCH certificates[39].

2.4.2.4 Trade: exporters must be able to connect digitally. Digital trading solutions such as digital marketplaces that connect buyers and sellers are essential for seafood trade. Some examples of digital trading platforms are: TunaSolutions[40], Aquafind[41], Interfish Market[42], Seafood Portal[43], Seafood Xchange[44], XpertSea[45], Aquaconnect[46], Jala[47].

2.4.2.5 Retail and food service: traceability is key. That is why the most important trends on this level are technologies that help trace the products and monitor the supply chain such as blockchain or DNA technology. Some of the most common seafood commodities that integrate blockchain are tuna, Patagonian toothfish and farmed shrimp. By using this technology, not only are exporters able to have a higher level of control and real-time monitoring of their supply chain, but it also deters illegal activities through transparency. Therefore, exporters

[34] https://skytruth.org/
[35] https://www.natureaustralia.org.au/what-we-do/our-priorities/oceans/ocean-stories/fishface/
[36] https://tuna-scope.com/en/
[37] https://www.gomicro.co/sea-food
[38] https://www.snapit.group/
[39] A CATCH Certificate is an official document accompanying a consignment that must be validated by the competent authority, in such a way that it provides accurate and verifiable information that let trace fish from their point of capture through the entire supply chain. See EU´s IUU Regulation Catch Certificate Scheme: http://www.iuuwatch.eu/catch-certificate-scheme/
[40] https://www.tunasolutions.com/
[41] http://aquafind.com/
[42] https://interfishmarket.com/en/default-en.aspx
[43] https://www.seafoodportal.com/
[44] https://theseafoodxchange.com/
[45] https://xpertsea.com/
[46] https://aquaconnect.blue/
[47] https://www.jalafish.com/

who make their products traceable not only improve their supply chain but are also able to expand their market access as more retailers use traceability as a requirement. For example, digital traceability is important for the Marine Stewardship Council (MSC) (MSC's Annual Report 2019-2020). Another aspect of traceability is DNA technology, which can also be used to monitor the supply chain. An example of this is IdentiGEN[48], already working in Viet Nam, a tool that ensures that the products sold to the end consumer originates from approved sources that meet the required standards.

2.4.2.6 MSC also conducts an independent DNA Testing Program for MSC-labelled products to ensure that they are correctly labelled. According to MSC, DNA barcoding provides a vital tool to verify the authenticity of seafood products, deterring the commercialization of endangered and vulnerable fish species and preventing seafood fraud.

2.4.2.7 E-commerce and mobile applications also play a huge role in making the products visible online. Many North American retailers are already using e-commerce to market their products directly to consumers. This is an opportunity to reach out to or partner with importers to allow the products to be displayed in web shops. With home deliveries of products through e-commerce, there is an increased chance for niche products that would otherwise have no shelf space in a physical store to be sold. Using e-commerce platforms and online marketing increases not only the visibility but also brand awareness.

[48] https://www.identigen.com/Home/Change?ln=en

Box 10: Tracing your Shrimps' roots – Viet Nam and Thailand´s IdentiGEN´s case [49]

The issue of traceability in shrimp supply chains is not new. Shrimp may well be small sized, but the industry itself is huge, diverse, and difficult to map. Several new technologies are being employed by companies to aid traceability and provide increasingly trustworthy data on the products consumers put in their shopping baskets. Two such technologies are IdentiGEN´s DNA Traceback solution and the use of blockchain technology in supply chains.

In the case of IdentiGEN and Seafresh Group, they mapped out the shrimp being produced in the various regions Seafresh Group operates in. For Thailand and Viet Nam, this was done using a combination of parental and pond sampling. Using IdentiGEN's DNA TraceBack® solution means that when Seafresh Group's shrimp undergoes sometimes heavy processing at third-party facilities – and remarkably even after cooking – the DNA remains unchanged. IdentiGEN then samples the finished product at the distribution or store level and traces it back to its exact farm origin. If there is a "no-match", the Seafresh Group team investigates how and why.

Seafresh Group operates farms in Central America, and in Asia. These regions have different supply chain characteristics. A less vertically integrated supply chain (mostly found in Asia) means that there are far more farms and middlemen involved. In Central and South America, there are generally fewer companies operating, providing a less "diverse" supply chain (for example hatcheries, farming and processing operations are often integrated within one company).

Seafresh Group saw the challenge presented by the complexity of regional supply chains as an opportunity to prove the closeness of its own supply chain. For the DNA TraceBack® solution to work, cooperation and long-term partnerships along Seafresh Group's supply chain were essential, something it already had in place and testament to the level of organization and control that already existed.

[49] https://www.identigen.com/Home/Index

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Appendix

Appendix 1: World Bank Databank/ Health Indicators – Prevalence of undernourishment (% of population) of APEC economies (excluding Chinese Taipei, data unavailable) in comparison to the world and Sub-Saharan Africa (most undernourished region).

Economy Name	Code	2010	2011	2012	2013	2014	2015	2016
Australia	AUS	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Brunei Darussalam	BD	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Canada	CDA	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Chile	CHL	3,7	3,5	3,3	3,2	3,1	3,1	3,2
China	PRC	3	2,5	2,5	2,5	2,5	2,5	2,5
Hong Kong, China	HKC	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Indonesia	INA	12,9	10,5	9,3	8,9	9,3	9,3	9,2
Japan	JPN	2,7	2,5	2,5	2,5	2,5	2,5	2,5
Republic of Korea	ROK	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Malaysia	MAS	3,2	3	2,9	3,5	3,7	4	3,4
Mexico	MEX	4,8	4,6	4,3	4,1	4,6	5,6	6,4
New Zealand	NZ	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Papua New Guinea	PNG	..	..	..	..	..	..	..
Peru	PE	8,2	6,9	5,9	5,6	5,8	6,6	6,9
Philippines	PHL	13,1	13,3	13,4	14,6	15,3	16,2	15,2
Russian Federation	RUS	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Singapore	SGP	..	..	..	..	..	..	..
Sub-Saharan Africa (excluding high income)	SSA	18,693 2	18,304 3	17,927	17,418 5	17,134 2	17,062	17,364 9
Thailand	THA	10,5	9,9	9,4	9,1	8,8	8,6	8,6
United States	USA	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Viet Nam	VN	11,1	10,5	10,1	9,8	9	8,2	7,6
World	WLD	9,6	9,1	9,2	9	8,6	8,9	8,8