



Republic of Zimbabwe



HORTICULTURE SECTOR SKILLS STRATEGY 2022–2025

Skills for Trade and Economic Diversification | Fruits and Vegetables Value Chain

Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development
Ministry of Public Service, Labour and Social Welfare
Ministry of Industry and Commerce
Ministry of Lands, Agriculture, Fisheries, Water and Rural Development



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FOREWORD

Transforming the Technical and Vocational Education and Training (TVET) sector is one of government's strategy to particularly reduce unemployment and generally enhance the livelihoods of Zimbabwe. In line with the National Development Strategy (NDS1) priorities and Zimbabwe Horticulture Recovery and Growth Plan (HRGP), the Government of the Republic of Zimbabwe, through the Inter-ministerial and tripartite plus National Task Team co-chaired by the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development (MHTEISTD) and Ministry of Public Service, Labour and Social Welfare together with the Ministry of Industry and Commerce; and Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, developed this Horticulture Sector Skills Strategy (Fruits and Vegetables).

The Horticulture Sector Skills Strategy is a critical document that articulates the needs and galvanises a sector together with its key partners to address specific challenges and ensure that the technical and vocational education and training (TVET) that support human capital development in the fruits and vegetables value chain system functions well. The horticulture skills strategy intends to facilitate the integration of skills development into horticulture value chain development policies, thereby ensuring that the supply of skills is tailored not only to meet the skills demand of the fruit and vegetable value sector, but also to engineer the necessary growth in productivity which when sustained, will produce sustained decent employment.

In line with the National Development Strategy 1 (NDS1) and the Horticulture Recovery and Growth Plan, the vision of the horticulture sector is to grow its monetary value to US\$3.9 billion by 2025, anchored on upscaled primary production, and on a shift in focus from domestic to export markets; and improvements in the quality of horticulture products on the domestic market to boost import substitution, and regional markets in the short term, and in the long term re-orienting the sector from domestic market to more of high value export products.

This vision anticipates that the sector players will engage in mutually beneficial partnerships, joint ventures and outgrower schemes with international companies as a way of strengthening trading relations that will link them

to export trade value chains across the world as access to foreign markets remain a challenge for Zimbabwe.

The preparation of this skills strategy was under the framework of the Skills Anticipation component of the Skills Initiative for Africa (SIFA) Programme. SIFA (2019-2022) is a Programme of the African Union and African Union Development Agency (AUDA-NEPAD), assisted financially by the German Government and European Union. AUDA-NEPAD partnered with the International Labour Organization (ILO) to build the skills anticipation capacities of African Union Members States, as a means for improving the development of evidence-based skills policies, strategies and implementation.

The horticulture sector skills strategy developed by the Government of Zimbabwe brings together available research and data with sectoral analysis and provides a comprehensive overview of the employment structure in the sector and key trends affecting the demand for skills and labour using ILO's Skills for Trade and Economic Diversification (STED) methodology. It also sets out the supply of TVET for the sector; the current challenges facing the sector and the actions that need to be taken forward to ensure that the TVET system is fully responsive.

We hope this skills strategy does not only stimulate collective action, but also galvanises private sector/industry as it invest in their workforce, inform TVET institutions in their curriculum development and policy makers as they devise and implement the strategy.



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ACRONYMS AND ABBREVIATIONS

COVID-19	Coronavirus Disease 2019
CSO	Civil Society Organisation
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
HND	Higher National Diploma
HRGP	Horticulture Recovery Growth Plan
ICT	Information and Communications Technology
ILO	International Labour Organization
ISO	International Organization for Standardization
MSME	Micro, Small and Medium Enterprise
NFC	National Foundational Certificate
NC	National Certificate
ND	National Diploma
NDS1	National Development Strategy 1
NGO	Non-Governmental Organization
NTT	National Task Team
PUM	Programma Uitzending Managers
QLFS	Quarterly Labour Force Survey
SHE	Safety, Health and Environmental
STED	Skills for Trade and Economic Diversification
TVET	Technical and Vocational Education and Training
ZIMSTAT	Zimbabwe National Statistical Agency



1. INTRODUCTION

1.1. The need for a sector skills strategy

Horticulture is a fast-growing, major sub-sector of the agriculture industry in Zimbabwe. It makes significant contributions to nutrition, income and economic growth. The sub-sector has the potential to become one of the main sources of foreign exchange earnings and a significant driver of economic growth. As cited in the ILO Skills for Trade and Economic Diversification (STED) Zimbabwe Horticulture Background Study (2022), the horticulture sector is the fifth agricultural export earner, contributing 6.5% to the agricultural gross domestic product (GDP).

According to the findings of the ILO STED Zimbabwe Horticulture Background Study report of 2022 and STED Foresight Workshop with stakeholders, overall, the sub-sector suffers from low competitiveness; low-capacity utilization; limited quality standards; low technology levels; over reliance on rain-fed agriculture; corruption along the value chains; high levels of informalization and inconsistent application of good agricultural practices; and high labour intensity. Unfavourable prices; policy inconsistency; international sanctions; liquidity challenges and high cost of borrowing; absence of secure tenure; climate change; increase in pests and diseases and their transmuting variants; expensive and inefficient logistics; and a high skills deficit pose serious challenges to the sector's competitiveness for export growth.

Substantial growth opportunities however exist for Zimbabwe's horticulture businesses across domestic, regional and international markets, for both traditional and new products. If the sub-sector is to realise this potential, it is critical that the horticulture sector attracts, develops and retains a sufficient pipeline of a productive and skilled workers.

The Government of Zimbabwe acknowledges that the availability of skilled workers, particularly in high-value-adding sectors, such as horticulture, is key to maintaining competitiveness and attracting investment into the

industry. Skills are critical for enhanced production and productivity leading to production of high-quality produce that can compete on all market fronts. The ILO STED Zimbabwe Background Study report of 2022 notes that the country faces acute skills shortages, with a high skills deficit of 88% reported for the agricultural sector. The same report acknowledges the dominance of the challenges of skills mismatch and skills shortages in the horticulture sector, as is common to most African countries (ILO, 2021).

It is against this background that many countries have been targeting skills development policy towards three main objectives of matching supply to current demand for skills; helping workers and enterprises adjust to change; and building and sustaining competencies for future labour market needs (ILO, 2021).

This strategy forms part of the Government of Zimbabwe initiative to anticipate skills in Zimbabwe through the application of the STED methodology. The skills strategy is a direct response to the urgent need to develop priority skills of the horticulture sector for increased competitiveness, economic diversification and creation of more decent jobs in the economy. It is borne of a consultative and participatory process in which sector enterprises (including producers, processors and marketers), education and training providers, workers' and employers' organizations, government, development organizations and other relevant stakeholders in the horticulture industry have all contributed to its development.'

1.2. Sector definition and scope

The horticulture sector consists of three major pillars: fruits, flowers, and vegetables. The Government of Zimbabwe through its tripartite-plus National Task Team (NTT), involving a multi-stakeholder consultative process encompassing industry, workers, and employers, identified in the fruits and vegetables value chain sub-sector for STED analysis. This sub-sector has been identified as one of the priority sectors in the National Development Strategy 1 (NDS1) 2021–2025.

As identified in the background study, in this strategy, fruits include deciduous fruits (pineapple, apple, pear, peach, plum, apricot, and other stone fruits (nectarine)), grape, currant, melons and cantaloupes, citrus (oranges, grapefruit, lemons, mandarins), kiwi, lychee, blueberry, strawberry, raspberry, avocado, nuts, papaya and subtropical fruits (banana, mangoes, mangosteens, guavas, and passion fruit). Vegetables include cherry tomatoes, tomatoes, sweet corn, chillies and peppers, fine beans, asparagus, baby carrots, baby corn, butternut, gem squash, courgettes, mangetout peas, sugar snaps, peas, runner beans, baby onions, carrots and turnips, cauliflower, broccoli, chestnut, cow peas, cucumbers, mushrooms, artichoke, sweet potato, potatoes, green leafy vegetables (kale, covo, spinach etc.), cabbages, ginger and garlic.

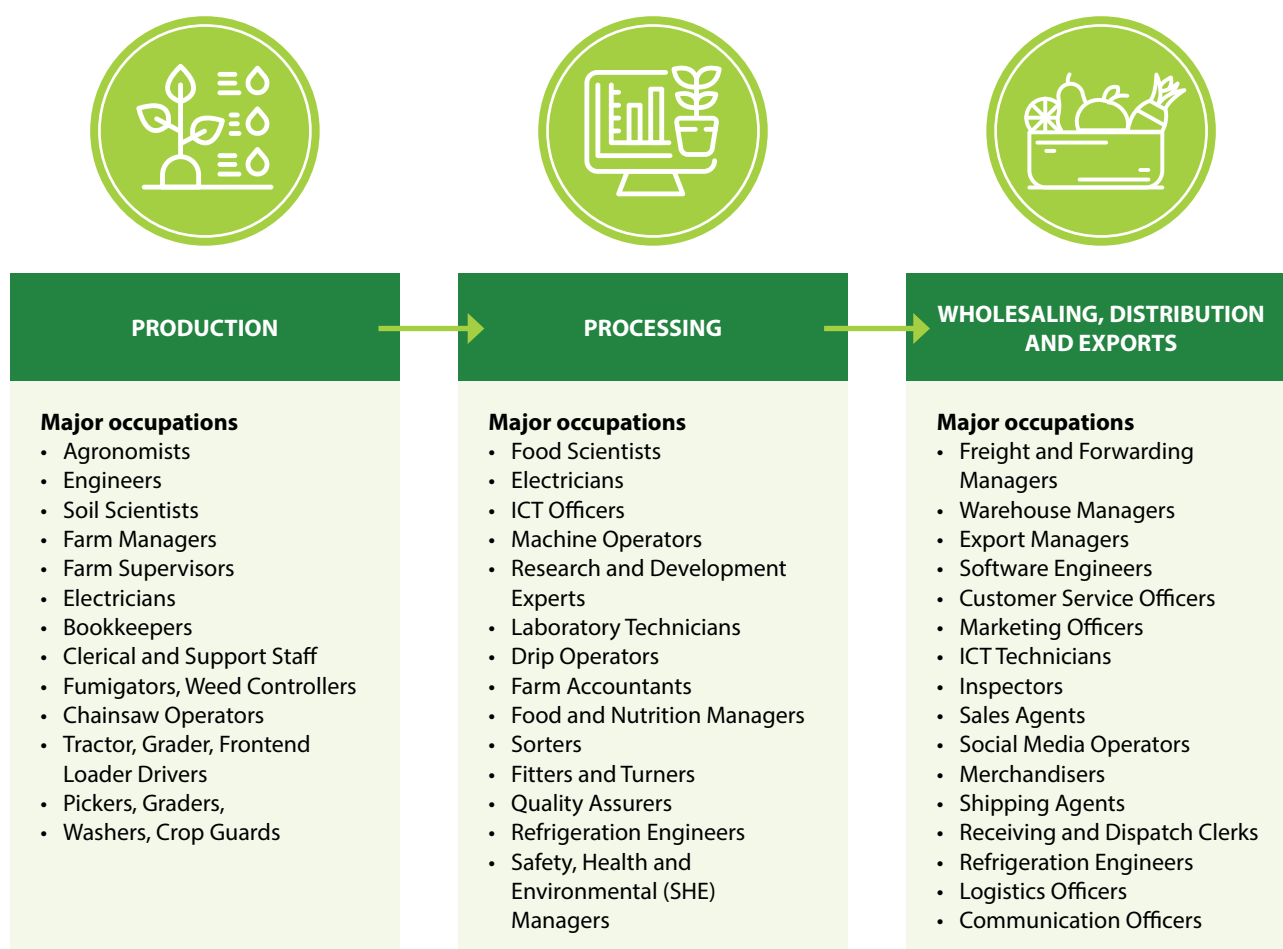
The value chain covers production, processing and marketing. It includes both domestic and export markets with a focus on all skills levels among key occupations

necessary to develop the sector's competitiveness for export growth, import substitution and economic diversification. The value chain is shown in Figure 1.

1.3. Sector skills strategy aims and scope

This skills strategy outlines both the current and future skills and labour requirements for the fruits and vegetables horticulture value chain. It further sets out a comprehensive action plan to ensure that the supply of skills and labour meets the requirements of the sector. The strategy stands to strengthen the sector's business capabilities for enhancing exports and economic diversification, enabling more and better jobs, and assisting policymakers to ensure that firms find workers with the right skills, and workers acquire the skills needed to find productive employment. It recognizes and supports the success of the HRGP, an implementation tool of the Agriculture and Food Systems Transformation Strategy that exists to support the development of the horticulture sector in the country.

Figure 1: Zimbabwe fruits and vegetable horticulture value chain



Source: Authors' compilation from the STED Foresight Workshop with stakeholders.

2. SHORT PROFILE AND SITUATION ANALYSIS OF THE SECTOR AND SUB-SECTORS

2.1 Economic profile

According to the Zimbabwe National Statistical Agency (ZIMSTAT) reports of 2019 and 2020, Zimbabwe had a GDP of US\$24.3 billion and a per capita income of US\$1 600 in 2018. The rebound after a decade of negative growth is attributed to the growth of the distribution sectors that have become dominant ahead of manufacturing and agriculture. The decline in agriculture GDP share, which employs up to 70% of the population (NDS1, 2020), however reflects worsening unemployment and poverty over the years. Following a downward trend over the years from 1990 to 2009, the value of agriculture exports averaged US\$1 billion per annum since 2010, mainly driven by tobacco (ILO STED Zimbabwe Horticulture Background Study, 2022).

2.2 Sector profile

Until the late 1990s, Zimbabwe's horticulture industry contributed 3.5 to 4.5% of national GDP, contributing significantly to the country's foreign exchange earnings. The sector at its peak in 2000 contributed over \$125 million in export earnings (ILO STED Zimbabwe Horticulture Background Study, 2022). Currently, the sector contributes less than 10% of national GDP, a situation which this strategy seeks to reverse.

The horticulture sector has significant unexploited export potential given the country's favourable climatic and geographic conditions. These are suitable for the production of most horticulture products with demand in international markets, including the UK, USA and Europe. Most of the high-value horticultural crops do well under greenhouse conditions. There are however fewer firms with modern world-class technology while a number of firms still lack modern technology along the entire value chain. There are large firms that have invested and have laboratories for in-processing, testing input quality and output certification. Regarding micro, small and medium enterprises (MSMEs), none have laboratories as they depend mostly on large firms as well as government laboratories which are slow and use outdated equipment. Along the entire value chain, labour intensity reduces efficiency/effectiveness thereby contributing to low output.



Low capacity utilization characterises most firms in the sector due to the volatile macro-economic environment currently prevailing in the country. As pointed out in the Foresight Workshop with stakeholders, although most large horticultural firms are International Organization for Standardization (ISO) certified and therefore enhancing their export capabilities, MSMEs do not follow specified quality management systems, therefore limiting their export potential as well as chances of securing contracts with large firms that are strict when it comes to quality management.

In Zimbabwe, horticulture production, processing and marketing of fruits and vegetables are predominantly practiced in the eastern and northern areas of the country. These lie in agro-ecological regions I and II characterised by favourable climatic conditions that support horticulture activities in these areas. Horticulture production, processing and marketing businesses are also located close to major urban areas such as Harare, Mutare and along major roads that connect with major urban settlements in the country.

Marketing of fruits and vegetables is done at wholesale and retail levels along the value chain. Wholesalers of fruits and vegetables consist of formal and informal organized networks of buyers who engage in bulk buying for purposes of repackaging and selling locally or for export. These include fruits and vegetable enterprises such as FAVCO, Frupac International and Food Lovers' Market. Big supermarkets and even informal trading businesses constitute part of the retail category in the fruits and vegetables sub-sector. Some small-scale farmers sell their produce in the formal markets. The produce from large-scale commercial farmers mainly goes to the export market, local retailers and food processing companies.

Top European countries importing fruit from Zimbabwe are the Netherlands, the UK, France and Ireland. For vegetables it is the Netherlands, the UK, France, Ireland, Germany, Belgium and Sweden. Overall, findings of the ILO STED Zimbabwe Horticulture Background Study (2022) show that Zimbabwe exports a higher volume of fruits than vegetables to countries like South Africa, Zambia, Vietnam, the UK and Bahrain. In 2020, South Africa accounted for 62% of fruit imports from Zimbabwe valued at US\$18.525 million while exports of fruits from Zimbabwe were valued at around USD33.803 million in 2019, a slight decline from USD35 million in 2018. Fruit

production and exports dominate over vegetables in the country.

The strategy attests to a huge potential for Zimbabwe to become a net exporter of both fruits and vegetables, reclaiming its regional market position alongside its competitors which include Kenya. The potential in the horticultural sub-sector follows from the fast growth potential that underlies most of the horticulture activities alongside growth in global incomes. The recent increase in the value of total vegetable exports from US\$52.3 million in 2010 to US\$87 million in 2018, suggests growth of potential markets—locally, regionally and internationally. Huge potential in value addition is however often hampered by a serious lack of processing skills and capital investment among MSMEs along the value chain.

The production and supply capacity of the sub-sector for the export markets have been disrupted by a lack of capital investment and in some cases outright disinvestments by the former farmers after the land reform programme. The new farmers who seek to venture into horticulture activities require adequate investment in both physical and human capital, especially with the requisite skills across the entire sub-sector value chain from production to final marketing.

“Horticultural businesses are located close to major urban areas such as Harare, Mutare and along major roads that connect with major urban settlements.”



2.3 Employment profile

The total number of employed persons in the fruits and vegetables value chain is 134 505. Of these, an approximate 56.9% are employees who mostly do not possess formal training from formal institutions of learning, and attain lower level secondary education, while 28.1% are employers, leaving 15% for the rest of occupations (Table 1).

Table 1: Distribution of employed persons 15 years and above in the horticulture sub-sector by status in employment and sex (Quarter 4: 2021)

Status in Employment	Number			Percent		
	Male	Female	Total	Male	Female	Total
Employees	39 954	36 545	76 499	54.2	60.1	56.9
Employers	27 459	10 297	37 756	37.3	16.9	28.1
Own account workers	472	1 890	2 362	0.6	3.1	1.8
Contributing family workers	5 786	12 102	17 887	7.9	19.9	13.3
Total	73 671	60 834	134 505	100	100	100

Source: Zimbabwe QLFS, Quarter 4: 2021 data as reported in the ILO STED Zimbabwe Horticulture Background Review Study, 2022.

Employment contractual arrangements for the sub-sector include a mixture of permanent contract workers and casual labour. The Foresight Workshop with stakeholders showed that the majority of the MSMEs are operating informally. Occupational standards such as personal protective equipment, safety and health standards are not properly adhered to. Levels of remuneration are not aligned to global standards hence leading to brain drain which then has implications for the quality of produce. The majority (90.6%) earn less than ZW\$10 000 (USD100 equivalence at the auction rate and USD at the alternative market rate as of October 2021) per month according to the Zimbabwean Quarterly Labour Force Survey (QLFS) (2021).

A breakdown of the workforce in the horticulture sub-sector (Table 2) further identifies that skilled agriculture workers dominate at 65%, followed by elementary occupations at 23.7%, leaving 12% for the rest of the occupations. Horticulture is a complex business that requires complex skills along the entire value chain. However, the complexity of skills varies with the size and nature of horticulture business, with highly specialised skills found among medium- to large-scale businesses from production, processing, to marketing. The high skills deficit in the sub-sector, especially for specialised skills such as cold chain logistics, and processing skills, is reflected in the low number of people engaged in the production of complex horticulture crops such as grapes and citrus.

Table 2: Distribution of employed persons 15 years and above in the horticulture sub-sector by horticulture sub-group and sex (Quarter 4: 2021)

Horticulture Sub-group	Number			Percent		
	Male	Female	Total	Male	Female	Total
Growing of vegetables and melons, roots and tubers	50 178	49 964	100 142	68.1	82.1	74.5
Growing of grapes	-	656	656	0.0	1.1	0.5
Growing of tropical and subtropical fruits	12 177	6 042	18 219	16.5	9.9	13.5
Growing of citrus fruits	2 436	575	3 011	3.3	0.9	2.2
Growing of other tree and bush fruits and nuts	4 534	2 951	7 484	6.2	4.9	5.6
Growing of oleaginous fruits	646	646	1 292	0.9	1.1	1.0
Growing of spices, aromatic, drug and pharmaceutical crops	3 700	-	3 700	5.0	0.0	2.8
Total	73 671	60 834	134 505	100	100	100

Source: Zimbabwe QLFS, Quarter 4: 2021 data as reported in the ILO STED Zimbabwe Horticulture Background Review Study, 2022.

2.4 Drivers of change, enablers and key major trends and their likely impact on employment

A number of factors will affect the demand for labour and type of skills required across the value chain, as demonstrated in Figure 2. These drivers are predominantly interconnected, and strategies to address specific drivers are liable to have wider effects. For example, migration of workers and or horticultural businesses in Ukraine and Russia as a result of the conflict in Eastern Europe provides increased opportunities for Zimbabwe to tap into new international markets. Globalization also contributes to the growing demand for horticultural products. Both factors will require that the fruit and vegetable businesses along the entire value chain attract, develop and retain a sufficient pipeline of a productive and skilled workforce to meet the export demands in terms of quantity and quality.

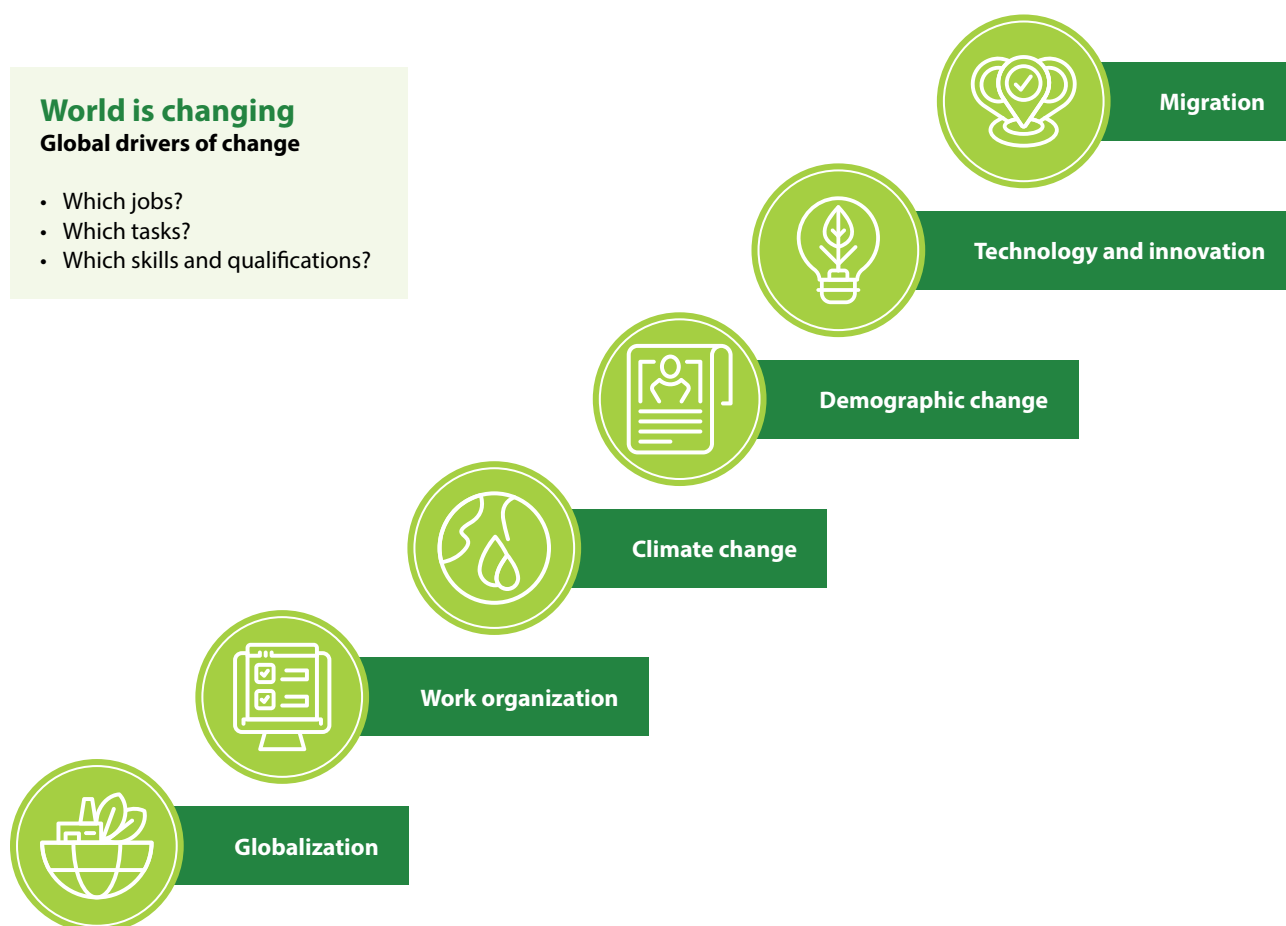


Figure 2: Drivers of change in the fruits and vegetables value chain

At production level, this requires reskilling and upskilling of key occupations for sector competitiveness, as identified in the Foresight Workshop with stakeholders:

- Farm workers and fruit/vegetable sorters: product knowledge and handling skills; health and safety skills; quality and compliance skills; soft skills; literacy skills; and communication skills
- Machine operators: machine operating skills; communication skills
- Irrigation technicians: calibration skills; quality and compliance skills; product handling skills; communication skills
- Agro-technicians: agronomy skills; communication skills; soft skills.

At processing level: The training of refrigeration technicians/technologists is required to meet the quantity gap in the sub-sector. Laboratory technicians/technologists require reskilling and upskilling in standards and compliance regulatory skills while more food safety technicians, food scientists and quality management experts must be trained. Electricians need reskilling and upskilling in e-communication skills.

At marketing level: The sub-sector has both quantity and quality gaps for logistics officers, information and communications technology (ICT) officers and quality management experts. Transport and logistics skills training is required to increase competitiveness in the value chain as well as ICT skills training and upgrading. Salespeople need digital skills and communication skills; marketing officers/digital marketing officers require upgrading in marketing skills, digital skills, and computer operating skills; documentation officers/shipping agents need upskilling in data management skills, communication skills, digital skills, re-skilling and licensing to match current standards; and communication officers need communication skills and digital skills.

In addition, horticulture businesses of nowadays differ from those 20 years ago due to drivers of change such as technology/innovation and climate change. Manual tasks and activities within certain occupations are fast being replaced by machinery and automation, with some activities requiring new occupations. Climate change in the form of extreme weather events such as floods and droughts have also contributed to technological changes in farming methods affecting the demand for labour and type of skills required. Examples of technological improvements that are likely to affect the demand for labour and type of skills required include the Internet of Things, precision irrigation, drone farming, adoption of information management systems, e-business standards, digital economy, hydroponics farming, green economy, climate smart agriculture, mobile technology, automation and optimization of firm operations, for example the use of drones with sensor and imaging capabilities to identify pests and diseases.

The sub-sector will require reskilling and upskilling in the following areas as identified in the foresight and validation workshops with stakeholders:

“Technological improvements that are likely to affect the demand for labour and type of skills required.”

At production level: Digital skills; mobile technology skills; product knowledge and handling skills; health and safety skills; quality and compliance skills. These



skills, among others, are required for farm workers and fruit/vegetable sorters. Machine operators, irrigation technicians and agro-technicians will require training in automation; precision farming; green economy; waste management skills; climate smart agriculture; hydroponics; drone operation skills; and digital skills, among others.

At processing level: Refrigeration technicians/technologists are required and the skills needs include digital skills; automation skills; and quality and compliance skills. Laboratory technicians/technologists require digital skills, and electricians require green energy innovation skills.

At marketing level: Digital skills and mobile technology operating skills are required for salespeople and communication officers, while marketing officers/digital marketing officers, documentation officers/shipping agents and logistics officers will require upskilling in digital information management skills; e-business standards; website operating skills; and social media management skills for platforms such as LinkedIn, Twitter and Facebook.

Rapid urbanization in Zimbabwe is also a major driver of the horticulture sub-sector, increasing demand for vegetables such as tomatoes, onions, and leafy vegetables, while the outbreak of pandemics such as the coronavirus disease 2019 (COVID-19), have the potential to disrupt and introduce a 'new normal' in work organization among horticulture businesses that could lead to job losses for some occupations.

3. PROFILE OF MAJOR OCCUPATIONS AND KEY SKILLS IN THE SECTOR

(includes occupational map with major skills areas for each)

The fruits and vegetables sub-sector consists of a large variety of occupations given the nature of its size and scope of business activities, see Table 3.

Table 3: Major occupations and key skills in the sector

Major occupation groups	Critical skills
At production level	
Executive or managing directors; farm owners	Entrepreneurial skills; financial management skills; operations management skills; project management skills; strategic management skills
IT specialists; agronomists; engineers; project managers; soil scientists	ICT skills, graduate development and hands-on or on-the-job training skills
Farm managers; farm supervisors, human resource managers; plumbers; electricians; mechanics; extension officers	Management and supervision skills; negotiation and delegation skills; finance for non-finance managers skills; communication skills; agronomy skills
Bookkeepers; clerical and support staff	Financial literacy skills; communication skills
Fumigators; weed controllers	Chemical handling skills; communication skills
Chainsaw operators; tractor, grader, frontend loader drivers; machine operators	Need skills upgrading or licensing to meet current standards; equipment handling skills; communication skills; transport and logistics skills training
Pickers, graders; washers; sprayers; crop guards; health workers	Health and safety skills; spraying skills; soft skills; literacy skills; communication skills
At processing level	
SHE managers; food and nutrition managers; refrigeration engineers; warehouse managers; accountants	SHE skills upgrading to meet global standards; communication skills; food and nutrition managers are in short supply and more refrigeration engineers must be trained
Field supervisors; quality assurers; refrigeration controllers; mechanics; laboratory technicians	Training of refrigeration controllers; standards and compliance regulatory skills
Field drivers; warehouse operators; machine operators; fitters and turners	Product handling; machine operating skills; boiler maintenance skills
Post-harvest handlers-pickers; graders	Product knowledge and handling skills; communication skills
At marketing level	
Freight and forwarding managers; export managers	More skilled people needed in these areas
Software engineers	Quantity and quality gap—not so many of them in the country thus more trained people needed
Customer service officers; marketing analysts; ICT technicians; inspectors	Communication skills; marketing skills; ICT skills training and upgrading; inspectors are in short supply and more should be trained
Sales agents; social media operators; merchandisers; shipping agents	Communication skills; digital skills; reskilling and licensing to match current standards

Source: Foresight Workshop with stakeholders.

4. THE SUPPLY OF SKILLS

4.1 Key institutions, formal programmes and qualifications relevant to the sector

There is a wide spectrum of horticultural specific and related training available at different educational levels to support production, processing and marketing functions along the value chain. The key message emanating from the Foresight Workshop with stakeholders, Table 4, is that in real-life the major suppliers or sources of skills to the horticulture sector in Zimbabwe are TVET colleges, in-house or on-the-job training, experienced workers coming from outside the farm, informal training and to a lesser extent universities. The latter supplies the more specialized skills required by the sector.

Table 4: Real-life sources of skills supply and providers

Key: X=not a source; XX=minimal source; XXX=a source; XXXX=a major source

Key Occupation/Source of Supply	TVET/Skills Training Colleges	Universities	Apprentices/ Trainees	Informal Training	Skilled Workers from Outside	Internally Reskilled and Upskilled
Farm worker	XX	XX	XXXX	XXXX	XXXX	XXXX
Sales person	XXX	XXX	XXX	XXX	XXXX	XXXX
Agro-technician	XXXX	XXXX	XXX	XXX	XXXX	XXXX
Irrigation technician	XXXX	XXX	XXXX	XXXX	XXXX	XXXX
Electrical technician/ technologist	XXXX	XXX	XX	XX	XXXX	XXX
Refrigeration technician/ technologist	XXXX	XXX	XX	XX	XXXX	XX
Fruit/vegetable sorter	XX	X	XXXX	XXXX	XXX	XXXX
Machine operator	XXX	XXX	XXX	XXX	XXXX	XXXX
Laboratory technician/ technologist	XXXX	XXXX	X	X	XXXX	XX
Food safety technician	XXXX	XXXX	X	X	XXXX	XX
Food scientist	XXXX	XXXX	X	X	XXXX	X
Documentation officer	XXX	XX	XX	XXX	XXX	XXXX
Marketing officer	XX	XXXX	X	XXX	XXXX	XXXX
Logistics officer	XXXX	XXXX	X	X	XXXX	XXXX
Quality management officer	XXX	XXXX	X	X	XXXX	XXX
ICT specialist	XXX	XXXX	X	X	XXXX	XXX
Communication officer	XXX	XXXX	X	X	XXXX	XXX

Source: Foresight Workshop with stakeholders.

Although all TVET colleges in Zimbabwe are mandated to train and produce competent and skilled graduates for the job market, evidence on the ground shows the opposite. According to the ILO STED Zimbabwe Horticulture Background Report (2022), very few agricultural workers along the value chain have formal qualifications that go beyond certificate level. The majority have attained primary and secondary school education only, supplemented by in-house training. Therefore, the country faces acute skills shortages. The report observed that across the horticulture value chain a critical shortage of skills for all the key occupations in the sector exists in terms of both quality and quantity (see section 7 of this strategy). For the universities, it is generally felt that the curriculum is too theoretical and divorced from the needs of industry, hence it is not sufficiently broad to equip firms with the skills required to be successful along the value chain.

At production level, firms recruit agro-technicians and irrigation technicians who are mostly inexperienced workers entering the labour force as qualified graduates from TVET/skills training institutions, and skilled experienced workers from outside the firm. From the Foresight Workshop with stakeholders, it was noted that there is a need to train more irrigation technicians as they are in short supply. Both agro-technicians and irrigation technicians must be reskilled and upskilled with agronomy skills, calibration skills, quality and compliance skills, product handling skills, communication skills as well as soft skills to improve competitiveness of the sector for export growth.

According to the ILO STED Zimbabwe Horticulture Background Study Report of 2022, many public and private agriculture colleges in Zimbabwe offer a National Diploma (ND) in Horticulture; National Certificate (NC) in Horticulture; HEXCO NC in Horticulture; Diploma in Agriculture; and Horticulture Farmer Training (one- to four-month course). Course content includes horticulture production and agribusiness; horticulture technology; horticulture marketing, horticulture management; agricultural machine technology; machinery management; irrigation and drainage engineering. The Demonstration Centre of China at Gwebi College offers practical training on agricultural technology. Among the new courses introduced are conservation agriculture and agricultural technology, for example the application of hydroponics farming techniques that promote water conservation. However, the curriculum of these agricultural colleges

generally does not include training in automation; precision farming; green economy; water harvesting; waste management skills; climate smart agriculture; hydroponics; drone operation skills; and digital skills that are required at production level for increased sector competitiveness, as pointed out in the Validation Workshop with stakeholders. Graduates from universities rarely supply skills for agro-technicians and irrigation technicians.

Formal apprenticeships and or traineeships and short or initial training offered by firms and other private sector players provide training for farm workers, fruit/vegetable sorters and machine operators. These require upskilling and reskilling in product knowledge and handling skills; health and safety skills; quality and compliance skills; soft skills; literacy skills; communication skills; and machine operating skills. Companies such as Farmec and private organizations like Programma Uitzending Managers (PUM), play a critical role in providing in-house skills development in the horticulture sector in Zimbabwe (ILO STED Zimbabwe Horticulture Background Study, 2022). The existing Junior School Agriculture Syllabus and Horticultural Syllabus at secondary school level with course content that include background to horticulture; production technology; plant physiology; soil and water management; plant protection; landscaping and ornamental plants; floriculture; vegetable production; fruit production; and herb and spice production, play a critical role in providing training for farm workers, and fruit/vegetable sorters.

At processing level, there is a need for training of more refrigeration technicians/technologists through TVET/



skills training institutions with digital skills, automation skills and quality and compliance skills. There is also a need for reskilling and upskilling of laboratory technician/technologists who are mostly recruited from TVET/skills training institutions in standards and compliance regulatory skills, and digital skills, while more food safety technicians, food scientists and quality management experts need to be trained by universities. Electricians mostly recruited from TVET/skills training also need reskilling and upskilling in e-communication skills and green energy innovation skills. Vocational training centres such as Ponesai Vanhu, Kaguvi, Chaminuka and Mashayamombe offer training for the sector at different levels including Higher National Diploma (HND), ND, National Foundational Certificate (NFC) and Training for Enterprise courses in welding, tourism and hospitality, motor mechanics, carpentry, building, and autoelectrics.

At marketing level, polytechnics and industrial training colleges run all TVET courses relevant for the sector. The Foresight Workshop with stakeholders noted a need for training of more logistics officers, ICT officers and quality management experts as well as the need to reskill and upskill these. Transport and logistics skills training is required to increase competitiveness in the value chain as well as ICT skills training and upgrading. Salespeople need digital skills, mobile technology operating skills, and communication skills. Marketing officers, digital marketing officers, communication officers and documentation officers/shipping agents require upgrading in marketing skills; digital skills; communication skills; and computer operating skills as well as digital information management skills; e-business standards; website operating skills; and LinkedIn, Twitter and Facebook management skills. The current training offered by polytechnics and industrial training colleges runs at various levels of qualifications that include the NC, ND and HND levels. These include motor mechanics; science technology; ICT; motor cycle mechanics; water resources and irrigation engineering; secretarial studies (office management); management; accountancy; human resource management; automotive engineering; civil engineering; construction engineering; electrical and power engineering; mechanical and production engineering. Bachelor of Technology (B-Tech) degree programmes cover fields such as marketing management; quality assurance and food safety; payroll administration; purchasing and supply management; refrigeration; and horticulture.

Universities also support the development of skills for communication officers, ICT officers, quality management experts, and marketing officers/digital marketing officers at both undergraduate and postgraduate levels.

4.2 Enrolments and completion data for relevant courses by region and providers

The TVET institutions provide support for the majority of the workforce in the sector along the entire value chain. The available data on enrolments focus on those courses that prepare someone for entry into the sector, see Table 5.

Table 5: Enrolment in polytechnics and industrial training colleges 2015–2020/graduation

Year	Male	Female	Total
2015	12 939	7 329	20 268
2016	13 495	7 159	20 654
2017	14 966	8 604	23 570
2018	15 026	9 337	24 363
2019	19 499	15 437	34 936
2020	18 647	14 062	32 709

Source: ZIMSTAT, 2021.

The enrolment figures from the ZIMSTAT report of 2021 show that there were 32 709 students enrolled at polytechnics and industrial training colleges in 2020. The intake rates have been rising over time for both male and female students although more males were enrolled in each year compared to their female counterparts.

A total of 171 learners had enrolled into various TVET centres offering specialised horticultural training, up to ND level in 2019 (Table 6). The statistics show that more women (101) than men (70) enrolled for horticultural training.

Table 6: Qualification level and horticulture enrolment statistics by gender 2019

Key: *= training up to NFC; ***= training up to ND

TVET Institution	Male	Female	Total
Bulawayo Polytechnic***	7	5	12
Harare Polytechnic***	13	28	41
JM Nkomo Polytechnic***	0	3	3
Kushinga Phikelela Polytechnic***	5	18	23
Masvingo Polytechnic***	12	23	35
Mupfure Industrial Technical Centre*	14	2	16
Mutare Polytechnic***	19	22	41
Total	70	101	171

Source: ZIMSTAT, 2020.

There is however no data to show the amount of training that had been undertaken with the existing workforce for the sector. Given the amount and range of skills gaps in the sector it will be crucial to have a better understanding of this and the collection of data should be a priority for the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development.

4.3 Work-based learning (nature and scope), and other informal and non-formal sources of skills supply (vendors, different line ministries, civil society, etc.)

Training for the workforce at production level is often informal, work-based learning, which is undertaken on-the-job. Depending on the size of the business, training is delivered either by firm owners or supervisors or through an informal apprenticeship system or formal sector trainers, including industry, development partners, civil society organisations (CSOs), and agricultural extension officers. These trainers provide specific training to address specific skills needs. Development partners and CSOs provide more targeted training compared to TVET and universities.

ZimAgriHub, Farmec and PUM offer work-based learning training to all levels of businesses along the value chain. The Zimbabwe Institute of Management offers general training in transport and logistics management from certificate to diploma level. The course modules include freight logistics management and warehouse and retail logistics management. Currently no agricultural or TVET college offers specialized training in cold chain which is important in post-harvest and handling of horticulture produce. Neither is there any one-stop model or specialized horticulture institute in Zimbabwe that provides agricultural education and training from production to the end of the horticulture value chain.

There is also formal training from private sector institutions, for example the Citrus Academy offers training in packhouse and marketing management. According to the Validation Workshop with stakeholders, firms are sending workers outside Zimbabwe for specialised training, which this strategy seeks to reverse as it is costly and difficult to manage and coordinate for improved sector efficiency.

After receiving work-based training, team leaders or champions are identified to facilitate the practice of the required skills. A similar approach is used in the training of staff hired from within the industry but requiring the development of more specific skills.

Overall, MSMEs get support from extension officers and community engagement, but it is often ad hoc.

5. SUPPLY-SIDE CHALLENGES AND CONSTRAINTS

There are some serious barriers and challenges inhibiting the supply and retention of key occupational skills needed by the sector. These barriers and challenges are based on information gleaned from discussions with leading horticulture producers, government officials, education and skills training providers and deliberations that took place at the foresight as well as the validation workshops with stakeholders and include the following:

- An acute shortage of training materials and workshops to conduct training was highlighted as a key challenge that compromised both the quantity and quality of the graduates, particularly in terms of practical skills acquisition and numbers that can be enrolled at any given time.
- It was also pointed out that the current structure of TVET syllabi is now outdated. The participants at the Foresight Workshop and horticulture producers who had been interviewed earlier on indicated that the course content and its delivery is still highly theoretical, implying a need to strengthen and give more prominence to the practical aspect of horticulture skills training in the country.
- Attachment not effectively nurturing students. The interviewed TVET lecturers pointed out that students were not being sent to the right institutions for their attachment and as a result they are not acquiring the right knowledge and practical skills sets.
- It was also revealed that both staff and student mobility has generally been constrained by the prevailing economic challenges. This has negatively affected the promotion and strengthening of vital linkages between skills training institutions and the private sector which provides both industrial on-the-job training opportunities and the relevant course and programme content.
- Shortage of lecturers was singled out as a major challenge, adversely affecting both the quantity and quality of skills being supplied by the education and skills providers in the country. In particular, it pointed out a huge deficit of teaching staff with the requisite experience in most TVET colleges across the country.



- Lack of collaboration and coordination between education and skills training institutions and the private sector was singled out as another critical challenge. According to the feedback from the Foresight Workshop participants, this is a major issue of concern because the private sector is not in a position to influence the curriculum of these institutions to make it relevant to the skills needs of the horticulture sector.
- Poor financing of TVET institutions and capacity to manage them properly were also cited as major problems, thus adversely affecting both the quality and quantity of skills being produced.
- Some of the respondents also pointed out the absence of a robust quality assurance system as a major challenge. This has actually resulted in the overall poor quality of training, leading to low quality of skills acquired by the trainees on graduation.

During the same Foresight Workshop, participants were again divided into three working groups in which they were then asked to score the severity of a set of given constraints and challenges to the supply of the right skills on a scale from 1 to 3, with 1= not a constraint and 3= a key constraint. The results of this exercise are shown in Table 7. It turned out that all the cited constraints were indeed either key constraints or just constraints for both TVET institutions and universities with some exceptions for apprenticeship and workplace-based training, as was already confirmed in earlier interviews and discussions with horticulture producers and education and skills training providers.

Table 7: Supply constraints for the right skills for selected skills supply sources

Key: X= not a constraint; XX= a constraint; XXX= a key constraint

Source of Skills/Constraint	TVET Colleges	Universities	Apprenticeship	Workplace Training
Lack of national skills policy and strategy	XX	XX	X	XX
Poor governance and stakeholder coordination	XX	XXX	X	X
Lack of funding	XXX	XXX	X	XXX
Relevance of curriculum and qualifications	XX	XXX	XX	XX
Poor delivery and assessment practices	XXX	XXX	XX	XX
Lack of access to training for targeted group	XXX	XXX	XX	X

Source: Foresight Workshop with stakeholders.





6. SECTOR VISION FOR THE FUTURE

The horticultural industry envisages developing and transforming a robust competitive horticulture sub-sector consisting of value chains capable of increasing productivity while ensuring sustainable supply of high-quality produce for domestic, regional and international markets.

It would require that the sector have a skilled and productive workforce to meet its vision and that TVET and tertiary education provision adapts to meet the needs of the sector in developing the skills of the future workforce while supporting the development of the existing workforce.

6.1 Sector envisioning

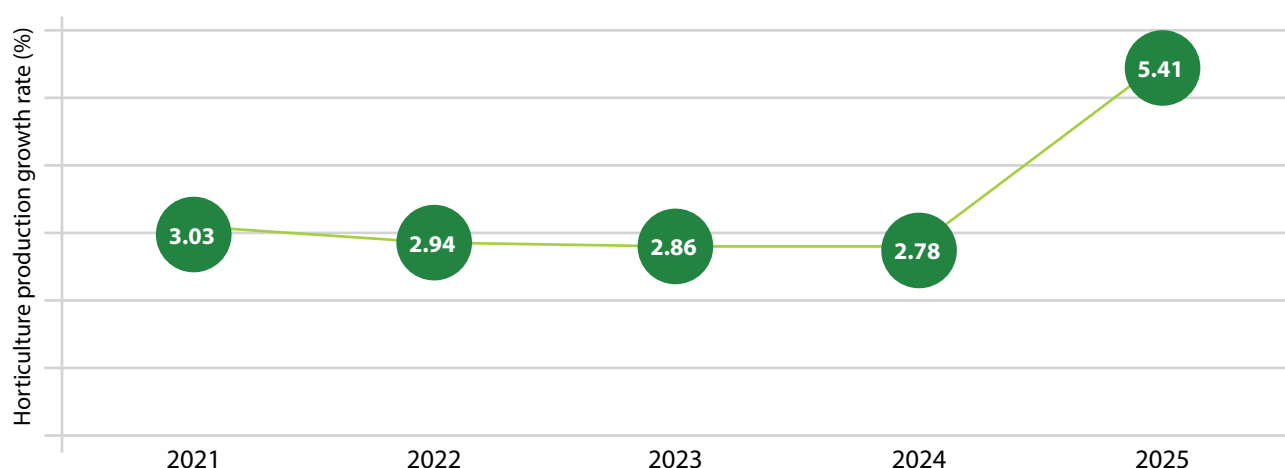
In line with the NDS1 and the Horticulture Recovery and Growth Plan, the vision of the horticulture sector is to grow its monetary value to US\$3.9 billion by 2025, anchored on upscaled primary production as well as on a shift in focus from domestic to export markets, improvements in the quality of horticulture products on the domestic market to boost import substitution and regional markets in the short term, and re-orienting the sector from domestic market to more high-value export products in the long term.

This vision anticipates that the sector players will engage in mutually beneficial partnerships, joint ventures and outgrower schemes with international companies as a way of strengthening trading relations that will link them to export trade value chains across the world as access to foreign markets remain a challenge for Zimbabwe.

6.1.1 Simple model for projecting labour demand by occupation

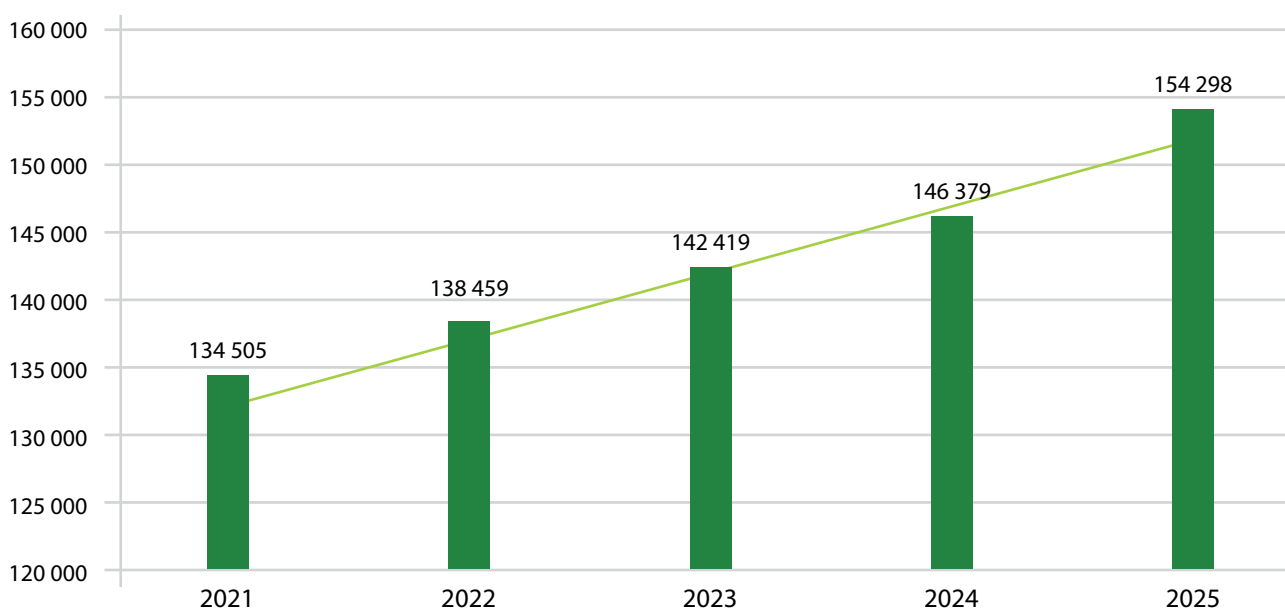
Based on the sector envisioning, we developed a simple model projecting labour demand by occupation using data collected from the Zimbabwe 2021 Labour Force Survey. The survey data were collected for the broad occupational categories which are different from the specific occupations identified in the desktop review and consultative meetings. Due to a lack of historical data for making a quantitative analysis and modelling skills requirements for these occupational categories, skills demand was modelled using the broad occupation categories as reported by ZIMSTAT using a simple quantitative model but in a qualitative way, so as to provide a reality check. The broad occupations identified in the ZIMSTAT Labour Force Survey include managers; skilled agricultural, forestry and fishery workers; elementary occupations; service and sales workers; craft and related trades workers; professionals; clerical support workers; plant and machine operators and assemblers; technicians and associate professionals. It should be noted that the occupational demand projections produced by the model may not exactly reflect actual demand but provide an approximate scale of demand.

In order to forecast the total labour demand in the horticulture sector in Zimbabwe, we link total horticulture production as projected in the NDS1 to employment. According to the ZIMSTAT 2021 Labour Force Survey, there were 135 505 workers in the horticulture industry in 2021. From the production targets projected in the NDS1, the annual horticulture production growth rates are shown in Figure 3.

Figure 3: Zimbabwe horticulture target production growth rates (2021–2025)

Source: Authors' calculations based on NDS1 production targets¹.

We then use the growth rates in Figure 3 to forecast the demand in labour as production increases. *Ceteris paribus*, increasing production entails increasing the labour employed in the sector across the whole value chain. If total production increases and producers and processors access more lucrative export markets, employment will rise, assuming that labour productivity stays the same. The forecasting is also based on the assumption that employment will grow by the same output real growth rate. The effect of the increase in employment due to greater production resulting from better access to more lucrative export markets, is presented in Figure 4.

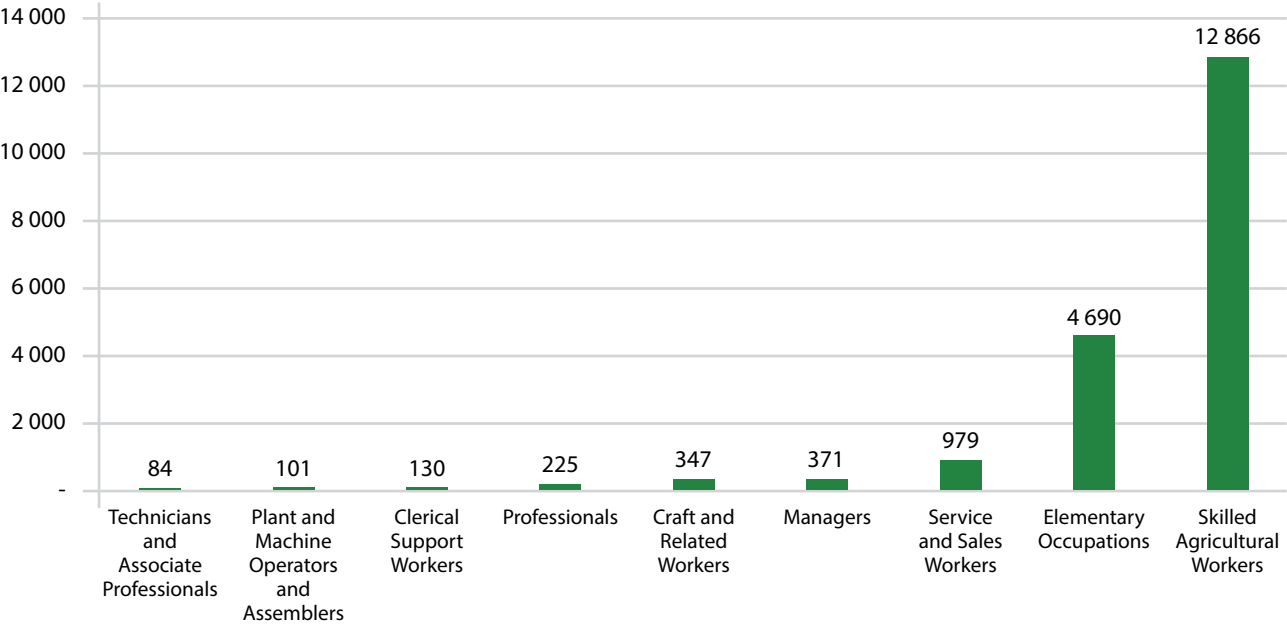
Figure 4: Projected employment levels in Zimbabwe's horticulture sector (2021–2025)

Source: Author's calculations based on ZIMSTAT (2021).

¹ These growth rates are computed based on set targets in the NDS1.

These projections point to an additional total labour requirement of approximately 19 793 workers by 2025. However, it should be noted that additional labour demand arising from retirement or workers leaving the sector is not accounted for. Combining this with a projection of the increase in employment by occupation based on the data from the ZIMSTAT 2021 Labour Force Survey and the NDS1 horticulture production targets, produces the projection of additional employment by occupational area shown in Figure 5.

Figure 5: Projected additional labour requirements by occupation area in horticulture sector in 2025



Source: Authors’ calculations based on ZIMSTAT (2021).



7. GAPS IN SECTOR CAPABILITIES AND INVENTORY OF SKILLS NEEDED TO ACHIEVE THE SECTOR VISION

Labour shortages and skills gaps have been identified through a consultative and participatory STED Foresight Workshop with sector and national stakeholders, sector enterprises, workers and employers' organizations, government and other stakeholders. The analysis revealed an array of business capability gaps and critical skills that are either in short supply at the moment or completely non-existent but which will be greatly demanded by the horticulture sector in the very near future.

7.1 Production capability gaps

At production level, the following emerged as key gaps for the sub-sector:

- Production knowledge gap (prices, quantities to produce and sustainable farming methods to increase productivity);
- Working capital inadequacy;
- Infrastructure gaps on electricity supply, packhouses, irrigation equipment, greenhouses, tractors, automated technology;
- High cost of production;
- Absence of supplier contracts;
- Lack of packaging technologies;
- Partial implementation of quality management systems;
- Lack of farm management, mechanization and automation skills;
- Lack of ICT competencies and inability to use various relevant production software;
- Inability to use blockchain technology to effect traceability of farm products;
- Lack of skills to exploit alternative sources of energy;
- Lack of procurement skills; lack of financing and financial management skills;
- Lack of skills to develop new seed varieties and controlling new diseases and pests; and
- Soil testing gap.



7.2 Processing capability gaps

At the processing level, stakeholders expressed concern over a wide gap that exists in terms of:

- Technology availability which is currently adversely affecting competitiveness;
- Weak global quality standards and or quality management, particularly ISO certification which is important for exports and is difficult to satisfy, particularly for MSMEs;
- Cold chain management and energy gap;
- Complex import and export procedures;
- Transport and financing gap;
- Limited availability of laboratories—although most large firms have access to these, it is not the case with small scale producers; and
- Waste management where a low off-take from potential collectors was noted.

7.3 Marketing/distribution and logistics gaps

The fruits and vegetables horticulture sub-sector suffers from:

- Lack of farm insurance, making it difficult to meet specifications of the export market;
- Lack of compliance officers for both regional and international markets;
- Lack of qualified agricultural certified agents;
- Lack of reliable logistics and cold chain facilities, thus adversely affecting the ability to meet international product standards;
- Compliance challenges where inspectors or compliance officers are not readily available;
- Market development challenges and lack of exposure, in particular export market development skills;
- Tariff and non-tariff barriers;
- Lack of aggregation centres and facilities;
- Lack of biotechnology labs, thereby hindering ability to detect pests and export produce; and
- Lack of proper business intelligence and marketing trends.



These capability gaps and their anticipated skills implications and needs are contained in Table 8.

Table 8: Production capability gap, key occupations and skills implications for the horticulture sector in Zimbabwe

Major Skills Category	Key Occupations	Skills Implication
1. Low-skilled workers	Pickers; graders; washers; sprayers; crop guards; health workers, etc.	Health and safety skills; spraying skills; soft skills; literacy skills
2. Operators/artisans	Chainsaw operators; tractor drivers; grader drivers; frontend loader drivers	Need skills upgrading or licensing to meet current standards; equipment handling skills
3. Technicians—diploma level	IT specialists; plumbers; electricians; mechanics; fumigators; weed controllers; bookkeepers; clerical and support staff	Equipment handling skills; chemical handling skills; financial literacy skills
4. Middle managers—HND/degree	Farm managers; farm supervisors; human resource managers	Management and supervision skills; negotiation and delegation skills; finance for non-finance management skills
5. Engineers/professions (senior)—technical and management level	Agronomists; engineers; project managers; soil scientists	Graduate development and hands-on or on-the-job training skills
6. Managers	Executive or managing directors; farm owners	Entrepreneurial skills; financial management skills; operations management skills; project management skills; strategic management skills

Source: Foresight Workshop with stakeholders.

The analysis of the production capability gap shows the relative shortage of essential skills across all major skills categories and key occupations for both the low- and high-skilled workers. For the unskilled or low-skilled workers, gaps exist in terms of health and safety skills; spraying skills; soft skills; and literacy skills. For technical professional categories the skills shortages are of a technical, financial and management nature. These shortages are in terms of quantity and quality and calls for both urgent reskilling and upskilling of the current workforce.

Table 9: Technology/processing capability gap, key occupations and skills implications for the horticulture sector in Zimbabwe

Major Skills Category	Key Occupations	Skills Implication
1. Low-skilled workers	Fruit pickers; washers; sorters; food handlers; drip operators	e-communication skills
2. Operators/artisans	Drivers; machine operators; bookkeepers; clerks; data capturers; storekeepers; electricians	Bookkeeping skills, transport and logistics skills training
3. Technicians—diploma level	Extension officers; marketing officers; laboratory technicians; ICT officers; administrators	e-communication skills; agronomy skills; calibration skills
4. Middle managers—HND/degree	Supervisors; team leaders; marketing managers; sales managers; food scientists	e-communication skills; data analysis skills; computer operating skills
5. Engineers/professions (senior)—technical and management level	Specialist researchers; research and development experts; farm accountants; farm managers	Data analytics skills; programming skills; e-communication skills
6. Managers	Executive managers	Entrepreneurial and management skills

Source: Foresight Workshop with stakeholders.

The findings from the Foresight Workshop with stakeholders on technology/processing capability gaps also show the scarcity of priority skills across all major skills categories and key occupations for both low- and high-skilled workers. For the unskilled or low-skilled workers, gaps exist in terms of bookkeeping, transport and logistics skills as well as communication skills, particularly e-communication skills. For technical, management and professional categories the skills shortages are mainly management and ICT related. In the latter case, data analysis skills, computer operating skills and programming skills are in short supply. Calibration skills are also scarce. These shortages are both in terms of quantity and quality and calls for urgent reskilling and upskilling the current workforce.

Table 10: Marketing capability gaps, key occupations and skills implications for the horticulture sector in Zimbabwe

Major Skills Category	Key Occupations	Skills Implication
1. Low-skilled workers	Cleaners; cooks; ship runners	Communication skills to be able to communicate efficiently
2. Operators/artisans	Sales agents; social media operators; merchandisers; vehicle drivers; shipping agents	Improved communication skills and ability to use digital skills; retraining and licensing to match current standards
3. Technicians—diploma level	Customer service officers; marketing analysts; ICT technicians; inspectors	Enhancement of communication skills; marketing skills training; ICT skills training and upgrading; inspectors in short supply—more must be trained
4. Middle managers—HND/degree	Sales manager; marketing managers; ICT managers; sales agronomists	Skills in short supply—more training and skills upgrading needed
5. Engineers/professions (senior)—technical and management level	Software engineers	Not so many of them in the country—more trained people needed
6. Managers	Freight and forwarding managers; export managers	More skilled people needed in these areas

Source: Foresight Workshop with stakeholders.

The analysis of the marketing capability gap, Table 10, shows a huge deficit of priority skills across all the major skills categories and key occupations for both the low- and high-skilled workers. It is clear that communication skills are lacking for most of the skills categories that fall under this gap category. Software engineering skills, ICT skills, freight and forwarding skills and exports management skills are in short supply in the higher level key occupations. These shortages are both in quantity and quality terms which calls for urgent reskilling and upskilling of the current workforce.

Table 11: Cold chain and logistic capability gap, key occupations and skills implications for the horticulture sector in Zimbabwe

Major Skills Category	Key Occupations	Skills Implication
1. Low-skilled workers	Post-harvest handlers—pickers, graders, cleaners, field supervisors; quality assurers; cooks	Skills training product knowledge and handling; enhancement of communication skills
2. Operators/artisans	Field drivers; warehouse operators; machine operators; fitters and turners	Skills training and upgrading of product handling; machine operating skills; boiler maintenance skills
3. Technicians—diploma level	Receiving and dispatch clerks; refrigeration controllers; mechanics; laboratory technicians	Up-skilling in data management and handling; training of refrigeration controllers
4. Middle managers—HND/degree	Warehouse managers; bookkeepers; accountants; human resource managers; food and nutrition managers; refrigeration engineers	Skills training in communication for warehouse managers; food and nutrition managers in short supply as well as refrigeration engineers—more must be trained
5. Engineers/professions (senior)—technical and management level	SHE managers	Skills upgrading to meet global standards
6. Managers	Farm managers; finance managers; general managers	Skills upgrading on management, financial management and entrepreneurship

Source: Foresight Workshop with stakeholders.

The analysis of the cold chain and logistic capability gap (Table 11) illustrates the non-availability of priority skills across all major skills categories and key occupations for both the low- and high-skilled workers. For the low-skilled workers, gaps exist in terms of product knowledge and handling, machine operating skills, as well as a lack of communication skills. For the technical and professional categories, the skills shortages are of a technical, financial and management nature. These shortages are both in terms of the quantity and quality of skills and calls for urgent reskilling and upskilling of the current workforce.

8. RECOMMENDATIONS ON STRATEGIES TO MEET PRIORITY SKILLS NEEDS AND GAPS

This section is based on the skills and capability gaps for the horticulture sector highlighted in section 7. It proposes the skills development and supply strategies that must be implemented to meet the sector's future priority skills needs. The strategies' delivery mechanisms and the accompanying short-, medium- and long-term recommendations are also listed where 'short' means one year, 'medium' means two to three years and 'long' is four to five years. Given the severity of the skills deficit in the sector, it means the reskilling and upskilling of the existing workforce will be a major priority between now and 2025. The major suppliers or sources of skills for the horticulture sector in Zimbabwe are TVET colleges, in-house or on-the-job training, experienced workers coming from outside the farm, informal training sources and to a lesser extent universities. The latter tend to cater for the supply of the more specialized skills requirements needed by the horticulture sector.

It therefore follows that in terms of the proposed skills development and supply strategies, these institutions will be the ones to play an important role in plugging the gaps to meet the current and anticipated skills needs for the horticulture sector in Zimbabwe.

“Major suppliers of skills for the horticulture sector in Zimbabwe are TVET colleges, in-house or on-the-job training, experienced workers from outside the farm, informal training sources and universities.”

8.1 On-the-job training by employers

On-the-job training is one of the most popular skills development and supply strategies currently being used by horticulture producers in Zimbabwe. It is also considered to be the most effective means of skills delivery because of the flexibility of delivery times and use of on-site training facilities and equipment. As a result, it is a strategy that can be used for reskilling and upskilling of low-skilled workers, operators and technicians to acquire specific skills such as health and safety skills; spraying skills; communication skills; literacy and financial skills; equipment handling skills; chemical handling skills; product handling skills; and supervision skills.



In this case, internally or externally designed short courses and training programmes can be used to reskill or upskill the existing workforce in the fore-mentioned skills to meet the anticipated skills needs. For this strategy to become a viable skills development option, the following is recommended:

- Employers in the horticulture sector should be incentivized in the short term to develop quality ongoing work-based short training programmes for the existing workforce and new trainees through the offer of generous tax breaks, subsidies and training grants.
- In the medium term, the development of industry-relevant on-the-job training short courses through the use of public-private partnerships in the skills areas mentioned to complement the skills development efforts by employers in the horticulture sector.

8.2 Increasing relevant certificates and diplomas by TVET and industrial training institutions and trade testing of semi-skilled artisans

TVET and industrial training colleges are also a major source of skills supply to the horticulture sector in Zimbabwe and are therefore strategically positioned to play a critical role in developing and supplying the priority future skills needs of the sector.

The following is recommended:

- In the short to medium term, TVET and industrial training colleges should offer a range of accredited practice-oriented short courses and diploma training programmes in the identified priority skills areas that include the following: equipment handling skills; chemical handling skills; management and supervision skills; computer operating skills; marketing skills; ICT skills; data analytics skills; refrigeration technician skills; and laboratory technician skills. Flexibility must be in-built into the delivery of these short courses and training programmes and this can be achieved via the use of blended learning methods, modular teaching, online as well as distance learning.
- The revival and expansion of the trade testing programme of semi-skilled workers and artisans in priority technical skills at TVET and industrial training colleges in the medium term, with the support of the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development, given the important role it plays in raising the quality of technical skills attainment which are in great demand

in the horticulture sector. Priority skills to be covered include the following: motor mechanics; refrigeration technicians; laboratory technicians; electricians; plumbers; and ICT technicians.

8.3 Community-based training by non-governmental and civil society organizations

NGOs and CSOs can play an important role in the reskilling and upskilling of the horticulture workforce by offering practice-oriented training modules that provide priority skills needed in the horticulture sector particularly for rural-based farmers and general farm workers. Most of these workers are not products of formal training institutions but rather of on-the-job training and other informal learning mechanisms. NGOs can therefore design short courses and training programmes for reskilling and upskilling these groups in specific priority skills such as communication skills; literacy skills; financial literacy; health and safety skills; product handling skills, etc. This can be done using a mixture of long distance learning, traditional face-to-face learning methods, for example attending day/evening/weekend sessions as well as making use of online agricultural training platforms. It is therefore recommended that:

- The Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development, in the short term, incentivize the skills development initiatives carried out in the horticulture sector by NGOs and CSOs for the rural and general farm workers by partly offering them generous subsidies and provision of training facilities.
- Development partners in the medium term to assist with strengthening of local NGO and CSO capacity to design and deliver community-based skills upgrading programmes for the rural farmers and general farm workers.

8.4 Teaching of specialized short courses and degree programmes by universities

Although it has been noted that in very rare occasions workers entering the labour force as qualified graduates come from universities in priority skills areas such as food safety technicians, food scientists, laboratory technicians, agricultural engineering, etc., these institutions still have an important role to play in plugging the current skills gap and in meeting the future skills needs of the horticulture sector. As such they can offer flexible part-time specialized short courses and degree programmes in the priority skills areas

as a key pathway for delivering a highly skilled workforce for the horticulture sector. The priority specialized skills areas of interest here include the following: farm management; mechanization and automation skills; cold chain management skills; transport and logistics skills; export marketing skills; artificial intelligence and block chain technology; software engineering; information technology; water harvesting; hydroponics farming; climate smart agriculture and waste management skills; and greening skills. The following is recommended:

- In the short term, universities should start designing the course content of the short courses that include farm management; transport and logistics skills; export marketing skills; artificial intelligence; water harvesting; hydroponics farming; climate smart

agriculture; waste management skills; and greening/ inorganic farming skills. Degree programmes could include block chain technology; software engineering; information technology; cold chain management; mechanization and automation production; and processing systems.

- In the medium term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development must undertake institutional reforms that will support and strengthen the part-time teaching of these specialized skills at universities in the country. In particular, this should include putting in place the requisite infrastructure and flexible course delivery tools to attract the targeted groups.





9. RECOMMENDATIONS ON MEETING SYSTEM-LEVEL PRIORITIES FOR THE SECTOR

The following seven key recommendations have been identified for the purpose of addressing the skills and capability gaps as well as meeting the system-level priorities of the horticulture value chain in Zimbabwe:

- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development should continue improving and supporting the current transition from Education 3.0 to Education 5.0 which entails shifting from being more theoretical to being more practice-oriented.
- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development should spearhead the development of the national skills policy and strategy to support and strengthen TVET/skills training institutions.
- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development; Ministry of Lands, Agriculture, Fisheries, Water and Rural Development and the Ministry of Youth, Indigenization and Economic Empowerment must establish the National Skills Council to strengthen stakeholder governance and coordinate and drive the entire skills training and development ecosystem.
- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development; the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development; the Ministry of Public Service, Labour and Social Welfare; the Horticulture Development Council; and TVET colleges and universities must establish the Sector Skills Council to strengthen stakeholder governance and coordinate and drive skills training and development in the horticulture sector.
- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development must work with TVET colleges and universities to improve skills training and delivery and assessment practices.
- In the medium term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development; horticulture firms; NGOs; CSOs; and development partners should work on broadening access to skills training opportunities relevant to the horticulture sector through the use of blended and burst-mode training formats, long distance and online or virtual learning tools and modules and face-to-face day, evening and weekend classes.
- In the short term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development; the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development; the Ministry of Public Service, Labour and Social Welfare; the Ministry of Industry and Commerce; the Ministry of Youth, Indigenization and Economic Empowerment; the Horticulture Development Council; horticulture firms; NGOs; CSOs; and development partners must strengthen industry-training institution linkages and support for workplace learning.
- In the medium term, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development must work together with the universities and TVET colleges to promote peer-to-peer learning and exchange visits between public and private TVET colleges. These exchange visits would facilitate better knowledge sharing on new trends in technical and vocational education and training, new research and new methodologies for course delivery and student assessment.

10. SKILLS STRATEGY IMPLEMENTATION PLAN

Based on these recommendations, the following proposed horticulture sector skills strategy implementation plan focuses on 10 key interventions needed to align the current and future skills needs of the horticulture sector in Zimbabwe, in both quantity and quality terms. In other words, if these interventions are properly implemented, they will go a long way to address the cited skills and capability gaps characterizing the horticulture sector of Zimbabwe.

Table 12: Horticulture Sector Skills Strategy Implementation Plan

Intervention	Action	Responsibility	Timeframe ²
1. Increase funding to meet the staffing and infrastructure requirements of the skills training institutions	1.1. Allocate more budgetary resources to skills development and institutions	- Ministry of Finance and Economic Development - Private sector mainly via the creation of private-public partnerships for infrastructure development and cost-sharing arrangements for skills training and development of training programmes and courses	- Short term - Medium term
	1.2. Widen the sources of the current national skills development levy	Ministry of Finance and Economic Development	- Short term - Medium term
	1.3. Introduce a sector-specific skills development levy scheme	Ministry of Finance and Economic Development	- Short term - Medium term
	1.4. Incentivize income generation by staff through undertaking consultancies and tailored training and capacity building programmes for the public and private sector	- TVET - Universities	- Short term - Medium term

² Short term=1 year; Medium term=2–3 years; Long term 4–5 years

Intervention	Action	Responsibility	Timeframe ²
2. Improve skills training capacity and learning methods	2.1. Institute curriculum reforms putting more emphasis on practical training	• TVET • Universities	• Short term • Medium term
	2.2. Promotion and facilitation of staff development and guest or visiting-lecturer programmes	• TVET • Universities	• Short term • Medium term
	2.3. Coming up and implement a farm placement programme for TVET college lecturers	• TVET • Universities	• Short term • Medium term
	2.4. Use ICTs to create mobile and online education and skills training platforms that are accessible to all learners including the disadvantaged and marginalized	• TVET • Universities	• Short term • Medium term
	2.5. Diversify delivery methods to include modular teaching; blended and burst-mode training formats; short-term practice-oriented courses; work-based learning; block release; evening classes, weekend classes; and distance learning	• TVET • Universities	• Short term • Medium term
	2.6. Incentivize and attract industry experts to deliver lectures on a part-time basis in selected specialized areas of the horticulture value chain.	• TVET • Universities	• Short term • Medium term
	2.7. Incentivize the diaspora to offer mentorship programmes, undertake short- and long-term teaching visits, supervision and collaborative research activities	• Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development • TVET • Universities	• Short term • Medium term
	2.8. Promote local, regional and international peer-to-peer learning, collaborative research and staff exchange visits	• TVET • Universities	• Short term • Medium term
	2.9. Establish public-private partnerships for collaboration in the development of courses and training programmes	• TVET • Universities	• Short term • Medium term
	2.10. Improve staff conditions of service including payment of a retention allowance	• Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development	• Short term • Medium term
3. Strengthening labour market information systems	3.1. Undertake periodic skills anticipation studies through collection and analysis of sectoral and national data on labour market skills demand	• Ministry of Public Service, Labour and Social Welfare	• Short term • Medium term
	3.2. Carry out periodic tracer studies that allow the tracking and assessment of TVET and university graduates' employability	• TVET • Universities	• Short term • Medium term

Intervention	Action	Responsibility	Timeframe ²
4. Improve monitoring and assessment practices	4.1. Develop indicators or criteria to use as benchmarks to improving educational quality including putting in place a credible national qualifications framework	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - TVET - Universities	- Short term - Medium term
	4.2. Undertake quality audits and accreditation of all public and private skills training institutions	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - TVET - Universities	- Short term - Medium term
5. Strengthening stakeholder coordination at the sector level	5.1. Establishment of a Sector Skills Council	Horticulture Development Council; Ministry of Public Service, Labour and Social Welfare; private sector; skills training institutions	- Short term - Medium term
6. Strengthening industry skills training institution linkages and collaboration	6.1. Promotion and ensuring access to high-quality industrial attachments/ internships/apprenticeships, and mentorship programme opportunities by making them more attractive to the employers, for example by offering them generous training grants, subsidies and tax breaks	- TVET - Private sector	- Short term - Medium term
	6.2. Enhance private sector technical support through provision of scholarships, research grants, prize sponsorship, equipment and other material support; and its direct involvement in curriculum development and review as well as the governance of skills training institutions	- TVET - Private sector	- Short term - Medium term
7. Strengthen the skills training and development institutions' governance system	7.1. Establishment of a National Task Team or National Skills Council to coordinate and drive the entire skills training and development system	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - Ministry of Lands, Agriculture, Fisheries, Water and Rural Development - Ministry of Youth, Indigenization and Economic Empowerment	- Short term - Medium term
	7.2. Build the capacities of the departments responsible for TVET, especially in the ministries with lead responsibilities for TVET and the institutionalization of sector-related skills anticipation methodologies and practices	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - Ministry of Lands, Agriculture, Fisheries, Water and Rural Development - Ministry of Youth, Indigenization and Economic Empowerment	- Short term - Medium term

Intervention	Action	Responsibility	Timeframe ²
8. Strengthen the management system of the skills training and development institutions	8.1. Appointment of heads of institutions with good managerial skills and agriculture practical experience	Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development	- Short term - Medium term
	8.2. In-service management capacity improvement and training on use of ICT tools for management, academic and support staff	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - TVET - Universities	- Short term - Medium term
9. Development and implementation of national skills policy and strategy	9.1. Develop a national skills policy and strategy	Inter-ministerial Taskforce	- Short term - Medium term
	9.2. Setting implementation targets and milestones within a fixed timeframe	Inter-ministerial Taskforce	- Short term - Medium term
	9.3. Developing implementation plans at national, provincial and sector levels	Inter-ministerial Taskforce	- Short term - Medium term
	9.4. Developing robust monitoring and evaluation indicators	Inter-ministerial Taskforce	- Short term - Medium term
10. Broaden access to training by actively promoting informal learning arrangements	10.1 Introducing and supporting adult learning programmes, long distance and online learning arrangements to cater for the youth, women and other disadvantaged groups	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - Ministry of Youth, Indigenization and Economic Empowerment - Horticulture firms - NGOs - CSOs - Development partners	- Short term - Medium term
	10.2 Coming up with a framework and good quality assurance mechanisms for adult learning, work-based and lifelong learning for farm workers	- Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development - Horticulture firms - NGOs - CSOs - Development partners	- Short term - Medium term
	10.3 Coming up with a package of incentives that is attractive enough for employers to implement work-based and lifelong learning programmes, for example offering financial incentives in the form of government grants, subsidies or tax breaks	Ministry of Finance and Economic Development	- Short term - Medium term

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