



2017 Final Report

Technical and Vocational Skills Development
for the Oil Palm Sector in Liberia



Ushirika wa Maendeleo ya Elimu Barani Afrika
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GTAPE



WGEMPS



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SHEM OKORE BODO

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PREFACE

The Ministry of Education (MOE) and the Association for the Development of Education in Africa (ADEA) have for the past two (2) years been engaged in a discussion to identify areas of cooperation. Following lengthy interactions involving face-to-face meetings, exchange of communications, joint surveys and workshops, the Ministry of Education and the Association for the Development of Education in Africa jointly identified and agreed to collaborate and implement programs in the Liberian Oil Palm sector.

Based on the understanding reached by the two parties, Ministry of Education and the Association for the Development of Education in Africa continued to further engage and successfully implemented a number of programs, including identification of skills needs of the national labor force and the link with the growth and employment within the oil palm sector, the assessment of the demand and supply of skills for the sector with particular reference to the roles of public and private providers as well as the assessment of the capacity of Technical and Vocational Education and Training providers to support the innovation and growth of the palm oil sector.

Having now come thus far, the Ministry of Education would like to reaffirm its commitment to working collaboratively with the Association for the Development of Education (ADEA) to move forward with the implementation of the identified programs and projects for the development of the Oil Palm sector.

Many thanks to ADEA for the valuable contribution to the education sector of Liberia.



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ABBREVIATIONS & ACRONYMS

ADEA | Association for the Development of Education in Africa

AITB | Agricultural and Industrial Training Bureau

A-TVET | Agricultural TVET

BWI | Booker Washington Institute

CPO | Crude Palm Oil

CPKO | Crude Palm Kernel Oil

CSO | Civil Society Organization
EPO | Equatorial Palm Oil

EU | European Union

FED | Food & Enterprise Development

FFB | Fresh Fruit Bunches

GVL | Golden Veroleum Liberia

ICT | Information and Communication Technology

LOPFU | Liberia Oil Palm Farmers Union

MOA | Ministry of Agriculture

MOE | Ministry of Education

MOPP | Maryland Oil Palm Plantation

MOYS | Ministry of Youth and Sports

NDA | National Diploma in Agriculture

NGO | Non-Governmental Organization

OPSTWG | Oil Palm Sector Technical Working Group

PK | Palm Kernel

RSPO | Roundtable on Sustainable Palm Oil

SDG | Sustainable Development Goals

UNIDO | United Nations Industrial Development Organization

UNESCO | United Nations Educational Scientific and Cultural Organization

USAID | United States Agency for International Development

USD | United States Dollars

TVET | Technical and Vocational Education and Training

TVSD | Technical and Vocational Skills Development

WGEMPS | Working Group on Education Management and Policy Support

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EXECUTIVE SUMMARY

The oil palm industry in Liberia has a huge potential for value addition and product diversification and can contribute significantly to economic growth and poverty reduction. Studies have shown that the palm oil production and processing sector can create as many as 156,000 jobs by 2030. The demand for palm oil on the global market is huge and Liberia can benefit from huge export earnings from the crop.

Recognizing this potential, the Government of Liberia sought the technical assistance of the Association for the Development of Education in Africa (ADEA) through its Working Group on Education Management and Policy Support (WGEMPS) to fund a study, in collaboration with the Liberia Ministry of Education, to assess the workforce skills requirements for the oil palm value chain and the capacity of local training providers to deliver skills training to the required standards. In general, an agricultural value chain analysis includes the determination of the technical and vocational workforce skills required along the entire production and transformation value addition chain.

The oil palm sector requires both skilled and semi-skilled workers. While skilled workers are required in areas such as nursery development, soil/site preparation, installation of irrigation systems, farm management and maintenance, the job of planting, cultivating, harvesting, collection and transporting of fresh fruit bunches to milling sites does not demand a highly skilled workforce.

A survey of the private sector companies and businesses in the oil palm industry in Liberia shows that most of them (60%) are involved in farming (production) operations with only 20% in processing or marketing. According to the employers, the skills lacking in their employees are in the areas of processing (66% of respondents), ICT (40% of respondents), report writing (25% of respondents), and entrepreneurship (50% of respondents). Forty per cent (40%) of the respondents also identified the absence of workers with skills in transport and logistics.



The expected outcome of the oil palm value chain analysis is a skilled workforce to support the sustainable growth of the industry that will lead to increased employment opportunities, higher labour productivity, and greater contribution to economic growth. For, if the workforce skills required for the oil palm sector are developed and enhanced, the quality and competitiveness of the workforce will be improved; labour productivity will be enhanced, and the sector's contribution to the growth of the Liberian economy will increase. This is because the improved skills will significantly support higher productivity, improved product quality; and increased export volumes and sales.



The development of technical and vocational skills for the oil palm sector will require some strategic interventions. It will be necessary for Government and the Ministry of Education to:

- Strengthen the physical and academic infrastructure of the training institutions
- Build the capacity of training institutions to develop demand driven curricula and deliver quality training to support the growth of the oil palm sector
- Design and implement short duration basic skills training courses for unemployed youth in the oil palm producing communities
- Encourage the large commercial plantations to invest in research and high level technical and vocational skills development for the oil palm sector.

The oil palm sector has huge potential for job creation, poverty reduction, and stemming the rural-urban migration of the youth. The following policy recommendations will help achieve these objectives:

- Enabling economic policies that encourage expansion of the oil palm industry should be pursued so as to increase the employment capacity of the enterprises and companies operating in the sector.
- Extension services to small holder farmers should be strengthened
- The establishment of county-level oil palm nurseries should be considered by the Ministry of Agriculture to support small holders. Alternatively, the private sector should be encouraged to establish commercial nurseries to supply nursed plants to farmers at affordable prices
- The private sector should also be encouraged to establish small palm oil processing plants within the production catchment areas to process the fresh fruit bunches of smallholders at a fee
- Government should partner the private sector to establish a marketing company or consortium that will buy fresh fruit bunches at guaranteed prices from farmers at the farm gate for sale to commercial processing mills.
- Research activities as well as data collection and analysis should be prioritized to support decision-making and development of the sector

1. INTRODUCTION

As a consequence of the economic diversification and export strategy of the Government of Liberia, several growth sectors with potential to generate hundreds of thousands of jobs have been identified. These sectors include the rubber, cocoa, food processing, fisheries, light manufacturing, and oil palm industry (see table 1). The oil palm sector in particular is projected to generate about 156,000 direct and indirect jobs by 2030. The oil palm sector also has a huge potential for value addition and product diversification, including the production of crude and refined palm oil, cooking oil, soaps and fats, bio-fuels, and animal feed. Additionally, the industry does not require huge capital investments or high level workforce skills at the plantation and primary transformation stages.

TABLE 1: ESTIMATES OF CURRENT AND POTENTIAL VIABLE JOBS IN HIGH PRIORITY SECTORS

SECTOR	CURRENT VIABLE JOBS & LIVELIHOODS SUSTAINED	POTENTIAL VIABLE JOBS & LIVELIHOODS SUSTAINED IN 2030
Oil Palm and oil palm product manufacturing	37,700	156,000
Rubber and rubber product manufacturing	49,000	267,000
Cocoa and cocoa product manufacturing	39,000	100,000
Aquaculture and processing of fish	2,500	35,000
Marine fisheries and processing of fish	30,000	38,000
Other light manufacturing (e.g. plastics, steel, aluminum, agricultural machinery, food products, beverages etc.)	3,000	24,000
Total from these 6 sectors	152,000	620,000

Source: Africa Governance Initiative estimates based on analysis of national export strategy, trade data, industrial data, agricultural data and reports.

The purpose of this study is to assess the workforce skills requirements for the oil palm value chain in Liberia and the capacity of local training providers to deliver training to the required standards. The study is funded by the Association for the Development of Education in Africa (ADEA) and his partner-USAID, with the Liberia Ministry of Education as its collaborating partner.

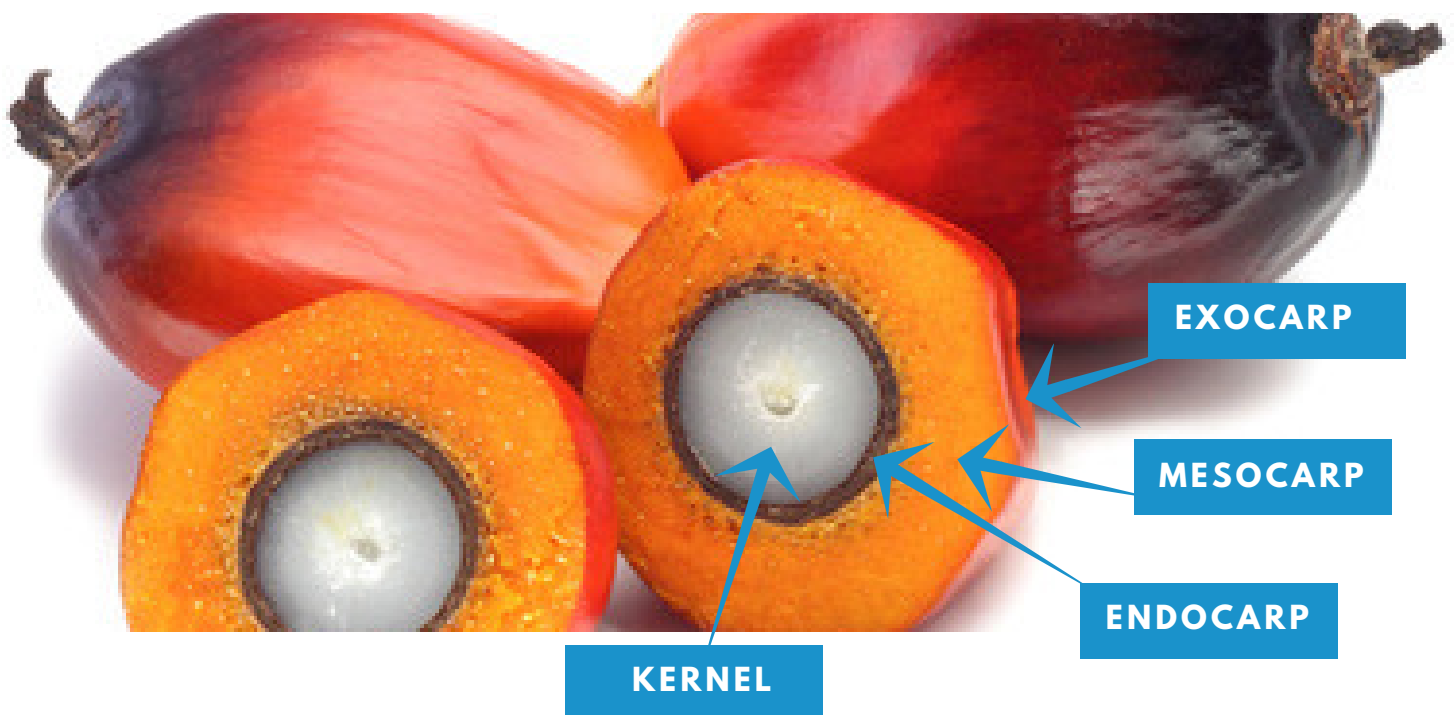
2. BACKGROUND INFORMATION ON PALM OIL PRODUCTION

The oil palm is an indigenous plant of West Africa. It originated in the rain forest regions of countries such as Togo, Gabon, Ghana, Liberia, Sierra Leone and Nigeria. The plant is also indigenous to the equatorial regions of Cameroon, Angola, DRC and Congo. It is from these regions that the palm fruit was taken to the Far East where it has now become an important economic crop in countries such as Malaysia and Indonesia, involving large scale production and processing for export.

THE PALM FRUIT

Two varieties of oil palm exist in West Africa: the thick-shelled indigenous variety called “Dura” and the “Tenera” which is a hybrid of Dura and the shell-less variety called “Pisifera”. Most commercial plantations now grow the Tenera variety which has a much thicker mesocarp and a thinner shell and yields much higher volumes of palm oil than the indigenous Dura (Figure 1).

FIGURE 1: THE PALM FRUIT



FARM SYSTEMS

Oil palm farm systems in Africa are generally classified as smallholder, medium and large commercial plantations.

The key characteristics of the production systems are shown in Table 2.

TABLE 2: KEY CHARACTERISTICS OF OIL PALM PRODUCTION SYSTEMS IN AFRICA

CATEGORY	SMALL FARMS	MEDIUM - LARGE PLANTATIONS
<i>Production Level</i>	Small scale	Commercial
<i>Production Tools</i>	Manual	Manual and Tractors
<i>Farm Inputs</i>	Small-scale/Basic	Large-scale/Extensive
<i>Markets</i>	Close to farms	Far off: products or raw materials transported to processing plant
<i>Technology</i>	Limited or minimal use of modern equipment	Technologically adapted or modern equipment
<i>Workforce</i>	Family workers	Mostly salaried workers
<i>Workforce Skills</i>	Entrepreneurship skills; unskilled labour	Entrepreneurship and management skills; Skilled workforce

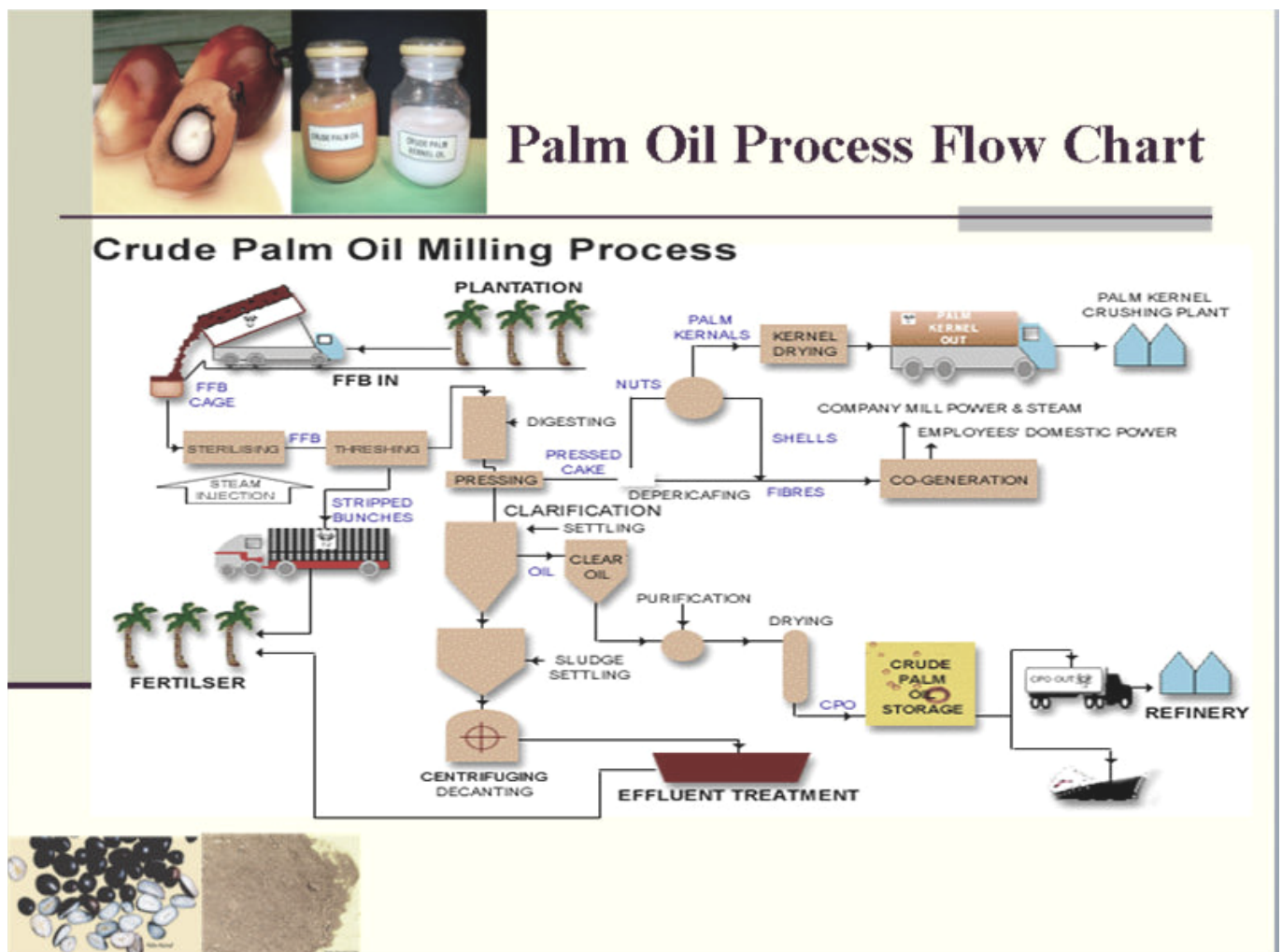
Source: Adapted from World Bank 2008

PALM OIL EXTRACTION PROCESS

The crude palm oil extraction process may be categorized into six key operations. These are:

1. Harvesting the fresh fruit bunches (FFB) from the plantations
2. Sterilization (cooking) of the fruit bunches
3. Threshing (separation of the fruitlets from the bunch)
4. Digestion (softening of the fruitlets) and pressing out of the crude palm oil
5. Clarification (purifying and drying) of the crude oil
6. Fractionation into liquid (edible oil) and solid phases (fats and industrial solids)

FIGURE 2: PICTORIAL PROCESS FLOW DIAGRAM



Source: Jin Xi Chemical Engineering Equipment Company Limited, China

Most of the processes involved in large milling and processing plants are mechanized using modern machinery and technology that require adequately trained workforce. Skills needs in the oil palm value chain are diverse (Table 3)

3. PURPOSE AND SCOPE OF THE STUDY

The demand for palm oil on the global market is huge. Palm oil has both food (e.g. edible oil, margarine) and non-food (e.g. bio-fuels, energy generation) uses. Palm oil can be found in one out of every ten food products (Sime Darby, 2009). Liberia can therefore benefit from huge export earnings from the crop. Key importers of palm oil are China, India, and the European Union. The potential for significant creation of jobs has also been highlighted. A study of the oil palm industry in Liberia with the objective of developing a trained workforce to support the revitalization of the sector makes a lot of economic sense, both at the national and individual levels.

TABLE 3: SKILLS NEEDS IN THE OIL PALM INDUSTRY

CATEGORY	CHARACTERISTICS	SKILLS NEEDS
<i>Small-scale Farmers</i>	Generally low production volumes	Planting, cultivating, and harvesting skills
<i>Commercial Farmers</i>	Higher production volumes; Stage I transformation	Production and farm management skills
<i>Local Transformers</i>	Informal sector; Artisanal; manual transformation; by-products as fuel	Automation; product diversification; packaging techniques
<i>Commercial Agents</i>	Middlemen; wholesalers; importers	Marketing and negotiating skills
<i>Transporters</i>	All types of vehicles	Logistics /Organization skills; Driving skills
<i>Industrial Processing</i>	Stage II transformation of palm oil; Refineries; manufacture of fats and soaps, etc.	Diverse technical, operational, and management skills

Source: Adapted from World Bank (2009)

OPPORTUNITIES FOR GROWTH OF THE OIL PALM INDUSTRY

A brief assessment of the oil palm sector in Liberia reveals opportunities and strengths which can be leveraged to support economic growth in the country and contribute significantly to sustainable livelihoods and poverty reduction. The strengths and opportunities include:

- Arable land and good climatic conditions
- Political will and national consensus for oil palm development and sustainability
- Existence of a coordination platform for the oil palm sector (OPSTWG – oil palm sector technical working group)
- Oil Palm Sector Strategy under development
- Private sector willingness to invest in capacity development
- Trainable population
- Presence of large commercial plantations and concessions, and small holders
- High demand for palm oil, on the local and international markets
- Huge potential to provide jobs, especially for women and young people in rural areas

GENERAL CHALLENGES IN THE OIL PALM SECTOR

In spite of the generally bright outlook for the oil palm sector, there are a number of challenges that need to be addressed for the sector to attain its full potential. These challenges include:

- Unregulated land tenure system
- Difficult access to affordable credit, financing and business support services
- Limited value addition to crude palm oil (CPO)
- Need for modern or improved processing mills and equipment
- Inadequate data (e.g. production and export volumes, employment data; skills gaps and shortages, smallholders and out-growers, etc.)
- Poor physical infrastructure and utilities (access roads, electricity, water)
- Inadequate research capacity

Although the above listed weaknesses and challenges pose a threat to the sustainable development of the oil palm sector, the greatest challenge appears to be the absence of a critical stock of skilled labour in the production and processing sub-sectors of the industry. There is need for a trained workforce imbued with relevant production, processing, packaging and marketing skills.

SCOPE OF THE STUDY

The analysis of the oil palm value chain shows that the issues of land acquisition, enabling economic policies, appropriate development strategy, sustainable financing, environmental sustainability, natural resource conservation, and agricultural certification schemes are important challenges that must be addressed. However, the scope of this study is limited to the development of technical and vocational skills for the industry. The study is not about concession agreements, regulatory and certification regimes, conservation or deforestation, or development of planting materials. It is about the development of production and processing skills for the sector and how the existing TVET schools and colleges can be supported to deliver such skills training. However, issues relating to the overall sustainable growth of the sector with adequate safeguards for the ecosystem will necessarily be included in the TVSD curriculum.

LINKAGE WITH NATIONAL POLICIES AND INTERNATIONAL DEVELOPMENT GOALS

One of the important pillars of the Liberia National TVET Policy 2015-2020 is the promotion of productivity and sustainability in agriculture through TVET. The policy considers the acquisition of TVET skills for the agricultural sector by rural dwellers, women and youth in fields such as farm mechanization, land preparation, food processing, and agribusiness as a key strategy that can contribute to promoting agricultural productivity, sustainable livelihoods, and political stability. The TVET Policy specifically recommends the provision of incentives and skills for young people in the production, processing and marketing of agricultural products and for the youth to perceive agriculture as a route toward career development and sustainable livelihoods. Vocational agricultural training for the youth is to be strengthened in TVET institutions and curricula.

The 17 Sustainable Development Goals (SDGs) which are at the core of the 2030 UN Agenda for Global Development also emphasize inclusive and quality education as a basis for achieving a sizable stock of educated, entrepreneurial, and technical human resources as a necessary precondition for sustainable socioeconomic development. SDG #4 seeks to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”. Of particular relevance to this study is Target 4.4 of SDG #4 which states the need to “substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship by 2030.”

The rationale and justification for this study is also rooted in the national vision document, Liberia Rising 2030, and the Government’s Agenda for Transformation, which both emphasize the need to equip the youth with employable skills. Indeed, the Government’s Employment Policy (2009) and Industrial Policy (2011) documents clearly identify skills development as a key strategy for poverty reduction and rapid industrialization of the Liberian economy.

OBJECTIVES OF THE STUDY

The specific objectives of the study are to:

1. Identify the skills needs of the labour force and the link with growth and employment within the oil palm sector
2. Assess the demand and supply of skills for the sector, focusing in particular on the roles of public and private providers.
3. Assess the capacity of the TVET subsector to support the innovation and growth of the oil palm industry.
4. Identify the demand for TVET skills at different levels within the value chain with emphasis on areas of actual and future skills gaps.

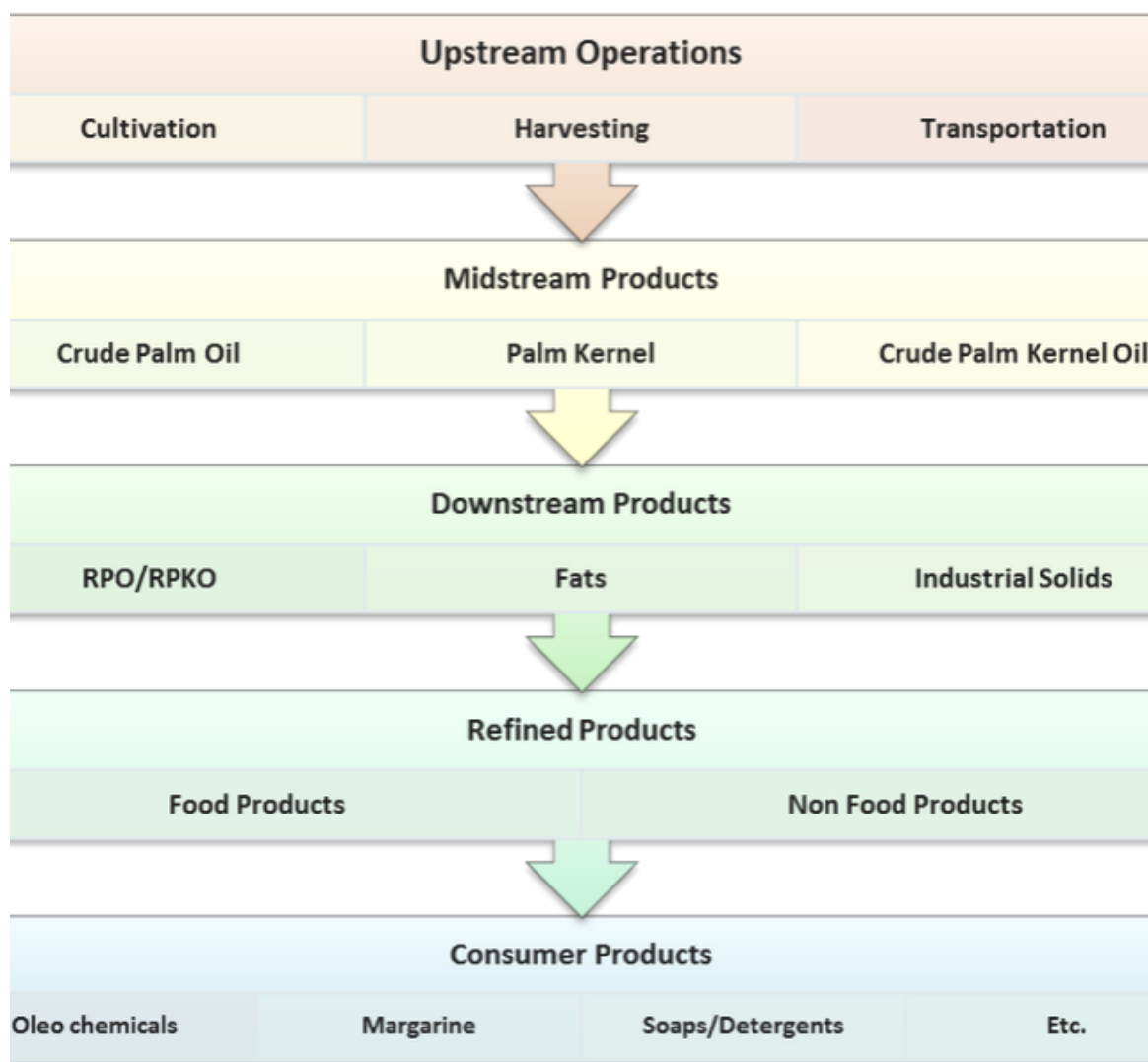
In order to identify the skills development and workforce requirements for the oil palm sector, a value chain analysis is necessary.

4. VALUE CHAIN ANALYSIS

One important aspect of the value chain analysis of an agricultural sector is the determination of the workforce skills required to develop and grow the sector in question along the entire value chain. It also includes an assessment of the education and training needs as determined by the relevant enterprises and other private sector actors involved in the selected sector as well as the capacity of national training providers to deliver training to the required standards.

The selection of the priority economic sector or sectors to be developed is often a function of the potential of the sector for growth, high productivity and employment creation. The Liberia National TVET Policy document prioritizes a number of key economic sectors, including agriculture and agribusiness, hospitality and tourism, light manufacturing, and ICT. The Ministries of Commerce and Industry, Agriculture, and Finance as well as the National Investment Commission and the National Bureau of Concessions have identified the agriculture, agro-processing and manufacturing sectors as the key priority sectors that are capable of raising the regional competitiveness of the Liberian economy as well as contribute to large scale employment of the youth.

FIGURE 3: PRODUCT FLOW DIAGRAM



The oil palm sector satisfies the criteria for selection as a priority sector. As can be seen from Table 1, the oil palm sector which currently provides 37,700 viable jobs and livelihoods has the potential to generate as many as 156,000 jobs by 2030. The oil palm sector also lends itself to greater value addition and product diversification as well as lower capital investments, at least at the production (i.e. planting, cultivating and harvesting) level.

PALM OIL VALUE ADDITION CHAIN

Figure 3 shows schematically the palm oil product flow diagram from the production of fresh fruit bunches through to consumer end products.

5. METHODOLOGICAL APPROACH

The methodological approach adopted in this study consisted of a mapping exercise to collect existing data and fill in any knowledge gaps through targeted sample surveys and interviews with relevant actors within the oil palm sector. Sources of data that were exploited for a deeper analysis of the skills supply and demand equation included:

- Administrative data available in the relevant ministries and agencies (Ministry of Education, Ministry of Youth and Sports, Ministry of Commerce and Industry, Ministry of Agriculture and other sector ministries) with regard to the supply of TVET by public and private providers.
- Existing studies conducted on the oil palm sector, which yielded relevant information pertaining to current and potential shortages of specific technical, vocational and professional skills in the sector.
- A survey of enterprises in the formal and informal sectors to obtain information on the scope and nature of the skills gaps and shortages.
- A survey of public and private training providers to obtain information on training costs, types of agricultural TVET and related programs offered, training quality, quality assurance, and the employment rate of trainees.

An inception workshop was also held on 28 September 2016, bringing together a cross section of key players in the oil palm industry in a 1-day stakeholders' forum to explain the rationale and justification of the study and to pilot a set of questionnaires designed for the study (see the Appendix to this report). At the stakeholders' forum, a round table discussion was organized to receive participants' views on the prospects for the oil palm sector in Liberia. The five key discussion points below guided the round table discussions:

1. *Why do you think the oil palm sector in Liberia is economically viable?*
2. *Identify the strengths, weaknesses, opportunities and threats involved in the oil palm value addition chain*
3. *Identify the key stakeholders in the industry*
4. *Identify and prioritize the workforce requirements and skills needs in the value addition chain*
5. *Identify potential training providers (public and private) and existing or potential partners*

From the roundtable discussions, it was generally agreed that the oil palm sector has huge potential to create sustainable jobs and that Liberia has the right climate and soil conditions for oil palm production. However, it was pointed out that there were human resource challenges that needed to be addressed in areas such as nursery development, farm management, machine operations, productivity enhancement, and research. Limited access to finance was also cited as a drawback. On the positive side, an Oil Palm Sector Strategy was under development while a Technical Working Group, consisting of officials from several ministries and other industry players and stakeholders, was active in the sector as a coordination platform. The private sector was also willing to invest in capacity development for the sector.

Finally, as part of the methodology, field visits were undertaken in November and December 2016 to:

- Gather detailed information, data and statistics on the oil palm sector: who is doing what and where?
- Assess the potential impact of the oil palm industry on livelihoods
- Identify the skills needs for increasing productivity
- Determine the workforce requirements for modernizing and strengthening both the primary and secondary transformation processes in the value addition chain
- Assess the capacity of training providers to meet current and future workforce skills requirements
- Identify the key requirements for growth and innovation

6. MAJOR CONCESSIONAIRES IN THE OIL PALM INDUSTRY

The major producers of palm oil in the country are the four companies that have signed concession agreements with the Government of Liberia, namely: Sime Darby, Equatorial Palm Oil (EPO), Golden Veroleum Liberia (GVL), and Maryland Oil Palm Plantation (MOPP). The locations of their operations and plantation sizes are indicated in Table 4.

In addition to these large oil palm plantations, there are a number of medium scale commercial farms and smallholders, some of whom have been organized under the Liberia Oil Palm Farmers Union (LOPFU) Incorporated. LOPFU currently comprises about 66 farmers in 12 Counties. Under the memorandum of understanding agreed with the participating farmers, LOPFU provides technical assistance and education to these smallholders for sustainable growth and profitability and supports them to acquire RSPO (Roundtable on Sustainable Palm Oil) certification. The focus of LOPFU is on the planting, growing, harvesting and production of quality crude palm oil, palm kernel oil, and other by-products including (in the long term) animal feed and cosmetics.

TABLE 4: MAJOR LARGE-SCALE COMMERCIAL PALM OIL PRODUCERS IN LIBERIA

COMPANY	LOCATION/COUNTRY	CURRENT PLANTATION SIZE(HA)	TOTAL CONCESSION (HA)	MILL
Sime Darby	Grand Cape Mount, Bomi	10,518	220,000	1
Equatorial Palm Oil(EPO)	Grand Bassa	21,757	66,773	1
Golden Veroleum Liberia (GVL)	Sinoe, Grand Kru, Maryland, River Cress, River Gee	?	220,000	
Maryland Oil Palm Plantation (MOPP)	Maryland, Grand Kru	?	15,400	

On the whole, data on oil palm production in Liberia is scarce and unreliable. However, highly unreliable data suggests a total annual production volume of about 180,000 tons of FFB or 44,000 tons of CPO.¹

7. WORKFORCE SKILLS REQUIREMENTS

From the upstream (farm level) operations to the end consumer products, technical and vocational skills are required to support the transformation processes. These are indicated in Table 5.

The oil palm sector requires both skilled and semi-skilled workers at the production level. While skilled workers are required in areas such as nursery development, soil/site preparation, installation of irrigation systems, farm management and maintenance, the job of planting, cultivating, harvesting, collection and transporting of fresh fruit bunches to milling sites does not demand a highly skilled workforce.

1. Unpublished data collected from non-referenced sources on the Internet.

TABLE 5: TVET SKILLS REQUIREMENTS ALONG THE PRODUCT TRANSFORMATION CHAIN

	 UPSTREAM OPERATIONS	 PRIMARY TRANSFORMATION	 MIDSTREAM PRODUCTS	 SECONDARY TRANSFORMATION	 DOWNSTREAM PRODUCTS	 FINAL TRANSFORMATION	 CONSUMER END PRODUCTS
ACTIVITIES	<ul style="list-style-type: none"> • Cultivation • Harvesting • Transporting 	<ul style="list-style-type: none"> • Milling Operations (sterilization, threshing, digestion, pressing) 		<ul style="list-style-type: none"> • Refining • Fractionation 		<ul style="list-style-type: none"> • Industrial Processing • Packaging • Branding 	
PRODUCTS	<ul style="list-style-type: none"> • Fresh Fruit Bunches 		<ul style="list-style-type: none"> • CPO • PK • CPKO • PK Cake 		<ul style="list-style-type: none"> • RPO • RPKO • PK Oleum • Fats • Industrial Solids 		<ul style="list-style-type: none"> • Margarine • Soaps • Cooking oil • Biodiesel • Etc.
TVET SKILLS REQUIREMENTS	<ul style="list-style-type: none"> • General Agriculture • Nursery • Development • Irrigation • Technology • Plantation • Management • Transport & Logistics • Farm Safety • Natural Resources Management 	<ul style="list-style-type: none"> • Milling Operations • Heavy Equipment Operation & Maintenance • Mill Repair & Maintenance • Occupational Health & Safety 		<ul style="list-style-type: none"> • Process Control Systems • Plant Maintenance • Facilities Management 		<ul style="list-style-type: none"> • Agro-industrial Processing Technology • Packaging Technology • Sales & Marketing 	

FIGURE 4. PICTORIAL VIEWS OF A TYPICAL NURSERY IRRIGATION INSTALLATION, NURSED PLANTS, AND FRESH FRUIT BUNCHES



However, the availability of trained technicians with skills in mill operation, repairs and maintenance, heavy equipment operation and maintenance, process control systems, plant maintenance, facilities management, and occupational health and farm safety, is necessary for the long-term sustainability of the oil palm industry.

8. BRIEF ASSESSMENT OF TVET PROVIDERS

A number of TVET institutions under the ministry of education and vocational training centres under the ministry of youth and sports offer courses in General Agriculture. However, programs specific to the acquisition of technical and vocational skills for the oil palm industry are not available.

In developing the required skills sets for the oil palm sector, there will be need to revise existing curricula or design new ones in collaboration with industry experts. In particular, the capacity of the Agricultural and Industrial Training Bureau (AITB) should be strengthened to take on the lead role of curriculum development together with the Ministry of Agriculture, the USAID-FED (USAID Food & Enterprise Development) program and the training institutions.

It is noted that USAID-FED has supported the establishment of four Centres of Excellence in Agriculture where the National Diploma in Agriculture (NDA) is offered. Specific competency based training programs for the oil palm sector can be developed and offered at these centres of excellence. While the NDA is a 2-year postsecondary program for high school graduates, lower level short duration certificate courses can also be run at the same institutions. This will make for synergies in training delivery and ensure the optimal use of the resources and training facilities provided to the institutions under the USAID-FED program.

The four institutions involved in the USAID-FED program are:

- Booker Washington Institute (BWI)
- Nimba County Community College
- Lofa County Community College
- Grand Bassa Community College

Short-duration skills training programs for less-qualified or out-of-school youth and adults in the rural areas in basic skill areas such as nursery development, planting, farm maintenance and harvesting can be offered at the pre-tertiary TVET institutions under the ministry of education or at the vocational training centers under the supervision of the ministry of youth and sports.

Higher level skills such as irrigation system installation, plant maintenance & facilities management, agro-processing, process control systems, packaging technology, heavy equipment operation and maintenance, transport and logistics, and occupational health and farm safety may be offered at the diploma level. It must be noted that some of the proposed skills sets such as farm management, heavy equipment operation, plant maintenance, and process control systems are transferable to other economic sectors and agricultural value chains. Students acquiring these skills will therefore be equipped for gainful employment in other sectors of the economy.

In this regard, the UNIDO project, supported by the Government of Japan, to strengthen the heavy equipment training infrastructure of BWI into a center of excellence can support the delivery of targeted training to support not only the mining, agro-forestry and construction sectors, but also the oil palm and agricultural sectors.

9. STAKEHOLDER SURVEYS

In order to obtain a clearer picture of the oil palm industry landscape and the skills needs and gaps, two sets of questionnaires were designed and administered to a representative cross-section of public institutions, agencies and government ministries on the one hand, and the private sector, including oil palm producers, NGOs, CSOs, and development partners on the other hand. Stakeholders' opinions were sought on a wide range of issues and challenges affecting the sector as well as its potential for growth and job creation.

Regarding the private sector, respondents were asked about existing and potential partnerships with training providers and areas in the oil palm value chain where skills shortages were most evident. Employers and industrialists were also asked about the skills lacking in their current employees or the industry as a whole, and what they considered as the key constraints to the development of the oil palm industry.

On the other hand, the survey questionnaires addressed to the training institutions covered areas such as the number and type of A-TVET courses offered, access and participation of females, quality of instructors, curriculum relevance and training materials, assessment and certification, and quality assurance. Other issues raised concerned private sector participation in curriculum design and delivery, the management and governance of the training institutions, involvement or support of NGOs and development partners in training provision, cost of training and financing mechanisms, and the employment rates of graduates and trainees.

Samples of the questionnaires can be found in the Appendix

10. KEY FINDINGS AND CHALLENGES

The findings from the survey are grouped under two categories: findings relating to training providers under the ministry of education, and the ministry of youth and sports on the one hand, and the private sector, NGOs and development partners on the other hand.

TRAINING PROVIDERS

While many TVET institutions offer courses in general agriculture, only a few of them provide training in farm machinery. BWI dominates the TVET training landscape with many students enrolled in engineering, farm machinery, and entrepreneurship. None of the institutions surveyed offers training programs in agro-processing. A few of the training providers have female-friendly A-TVET programs such as poultry and crop farming, but no institutions offer programs specifically designed for persons with disability. However, at least three vocational training centers under the ministry of youth and sports run A-TVET courses that address the training needs of persons in rural areas.

The quality of A-TVET teachers needs to be improved. Only about one-third of A-TVET instructors are trained. While some training institutions have integrated ICT into the delivery of

their training programs, teaching and learning materials as well as training equipment are inadequate, obsolete or unavailable. This situation has negative implications for effective training and the quality of the graduates and trainees. Although the ministry of agriculture is involved in the curriculum development of A-TVET courses, the AITB is the main agency responsible for developing the curriculum of all TVET trades in collaboration with the ministry of education.

It is noteworthy that at least 60% of students' assessment is assigned to performance in the practical component of training. This is in line with the standard curriculum partition of 60-70% practice and 30-40% theory for such level of technical and vocational skills development. In most cases, assessments involve the participation of industry experts and test administrators of AITB.

Tuition/training fees are generally low at about USD90 per academic year. At some training establishments under the ministry of youth and sports, tuition is free and students do not pay any fees. On the other hand, BWI which operates at a higher educational level charges tuition fees of about USD300 per annum. Generally, the average training cost per student for TVET programs range from USD700 – 900. Unit costs for A-TVET programs are much lower at about USD300.

Funding for public TVET institutions is mainly provided through government budgetary allocations. Other sources of funding are donations from international NGOs and development partners, such as GROW, Bread for the World, UNESCO, UNIDO, USAID, EU, and the World Bank. There is currently no dedicated Skills Development Fund or training levy scheme in Liberia.

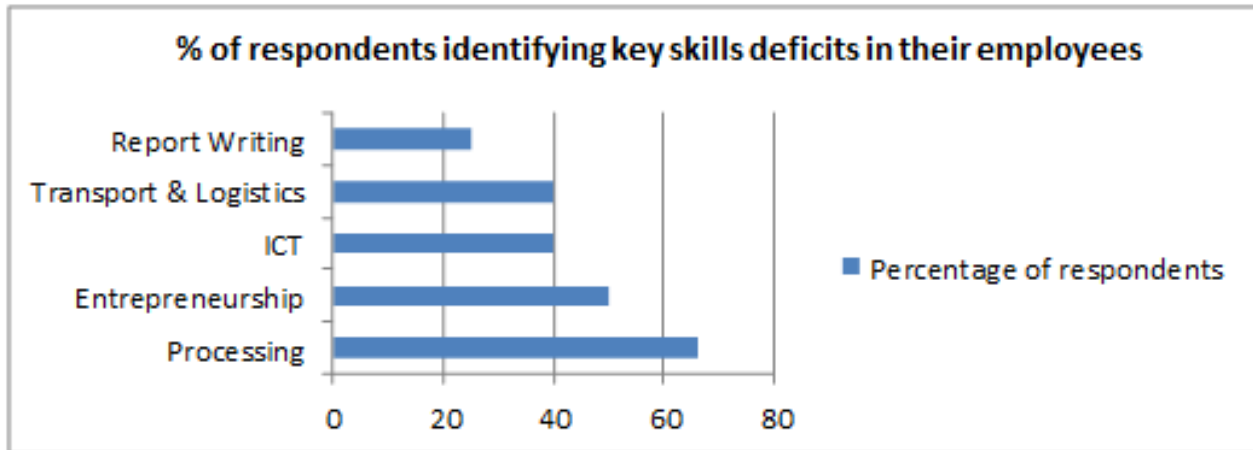
A critical weakness of the TVET system is the absence of national data on TVET completion rates and reliable information on the employment status of TVET graduates. Tracer studies that track the destination of graduates and trainees in the employment market are not routinely conducted by the training institutions. There is therefore no credible feedback mechanism in place to evaluate the quality of training delivered and employer satisfaction with the graduates produced.

PRIVATE SECTOR COMPANIES AND BUSINESSES

Most of the private sector companies (60%) are involved in farming (production) operations with only 20% in processing or marketing. The private sector businesses surveyed are micro (< 5 employees) or small enterprises employing between 5 and 20 workers. According to the employers, the skills lacking in their employees are in the areas of processing (66% of respondents), ICT (40% of respondents), report writing (25% of respondents), and entrepreneurship (50% of respondents).

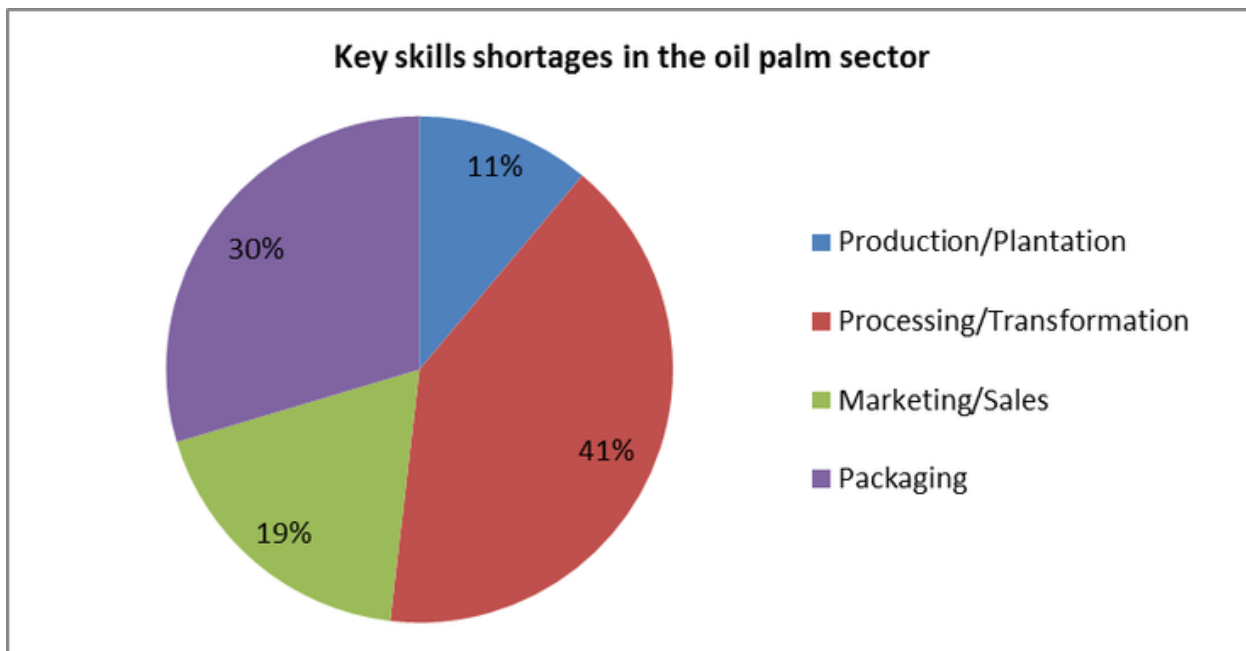
Forty percent (40%) of the respondents also identified the absence of workers with skills in transport and logistics(Figure 5).

FIGURE 5: KEY SKILLS LACKING IN CURRENT EMPLOYEES



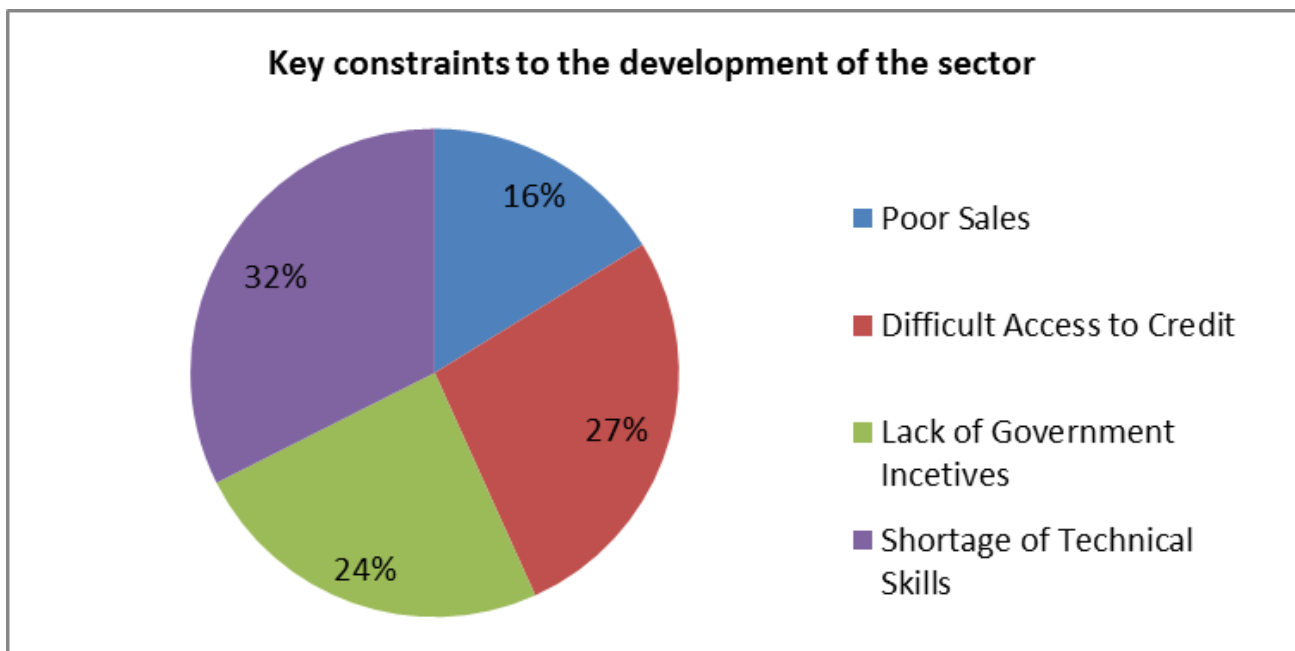
More than ninety percent (90%) of respondents affirm that there are skills deficits in the oil palm industry, particularly at the transformation, packaging and marketing levels (Figure 6).

FIGURE 6: KEY SKILLS DEFICITS IN THE OIL PALM SECTOR



However, the key constraints identified by the private sector as hampering the development of the sector are shortage of technical skills (32%) and difficult access to credit facilities (27%) and lack of government incentives (24%) (Figure 7)

FIGURE 7. CONSTRAINTS HAMPERING DEVELOPMENT OF THE OIL PALM SECTOR



It is significant to observe that all (100%) of the private sector respondents are willing to collaborate with training providers particularly in the areas of curriculum development, training delivery, and internships for both staff and students. Some significant percentage of private sector companies (30%) are also favorably disposed to donating training equipment or making financial contributions towards improving the quality of training.

11. THEORY OF CHANGE AND POLICY INTERVENTIONS

In order for the oil palm industry to contribute significantly to the growth of the Liberian economy, there is need for policies to support the theory of change that underpins the value chain proposition.

THEORY OF CHANGE

What is the outcome envisaged under the strategy of building relevant technical and vocational skills for the oil palm sector?

Outcome: Sustainable growth of the oil palm industry, leading to increased employment opportunities, higher labour productivity, and greater contribution to economic growth.

If the TVET skills required for the oil palm sector are developed and enhanced, **then:**

- a) The quality and competitiveness of the workforce will be improved
- b) Labour productivity will be enhanced, and

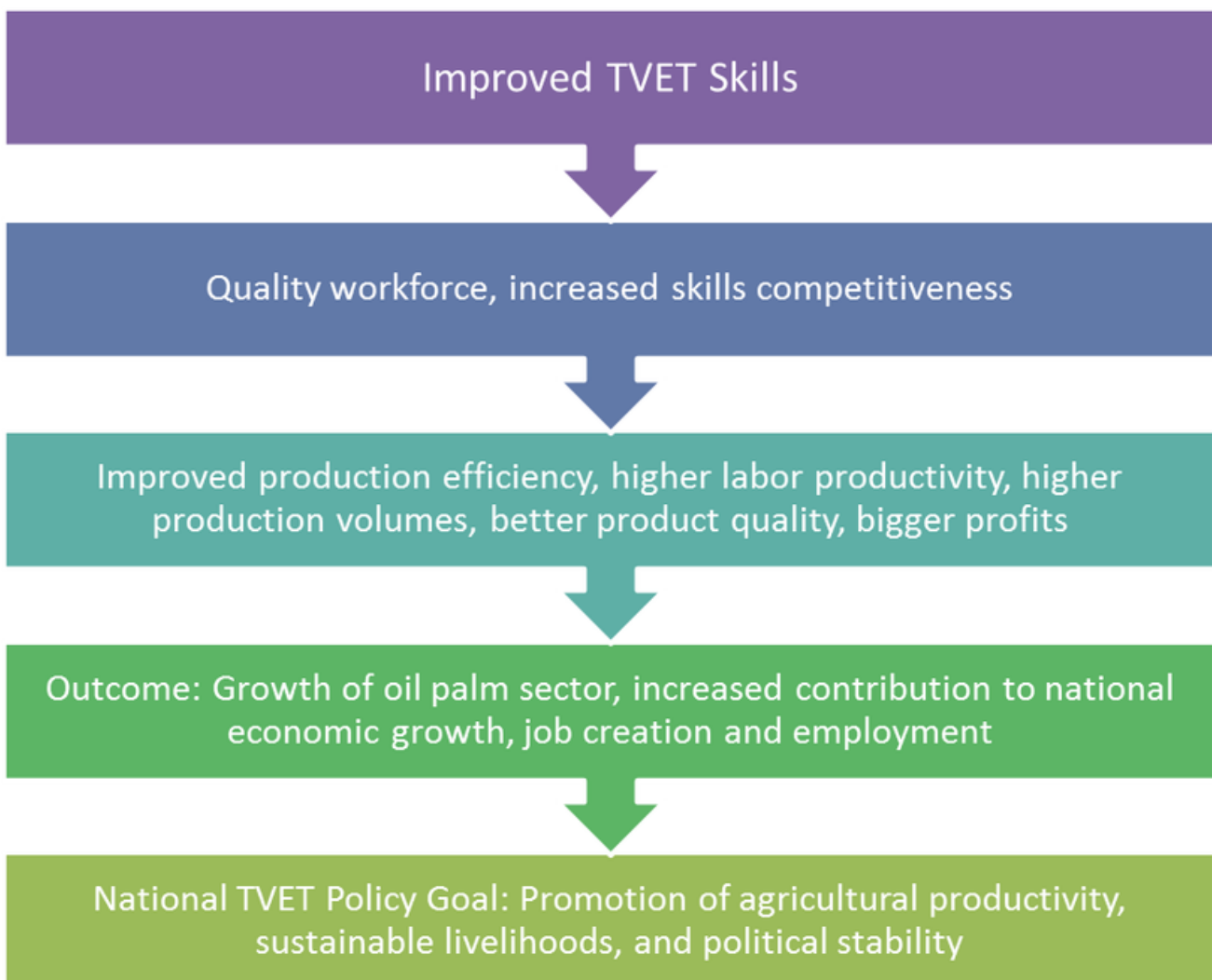
c) The sector's contribution to the growth of the Liberian economy will increase because the improved skills will support:

- Higher productivity
- Improved product quality
- Growth sustainability of the sector
- Increased export volumes and sales
- Environmental sustainability
- Easier attainment of the industry accreditation and certification requirements.

THEORY OF CHANGE FRAMEWORK

The theory of change framework is shown below in Figure 8.

FIGURE 8: THEORY OF CHANGE FRAMEWORK



ASSUMPTIONS

The theory of change is underpinned by a number of assumptions that include:

- Availability of a trainable workforce
- Training institutions are adequately equipped to provide the required training
- Large businesses and concessionaires in the oil palm sector are willing to support training providers in curriculum development, training delivery and quality assurance
- There is strong political will to support the development of the sector
- Entrepreneurs have easier access to credit facilities
- Infrastructure constraints (roads, water, electricity, etc.) and unfriendly business regulations are addressed
- Economic policies and the regulatory regime governing the sector remain favorable for growth and expansion.

STRATEGIC INTERVENTIONS

The development of technical and vocational skills for the oil palm sector within the theory of change framework will not only have policy implications but will also require some strategic interventions. In this regard, it will be necessary to:

- Adequately strengthen the physical and academic infrastructure of the training institutions
- Build the capacity of TVET institutions to develop demand driven curricula and deliver quality training to support the growth of the sector
- Encourage and support TVET institutions to be part of out-grower schemes
- Incentivize AITB to design and implement short duration basic skills training courses for unemployed youth in the oil palm producing communities
- Oblige the large concession companies to invest in research and high level technical and vocational skills development for the oil palm sector

12. CONCLUSION AND RECOMMENDATIONS

The oil palm industry in Liberia is growing and evolving into a major sector that is capable of driving economic growth and industrialization. A skilled workforce is one of the pre-requisites for the sustainable development of the sector. The oil palm sector has huge potential for job creation, poverty reduction, and stemming the rural-urban migration of the youth. If properly harnessed, the oil palm industry may surpass the rubber industry in its ramifications on the national economy and the sustainable livelihoods of individuals.

The outlook for developing the oil palm sector appears good. However, it is necessary to keep in focus the drivers of the industry, which are:

- Enabling policies, incentives, and political will
- Targeted skills development, including research capacity
- Technology (including ICT) integration into the production and processing systems
- Infrastructure development in the production catchment areas (roads, utilities, etc.)
- Increased private sector, NGO and CSO participation and collaboration with TVET institutions and training providers
- Ease of access by entrepreneurs to affordable credit and financing schemes.

In this regard, the following recommendations are made:

- a. Enabling economic policies that encourage expansion of the oil palm industry should be pursued so as to increase the employment capacity of the enterprises and companies operating in the sector. Enterprise development and entrepreneurship should be actively encouraged through appropriate incentives
- b. Technical assistance to small holder farmers should be strengthened
- c. The establishment of county-level oil palm nurseries should be considered by the ministry of agriculture to support small holders. Alternatively, the private sector should be encouraged to establish commercial nurseries to supply nursed plants to farmers at affordable prices
- d. The private sector should also be encouraged to establish central palm oil processing plants within the production catchment areas to process the fresh fruit bunches of smallholders at a fee
- e. Government or the private sector should consider the establishment of a marketing company or consortium that will buy fresh fruit bunches farmers at the farm gate for sale to commercial processing mills. Such a consortium would include marketing specialists with negotiation skills, investors and financial institutions that would offer farmers fair and guaranteed prices for the fresh fruits

- f.** Linkages between training providers and enterprises should be strengthened.
- g.** The MOE and the MOYS should collaborate with the MOA on the Technical Working Group on the oil palm sector
- h.** The training of A-TVET instructors, especially in oil palm production and processing, should be prioritized
- i.** The MOE could solicit the support of ADEA/WGEMPS to establish a robust TVET data collection and analysis platform
- j.** Research activities as well as data collection and analysis should be prioritized to support decision-making and development of the sector

The issues and challenges discussed in this report are intended to guide the further development of policies, priorities and plans for the training of a skilled workforce to support the structural transformation of the oil palm sector, raise productivity, and provide the foundation for greater investments in the sector. The TVSD model proposed for the oil palm sector may be generalized and adapted for various agro processing systems where value addition occurs through transformation processes along the value chain. At each value addition stage, the processing skills required will be identified and appropriate curriculum developed to train the relevant workforce.

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