

## Mapping the Oil Palm Value Chain in Ghana



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## Executive Summary

As per SoW of the consultant and based on both secondary literature and direct field observations and interviews, this report provides:

- i. A description of how the oil palm value chains operates and functions as a whole
- ii. Production, yields, and processing volumes
- iii. The geographical distribution of producers and processors
- iv. Markets and Prices
- v. Identification of the fault lines and the weak links in the chain and potential investment opportunities
- vi. Other relevant information
- vii. Contact list of the key value chain drivers (See Annex on Interview Summaries)

Field observations by the author and a review of the literature shows that Ghanaian oil palm sector is going through an important transformation mainly because of rising demand and rising prices for palm oil, combined with earlier efforts by the government and development projects for the dissemination of new technologies, in addition to the presence of many local processors that are creating a steady stream of demand for palm fruit. According to one specialist, the real boom for Ghanaian palm oil is only just starting<sup>1</sup>.

The oil palm is the second important tree crop in the Ghanaian economy after cocoa. In view of the current prices and trends, it is likely to become the principal tree crop<sup>2</sup>. Geographically, oil palm is a forest product with rainfall above 1200 mm/annum distributed in two seasons. Oil palm bunch production has a peak season in February-May and a lean season in September-December. This corresponds to the rainy and dry seasons. About 70 percent of annual yield occurs in peak season<sup>3</sup>. The areas for oil palm cultivation and processing are the Western, Central and Eastern Regions.

According to the Ministry of Food and Agriculture, Directorate of Crop Services, local oil palm production is on average about 200,000 metric tons per annum, while total demand is around

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<sup>1</sup> - Engineer Mac Makafui Amedzi, Oil Palm processing specialist, ex staff of Solidaridad from 2013 to 2020, interviewed in September 2022.

<sup>2</sup> - Field observations have confirmed that many cocoa farmers in the Eastern Region are cutting down their cocoa trees and planting oil palm in its place due to the superior profitability and more certain cash flow from the sale of FFBS (Fresh Fruit Bunches or palm fruit).

<sup>3</sup> - George Kojo Yawson, Overview of Oil Palm Industry in Ghana, CSIR, Oil Palm Research Institute, Kade, 2012.

290,000 metric tons per annum, leaving a deficit of about 90,000 metric tons which is met through imports of vegetable oil<sup>4</sup>.

Due to this deficit and the job creation aspect of the industry, oil palm is considered as a strategic sector for agriculture and agribusiness by the Ghanaian government<sup>5</sup>. According to the Ministry and confirmed by field observations, there is no market issue for palm oil in Ghana as the FFBs (Fresh Fruit Bunches) are quickly sold and fetch a high price<sup>6</sup>. Field interviews confirm that since 2018, FFB prices have quadrupled in Ghana. The structure of the palm oil industry in Ghana has been shaped by the presence of two different sectors, namely:

- (i) The large industrial estates (known as nucleus estates) with large plantations, superior yields, and large processing factories for processing the Fresh Fruit Bunches (FFBs) and producing both RPO (Raw Palm Oil) and PKO (Palm Kernel Oil).
- (ii) Smallholder sector is either an outgrower supplying the industrial estate factories or an autonomous producer that has several market options namely: (i) sell the FFB to the large factories, (ii) sell in the open market to aggregators, or, (iii) take the FFB to a local artisanal processor and pay for its transformation and sell or store the resulting palm oil.
- (iii) The current area under oil palm is estimated at **540,000 ha**<sup>7</sup>. The plantations represent 20% of the area under oil palm while smallholders represent 80% of the area under oil palm.
- (iv) Small-scale producers produce approximately 60% to 80% of Ghana's oil palm<sup>8</sup>. Oil extraction rate in large factories is around 19% whereas the oil extraction rate of artisanal processing is around 9-12%<sup>9</sup>.

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<sup>4</sup> - The total production figure varies according to different sources and different year. Ofosu and Sarpong offer a different figure of 242,130 MT without mentioning the year. There are no reliable and recent published figures on artisanal oil extraction and production. Most of the figures reflect the output from the industrial estates.

<sup>5</sup> - Interview with the Director of Crop services, August 2022.

<sup>6</sup> - Ibid.

<sup>7</sup> Figure communicated to the author by Mr. Francis Obipeni, in charge of Smallholder and Outgrowers at GOPDC. The figure usually quoted for area under oil palm is 390,000 ha, which is based on a survey carried out by the NGO Solidaridad in 2013. The current figure represent approximately 40% growth in the area under palm oil since 2013.

<sup>8</sup> - K. Ofosu-Budu and D. Sarpong, Ofosu-Budu, K., and D. Sarpong (2013), Oil palm industry growth in Africa: A value chain and smallholders study for Ghana, In: Rebuilding West Africa's Food Potential, A. Elbehri (ed.), FAO/IFAD. C. Osei-Amponsah et al, "Processing Practices of Small-Scale Palm Oil Producers in the Kwaebibirem District, Ghana: A Diagnostic Study," NJAS-Wageningen Journal of Life Sciences 60, 49-56, 2012

<sup>9</sup> - Interview with GOPDC, Outgrower specialist, Mr. Francis Ohipeni. Mr. Ohipeni also worked with the NGO Solidaridad for a number of years. He is one of the top specialists of oil palms in Ghana. T. Rhebergen the author of the book quoted below estimates that in 2012 the oil extraction rate of 12% for artisanal processors and 21% for the larger factories. Therefore, larger factories have had an important productivity gain in oil extraction over the past decade as opposed to relatively stagnant oil extraction rate in the processing sector.

Expansion of the oil palm industry by large-scale plantations in Ghana is limited to due to the lack of suitable and available large and contiguous tracts of land. A feasible strategy for oil palm expansion can be sought through smallholder production, which can make use of smaller parcels of land<sup>10</sup>.

The most important current event in the oil palm sector in Ghana is the sharp rise in palm oil FFB prices which have quadrupled since 2018 when FFB prices per ton were at GhC 400/ton and in August 2022 to GHC 1,600-1700/ton. Palm oil prices were Gh C. 200 in August 2021 for a 25 liter jerry can of locally processed palm oil while in August 2022 the price has risen to Gh C. for a 25 liter jerry can.

There has been a narrowing of the yield gap between the large plantations and smallholders. According to GOPDC the current potential yield of the plantation sector is 18 to 20 tons/ha and the current potential yield for the Outgrowers has risen from the baseline in 2012 of 5.3 tons/ha to the current 12-15 tons/ha. The yield of the independent smallholders has also risen from the baseline of 5.3 tons/ha to between 8 to 10 tons/ha. But there is still an almost 10 tons per ha yield gap between the plantation and the independent smallholders that need to be bridged as a priority by the government<sup>11</sup>. The rising yield is due principally to the widespread use of improved planting material and the rising price of palm oil, which is bringing more small investments to the sector as well as the gradual adoption of Best Management Practices (BMP), although there is still a long way to go<sup>12</sup>.

Small scale processors have currently (2022) a relatively lower oil extraction rates (OER) of 13%, compared with 27% by large-scale processors<sup>13</sup>, resulting in respective crude palm (CPO) oil losses exceeding several tons per ha. Furthermore, the published literature does not highlight the very real potential of the artisanal processors and the available technologies that can enable the local processors to effectively compete with imported oil in the domestic market. This trend is increasingly the case given the sharp rise in imported oil prices in 2022<sup>14</sup>.

Some of the value chain ***fault lines*** that have been identified are listed below:

- i. Absence of adequate extension to promote good agricultural practices in oil palm for the autonomous smallholders (not the Outgrowers covered by the large plantations) reflected in the much lower potential yield in spite of the availability of high yielding planting

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<sup>10</sup> - T. Rhebergen, *Yield gap analysis in oil palm production systems in Ghana*, University of Wageningen, 2019.

<sup>11</sup> - MoFA, DCS, Ibid.

<sup>12</sup> - T. Rhebergen, *Yield gap analysis in oil palm production systems in Ghana*, PhD Thesis, University of Wageningen, 2019.

<sup>13</sup> - Ibid

<sup>14</sup> - The improved mechanical oil palm processor with hydraulic reaction cone can yield up to 17% extraction rate. The cost of the machine is US\$ 12,000. This technology has not yet been adopted by the artisanal processors due to the financing constraint.

material.

- ii. Issue of alternative livelihoods for farmers, which have to renew the plantation (after 25 years) and wait for 4-5 years to get a fresh stream of income from oil palm.
- iii. Much of artisanal processors (90%) use the manual spindle with a throughput of 200-300 kg per hour and an oil extraction rate of 9-12%. About 18% smaller number use the mechanical screw press with manually controlled reaction cone which has 12-14% extraction rate. The improved technology of a mechanical screw press with hydraulically controlled reaction cone which can yield up to 17% oil (not far from industrial standards) is available in Ghana but less than 1% of the processors are using it.
- iv. Environmental consequences of the release of the effluent after oil processing by artisanal processors. There is need to reuse the effluent in composting and as fuel for the boilers which heat up the palm fruits prior to digestion and extraction.

Consequently, the following areas may provide immediate financing opportunities for UMB. These potential opportunities will be deepened with UMB during a later stage in the value chain financing process:

- i. Farm Management Companies that provide a one-stop-shop including inputs and extension to farmers to bridge the yield gap. What is financeable are the provision of extension and advisory services, contractual labour for planting, maintenance, and harvesting in addition to the supply of inputs and equipment. Farmers are willing to pay for quality extension and other services<sup>15</sup>.
- ii. Financing alternative livelihoods to smallholder oil palm farmers during the replanting period under the financial guarantee of the estates and large plantations. Such alternative livelihoods, especially small livestock raising such as rabbits, grass cutters, snail, and beekeeping can provide a stream of income to farmers during the first 3-4 years after planting the new palm oil trees.

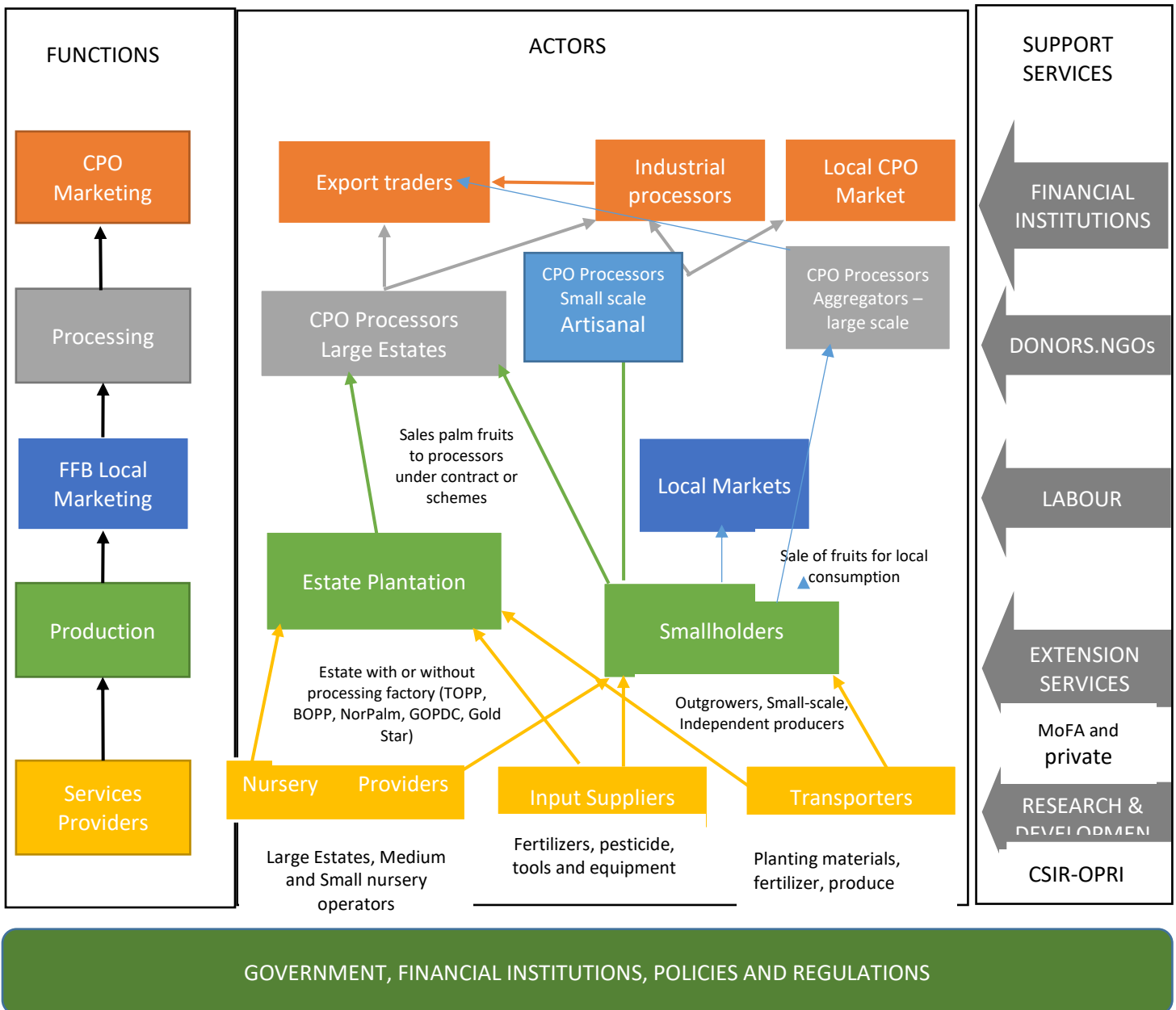
Financing artisanal processing plants with new technologies especially for renewal of processing machines for over 1100 artisanal processors operating in Ghana to narrow the oil extraction yield gap in the processing sector.

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<sup>15</sup> - There are a small number of companies already going in this direction. Interviews with farmers revealed that they are in great need of extension and advisory support and would be willing to pay for its cost.

**I. Detailed Report**

**Oil Palm Value Chain Mapping and Key Actors**



**TABLE 2: Area, production, yield (Oil Palm) in '000 HECTARES**

CROP	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Area	382,000	397,000	409,000	349,000	426,000	434,000	347,000	351,000	359,000	358,000
Production	2,125,600	2,196,100	2,326,920	2,443,270	2,443,000	2,443,000	2,476,065	2,647,066	2,655,440	2,471,605
Yield (MT/ha)	5.56	5.53	5.69	7.00	5.73	5.63	7.14	7.54	7.40	6.90

Source: Agriculture Facts and Statistics, MoFA, 2022

Note: Production refers to FFB

### Input Suppliers

- Inputs such as pesticides, herbicides, fertilisers, processing equipment and packaging materials. Some big agro-chemical dealers are located in Greater Accra, while smaller dealers operate throughout the oil palm growing areas in the country. The dealers sometimes offer information on the use of chemicals to producers.

### Smallholder Producers

- There are three identifiable types of small-scale farmers: (i) The smallholders organised under smallholder schemes<sup>16</sup>; (ii) Outgrowers organised under outgrowers schemes<sup>17</sup>; (iii) Independent smallholders, which do not operate under any schemes and maybe covered by projects or government's extension services

### Large Estates

- The large-scale plantations include Ghana Oil Palm Development Company GOPDC at Kwae near Kade in the Eastern Region (see map below)<sup>18</sup>, SOCFIN in the Eastern Region, Benso Oil Palm Limited (BOPP) in the Western Region, , NORPALM in the Western Region, Twifo Oil Palm Plantation Limited (TOPP) in the Central Region. Ameen Sangari

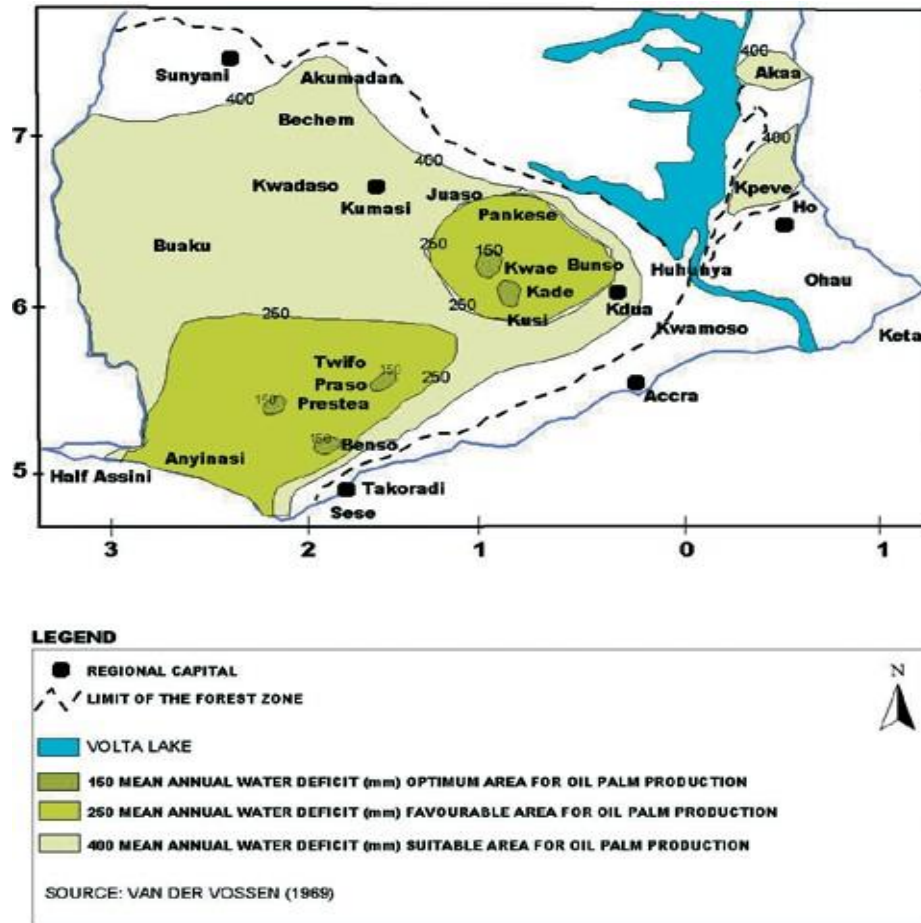
<sup>16</sup> - GOPDC's smallholder scheme is considered as part of their Corporate Social Responsibility.

<sup>17</sup> - The smallholders and outgrowers often receive supply of seedlings from the nucleus plantation that supports the schemes.

<sup>18</sup> - - K. Ofoso-Budu and D. Sarpong, Ibid,



and Juaben Oil Mills have struggled over the past few years. Gold Star Plantations produce FFBS for sale to large-scale plantations but do not have their own processing factory.



Map of Ghana Showing the Oil Palm Growing Areas

Estate Plantation (GOPDC) Eastern Region (with cover crops under the oil palm trees)

4. Some of the factors responsible for low productivity on private independent small-scale farms as compared to the large estates include the limited use of improved planting material, limited application of fertilizers, old and low-producing tree stock, poor maintenance and often unfamiliarity with cover crops under the oil palm trees. Cover crops such as mucuna or beans can fix nitrogen and enhance soil biology thereby increasing yields of oil palm trees.

Processors



5. The smallholder sector produces more than 2/3 of Ghana's crude palm oil (CPO). Women play a major role in Ghana's informal oil palm sector. Terms such as "oil palm mamas" or "market queens," refer to operators and traders of processing mills and sale in the smallholder sector. Around 80 percent of informal mills are owned by men, even though the operators and majority of laborers are women<sup>19</sup>. Palm oil and kernel oil can be processed into vegetable cooking oil, glycerin, Bio-diesel, and provides the raw materials for manufacture of soap and detergents.
6. Over the past few decades, the formal sector has played a particularly important role in industry expansion by providing planting materials, fertilizers, harvesting tools and safety equipment to oil palm farmers in exchange for exclusive contracts<sup>20</sup>. The competition has resulted in some farmers to side sell their palm nuts to the informal sector without repaying their debts to the companies with which they were originally contracted. As a result, some companies have closed their service and benefit schemes with farmers to stay economically competitive.
7. Six estates are the major processors in Ghana. However, most of the FFB (80%) are processed by small and medium scale mills, especially for the local market. These small facilities are facing serious challenges in terms of oil quality (poor extraction rate, low quality) and have a negative impact on the local environment (effluents, smokes). The majority use very primitive manual spindle method with an extraction rate below 10%. There are improved mechanical equipment with higher rates of extraction. The highest rate of almost 17% can be achieved by a mechanical screw press with hydraulic reaction cone at the current cost of \$12,000.

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<sup>19</sup> - R. Sarku, Analysis of palm fruit value addition for socio-economic development in the Kwaebibirem District, Ghana, International Journal of Development and Sustainability, Volume 6, No. 4, 2017

<sup>20</sup> - Ofosu-Budu, K., and D. Sarpong (2013), Ibid.



Traditional manual spindle method for oil extraction

Women in palm oil processing

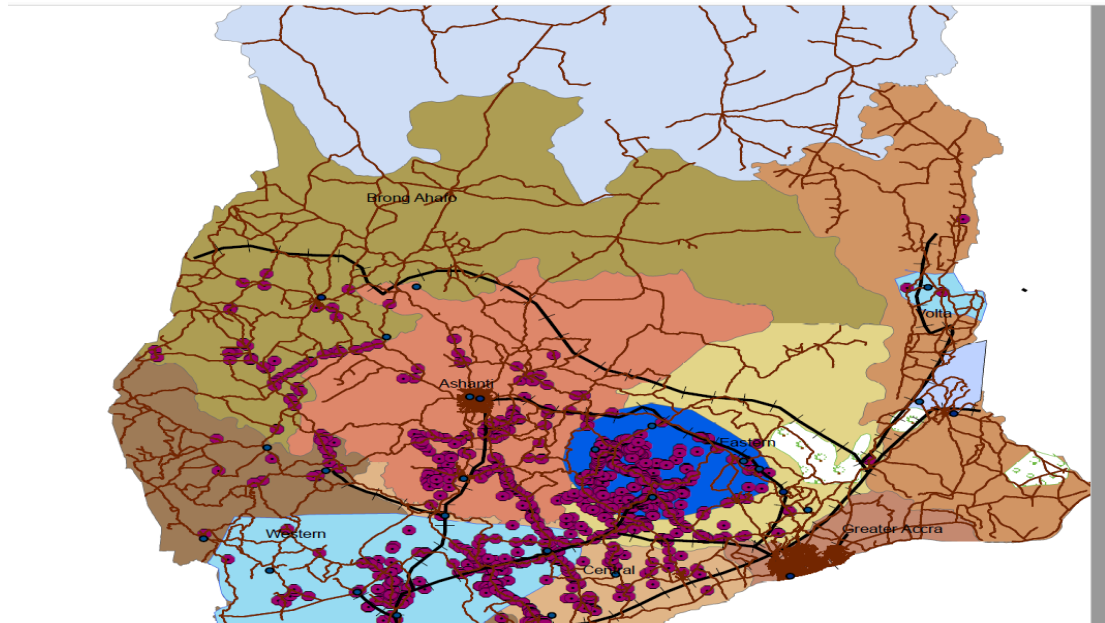


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10. The mills are generally owned by men while the workers are principally women who separate the fruit bunch, boil the palm fruits, and carry the fruit to and from the digester, separator, the boiler, and cream off the oil from water in pots. Over 80% of Ghana's FFBs produced is processed into Crude Palm Oil (CPO) and Palm Kernel (PKO) for the domestic market – for industrial use or home consumption and for the export market to West Africa or to Asia.



Artisanal palm oil processors – Geographic distribution - Ghana

Source: Survey carried out by Solidaridad, 2013; courtesy of Engineer Mac Makafui Amedzi



Palm kernel obtained after processing palm oil

11. There are over 1,274 (2013) local and artisanal oil mills located in the growing areas and they process a bulk of FFBS into CPOs but the quality is low.
12. Both industrial processors and artisanal processors obtain substantial quantities of palm kernel which requires further processing to obtain PKO which is a very valuable product in the international market. Palm kernel, is transformed by both large factories and by artisanal processors. PKO requires a separate oil extraction machine. There are multi-seed oil extraction machines available (mainly outside Ghana) that could potentially create an artisanal PKO processing industry but this has not yet happened. Currently, there are three methods of extracting oil from palm kernel namely (i) traditional method for home oil extraction; (ii) direct solvent extraction method used in large and medium scale processing mills of palm kernel, and mechanical extraction<sup>21</sup>.
13. The major industrial users are Wilmar, Unilever, Sofin, and Paterson Zonchonis. They sell either refined oil products or products derived from palm oil such as detergents and soaps.

#### Service Providers

14. Research: The Oil Palm Research Institute of Ghana (OPRI) at Kade is a research institute dedicated to Oil Palm. It has an international reputation and collaborates with most of the large estates. OPRI produces quality certified seedlings but lacks an improved distribution network to reach all the producers. Various Universities and other institutions also work in the sector. Most of the research institutions in Ghana are facing financial and technical resource constraints to undertake effective research.

#### Extension

15. The Ministry of Food and Agriculture (MOFA) provides extension services in the oil palm value chain. In some areas, extension is provided in collaboration with NGOs and donors through trainings, farmer field schools and media releases. The NGO Solidaridad was the main force behind extension for the oil palm sector in Ghana between 2013 and 2020. Currently (August 2022), the government staff lack operating funds to do field visits. The government through Planting for Food and Jobs provided seedling and subsidized fertilizer between 2017 and 2020 and has been continuing to provide seedling to farmers from certified

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<sup>21</sup> - Rebecca Sarku, Palm Kernel Processing for Income and Employment in the Kwaebibirem District, Ghana, Asian Journal of Agricultural Extension, Economics & Sociology, 16(2): 1-14, 2017

nurseries for replanting but no more subsidized fertilizer. In 2022, in Kade district, MoFA has distributed 50,000 seedlings for covering 333 hectares of new plantations for smallholders. As of August 2022, there are no projects in the district supporting the extension services. The minerals commission has supported reclaimed lands in abandoned gold mine pits for new oil palm plantations.



Extension worker talking to the farmer (notice the absence of cover crops)

### Transporters and Aggregators

16. They play an important role in bringing the FFB from the fields to the processing facilities. Transport of products remains a major challenge in remote areas where farmers struggle to find adequate transport to sell their product. There are collectors and aggregators operating near the cities with a scale that buy FFB and pay cash currently (August 2020) at Gh.C 1600-1700 per ton. The aggregators usually sell the collected FFB back to the large industrial factories although they can sell to the local processors if they offer a better price. There is actually a strong competition for FFB between the large plantations and the artisanal processors. They aggregators have set up local collection point on the main roads where farmers can easy access the agent, weigh their FFB and get immediate cash.

### Markets and Prices

17. The domestic market for FFB is very strong and there is a lot of competition between the large processors and the artisanal processors. The market, therefore, is not an issue in the palm oil value chain.



Aggregator agent buying location near Kade (August 2022)

18. The average local market price of FFB increased from GHS 150 per ton in 2013 to about GHS 400 per ton in 2016, 450 GHS in 2018, and GHS 1600-1700 in 2022<sup>22</sup>
19. Internal marketing of FFB and CPO is dominated by independent smallholders and outgrowers of estate plantations. FFBs are sold to local processing mills and estate mills for the production of Crude Palm Oil (CPO). A percentage of palm fruits is sold at the local market for household consumption. The CPOs from the Estate and Large mills are then sold to industrial users of CPO and exported to other West African countries or Asia. The CPOs from the local small-scale processors are sold in the local market. future supply and demand in Ghana indicate that the present shortfall of CPO supply will grow from 32,000 tons to 127,000 tons in 2024. Thus, there is a considerable requirement to fill this deficit.<sup>23</sup>
20. Oil palm is indigenous to Ghana and palm oil is an important local staple food and very rich in vitamin A and other minerals. There is a debate on the health aspects of consuming palm oil because of its high content of saturated fat although there are studies that show that it has many health benefits. A recent study shows that much of the criticism of palm oil as an edible oil is largely unjustified<sup>24</sup>.

<sup>22</sup> - Interview with farmers, GOPDC, and Engineer Mac (Ibid) have confirmed this trend.

<sup>23</sup> Tree Crop Implementation Plan Master Plan Review – Chapter 7 Oil Palm

<sup>24</sup> -, C. Benvenuti et al, Palm oil: health risks and benefits Article in Agro Food Industry Hi Tech · November 2017

Exporters and Industrial Users

<b>Exports of CPO and PKO - 2020 - 2021</b>			
<b>Year</b>	<b>2020 (MT)</b>	<b>2021 (MT)</b>	<b>% growth</b>
<b>Crude Palm Oil (CPO)</b>	11,715	1,253	-89%
<b>Palm Kernel Oil</b>	183	144	-21%

Source: Ghana Export Promotion Authority Website

21. Ghana is a net importer of CPO and after seeing a rise in export volumes and value from 2006 to 2011, it experienced a downward trend in performance until 2017 when there was a sharp fall in quantities exported. The trend has continued until 2021 as can be seen from the table above. Most of the palm oil produced in Ghana is now consumed locally and used by local processing industries.

Quality issues, Certification and Standards

22. Quality of CPO is critical and affects its pricing on the market. CPO with high FFA, adulteration (Sudan IV) and foreign material is not good for the market and attracts low prices.
23. Some of the quality benchmarks are oil extraction rates, level of free fatty acid (FFA) and the moisture content of this product. CPO as an international commodity traded on exchanges has predetermined quality parameters for trading that include FFA of not more than 5% and moisture content of not more than 0.4%.

## II. Other Relevant Information in the Oil Palm Value Chain

24. In the 60s and 70s, Government set up the State Farms Corporation to establish oil palm plantations solely to export CPO as part of the drive to increase import substitution of vegetable oil and other products. This policy direction resulted in the establishment of other estate plantations oil processing mills including Benso Oil Palm Plantation (BOPP), Twifo Oil Palm Plantation (TOPP) and Ghana Oil Palm Development Corporation (GOPDC) in the 80s and 90s.



25. There is an alternate livelihood project for young men and women who were engaged in illegal mining with the production and supply of oil palm seedlings for their own farms. This is funded by Precious Minerals and Marketing Company (PMMC) through private nurseries.
26. Solidaridad, TechnoServe, have been implementing projects with the objective to increase oil palm productivity, support growers to form associations, provide technical assistance to local processing CPO mills.
27. Outgrower associations include the apex body, Ghana Oil Palm Development Association (GODPA) and Oil Palm Outgrower Association (OPOA).



## Value Chain Mapping of Oil Palm– Ghana

### Interim Summary of Interviews

Aug 12 – Sep 30, 2022

Total Persons Interviewed for Oil Palm Value Chain: 30

#### **1. Interview with the Department of Tree Crop Services, MoFA, Accra**

15 August 2022

# of persons interviewed: 3

Location: Accra

- I interviewed Mr. Akoto, Director, DCS, MoFA, Tel: 0244 384 493; Mr. Anim Jerry Jacob, Assistant Director, Cashew Development, DCS, Tel: 0243757490; Ms. Rosemary, responsible for the Oil Palm development, DCS, Tel: 0244379034

#### Oil Palm

- There is a large gap between the yield or productivity per ha of estates (15 tons/ha) and the smallholders (5 to 10 tons/ha).
- There is also a large gap in processing yield between large plants (20% to 25% oil extraction rate) and artisanal processors (10% oil extraction rate).
- There is need for emphasis on smallholder oil palm rehabilitation through improved pruning, weed management, cover crops, and spraying.
- There is need for the establishment of a new plantation (Oil palm tree must be felled after 25 years and replanted).
- Some nurseries in Ghana are being certified.
- Fresh Fruit Bunches (FFB) has a very competitive market; there is competition between large plantations and the artisanal processors.
- Total palm oil production currently is 200,000 metric tons.
- There is need to finance new plantations to replace the plantations that are 25 years old or older.
- Artisanal processing equipment is outdated and need replacement.
- Farm size of smallholder palm farmers is 1 to 3 ha.
- There is an Oil Palm Master Plan prepared by consultants (MASDAR) as part of the plan for Tree Crop Development Authority which has been created with HQ in Kumasi but which is yet to receive full funding. Contact for Tree Crop Development authority: Foster Brateng: 054 011 6738.
- Government is currently unable to provide adequate extension because of lack of resources for operations.

#### **2. Interview with UMB**

18 August 2022

# of people interviewed: 4

Location: Accra

Mr. Roland Akarfa – Head, Strategy; Edward Asafu Adjeye, Head, FMCG, Commodities; Emmanuel Sackey Incoom, Head, Mining and Metals; Stephen Ampadu, Head Research and Strategy

- UMB already has a small agricultural portfolio (0.5% of loan portfolio) in cocoa purchases and sales, cane sugar processing, cassava starch production, and palm oil processing.
- They stated that their expectation is to get a report with a financing focus and information to assist them to increase their agricultural portfolio, identify financing opportunities, modalities of financing suitable to various value chain operators, and de-risking strategies.
- They stated that the cashew value chain is not well structured and prices have dropped
- They agree that the study should focus on oil palm, cashew, and soybeans
- They expect further capacity building and assistance in lending to the identified value chains from the Consultant after the presentation of the report expected on 30 September 2022.

### **3. Interview with Palm Oil producers and Processors Group**

August 24 2022

# of people interviewed: 12

Location: Abompe, Eastern Region

- Name of President and owner of the processing mill: Samuel Obugyei, Tel: 0551430751
- One major problem in actual yield is the common occurrence of theft. They stated that unemployed youth steal the FFBs from the farm and lower the yield per ha.
- They do not know the production per hectare but in FFB (fresh fruit bunches). One FFB varies in weight between 10 to 30 kg (average about 20).
- They do manual weed control
- They are not using cover crops
- Sometimes they spray with glyphosate for weeding below the trees; some farmers are aware of the danger of spraying herbicides and avoid it
- No fertilizer is used because of cost
- Average yield is about 5 tons per ha (based on 20 acres (8 ha) producing 40 tons)
- 1 tons of FFB gives 225 liters or 22%; 10 kg gives 2.8 liters (This is unlikely because large plantations with improved machinery can produce about 21% and previous studies show that artisanal processing yields about 10 to 12%)
- 1 average FFB is 20 Gh.C

- Current price per ton of FFB is GHC 1600
- 25 liters of palm oil is sold at 300 at the processing center and 400 at shops
- Main expenses of production are: weeding, pruning, and harvesting
- Labour is scarce and expensive
- Some of the farmers work with large companies as Outgrowers
- Large companies/plantations provide seedling and advice
- Cost of weeding per ha: ghc 200
- They need Improved boilers and separator machine
- The old screw press in use is being repaired by the owner who is a mechanic

#### **4. Interview at the Oil Palm Research Institute at Kuse, Eastern Region**

August 25, 2022

# of people interviewed: 2

Location: Kuse, Eastern Region

- Meeting with Dr Isaac Danso, Senior Research Scientist, Tel: 0244028992, and Dr. Frederick Danso, Senior Research Scientist, Tel: 0208208549
- The Institute is under the Council for Scientific Research, which covers 13 research institutions and has the mandate of working with specific crops, including oil palm and coconut. Their focus is on production and productivity issues.
- Planting material is key. High yielding hybrid planting material for oil palm such as Tenera is available.
- Focusing on 25 ton/ha yield for oil palm.
- Some large plantations have 20 tons already.
- Wild oil palm tree has a yield of 4 to 5 tons without any agronomic improvement.
- They are aiming at 25% oil extraction rate as opposed to maximum 15% local processing rates.
- Tenera planting material is being promoted. GOPDC has 25% of its plantation in Tenera.
- Good agronomic practice requires planting at the beginning of the rainy season, use of cover crops especially pueraria or mucuna which also act to control weeds under the palm oil tree, application of fertilizer especially P (phosphorous) and K (potassium), and pruning.
- Cost of weeding is high and with poor weeding yield declines. Not recommended to use herbicides like glyphosate due to its adverse impact on soil biology.
- In terms of pests and disease, there has been pest attack by the leaf miner, beetles, and some fungal diseases which would be eliminated with correct agronomic practices.
- There is need to develop drought resistant varieties because of 3-4 months drought during the year.
- Farmers located far from the station has difficulty accessing improved planting material because of transport costs; however, there is general awareness of the superiority of improved planting material.

- Cost of a Tenera seedling is ghc 14.
- They supply certified nurseries.

## 5. Interview at Ghana Oil Palm Development Corporation (GOPDC)

Date: August 26, 2022

Location: Kwae, Eastern Region

# of people interviewed: 2

- Meeting with Mr Fransic Ohipeni, Outgrowers Manager, Tel: 024 661 9911, and Mr. Samuel Ntow Okyrere, Nucleus Farm Manager, Tel: 024 962 5047
- The definition of a plantation is 40 ha and above.
- Smallholder Scheme: total 350 ha with maximum 2 ha per small holder with a total of 175 beneficiaries; this is part of corporate social responsibility for GOPDC (concession to the chiefs).
- They are helped with land preparation, planting, seedling, and farm management through the company.
- Many of the farms are now old reaching 24 years and the trees must be felled and replanted. Their yield is now 12-13 tons/ha which is low.
- Plantation yields are on average 18 tons per ha.
- We used planting material from Benin (Palm Elite) from SIRAT.
- Outgrowers are a group of farmers under contract with us.
- We supply the outgrowers with improved seedling at a cost (reimbursable at harvest), and we make sure that the land is suitable.
- They are obliged to sell 80% of their FFBs to the company (not all).
- Average yield is 18-20 tons per ha.
- 70% of the crop comes in the first half of the year.
- Lean season is July to December and full season is December to June and peak season is February to May.
- Cost of production for an industrial plantation (10,000 ha plus) is Gh.C 1400/ha.
- Cost of production for outgrowers is 2200/ha (mainly labour costs).
- Independent smallholders have lower yield at 6-8 tons per ha.
- Access to high yielding planting material in Eastern Region is adequate.
- Water stress during the drought season lowers the yield. Irrigation would be very effective.
- Autonomous smallholders have insufficient number of trees per ha and do not follow good agronomic practices.
- Pruning must be done twice/year once in December and January and once in June and July.
- The palm elite variety has limited height and lives up to 28 years.
- With cover crops in place, nitrogen fertilizer is not needed but there is need for potassium (K).

- Crop recovery should follow a 30-day cycle for smallholders; there is problem of over ripe fruits and loose fruits.
- Theft can be a problem.
- The idea of Farm Management Company as a one-stop shop is a very good idea. Farmers would pay for advice if it is good advice. The company can offer labour services, harvesting services, farm inputs, and crop protection and maintenance services.
- Solidaridad had a similar idea which was never put to practice.
- Solidaridad was a very effective project:
  - It carried out a national yield gap analysis in 2013
  - It operated demonstration farms for training
  - It raised smallholder yields significantly to up to 19 tons/ha in certain cases
  - It provided extension
  - It provided improved seedling and cover crops
- Processing: Artisanal manual spindle press has a yield of 9%, mechanical (non-hydraulic) screw press has a yield of 13%, and industrial processors have a yield of 27%.
- Some useful phone numbers: (i) Association of Artisanal Millers, Mr. Paul Amoueni, Tel: 057 633 5247; (ii) Secretary of Outgrowers Association, Tel: 024 443 1362; Chairman of Smallholder Association, Mr. Alex Odum, Tel: 024 424 8974
- A good reference for compilation of Solidaridad yield gap surveys is T. Reberghen, Yield Gap Analysis for Oil Palm in Ghana, 2017 (available online).
- Outgrowers make seasonal repayments with FFBs (70% in the first half of the year and 30% in the second half of the year).
- GOPDC has 4,400 ha of oil palm plantations.
- In 2021, total production was 60,000 tons of FFB with 13.6 tons/ha yield.
- Peak season they employ 1500 workers and lean season only 800 workers.
- There is planned development of additional 2000 ha.

## 6. Interview with Serendipalm

August 26, 2022

Number of people Interviewed: 1

Location: Asuom, Eastern Region

- Meeting with the production manager, Mr Andrew Omias Benpah, Tel: 024 335 7784
- Serendipalm is a processor of organic palm oil from organic growers that it supervises.
- In 2020, the company exported 795 tons and in 2021 it exported 823 tons of palm oil.
- In 2022, the goal for the year is 1200 tons; it has done 600 tons so far.
- There is insufficient supply of FFBs from its smallholders as it has greater processing capacity.
- They have customers from Germany and USA (Dr. Bronners, the company owner).
- It supports 650 smallholders.

- There is strong competition for FFB – market is not an issue for smallholders.
- It provides loans, farm inputs, extension and market (it exports all its oil).
- Root capital has been one of their financiers.

## **7. Interview with Kwaebibirem Rural Bank**

August 26, 2022

Number of people interviewed: 2

Location: Asuom, Eastern Region

- Meeting with Mr Ernest Obeme, Head of Credit, Tel: 050 155 7104 and Mr. Richard Tetteh Larvi, Loan Officer for agricultural loans.
- They have 265 agricultural borrowers involved in Oil Palm production and processing. Total Outstanding loans to the agricultural borrowers in GhC 363,000 with an average loan size of GhC 1400 (\$150).
- They are interested in collaborating with a commercial bank for lending to oil palm producers and processors.

## **8. Interview with the President of an Association (VSLA) of Oil Palm and Cocoa producers, Abaam, Ghana**

August 26, 2022

# of persons interviewed: 2

Location: Abaam, Eastern Region

- Meeting with Nyanor Daniel and his wife, Tel: 054 607 5535
- He produces oil palm and cocoa; he has 3.2 ha of Oil Palm.
- He sells mainly to Serendipalm.
- Serendipalm provides extension and seedling deductible at harvest.
- He first planted oil palm 8 years ago.
- 3 years ago, they formed an association.
- If they decide not to sell to Serendipalm, they go off scheme and will not receive further support.
- They used to sell all to GOPDC but Serendipalm provides loans and services. Serendipalm also provides scholarships and healthcare to the community.
- Serendipalm has helped them to buy a tricycle for transporting FFBs (using the VSLA model).
- They must maintain organic standards with no chemicals in the field and they must plant cover crops.
- Oil palm is more profitable than cocoa (cocoa prices are again down this year); 8 nags of cocoa this year sells at GhC 480 (60 ghc per bag) whereas 8 bags of palm fruit (removed from the bunch) sell at GhC 5280 (660/bag) – more than 11 times.

- In the major season he sold 4.5 tons at GhC 1600// tons and received 7,200.
- Most cocoa farmers in the area are converting their plantation to oil palm.
- Establishment cost for 1 ha is GhC 25,000; maintenance cost per year per ha is GHC 1700.

### 9. Interview with Chairman of GOPDC Outgrower Association

August 29, 2020

Number of persons interviewed: 1

Location: Kade, Eastern Region

- Meeting with Mr. Alex Odum, Tel: 024 424 8974
- Next year our members totaling 207 smallholders (2 ha per farmer) must fell their oil palm trees and replant; each smallholder has 240 trees – total: 50,000 trees.
- There is need to sustain the smallholders with alternative livelihood such as small livestock raising especially grass cutter, snails, beekeeping, and rabbits.
- GOPDC has agreed to finance the replanting costs of GhC 1,740,000 (\$ 200,000) deductible from the harvest s in the future.
- The problem is during the 3-5 years that it takes for oil palm to fruit, how do farmers sustain themselves and their families.
- The suggestion by the Consultant to arrange for a loan to the association for the 207 members for financing alternative livelihoods was welcomed by the Chairman man.
- According to the Chairman, GOPDC can guarantee the loan from a commercial bank to the association.  
*Note: further consultation with GOPDC on this point revealed that GOPDC would be willing to consider offering a guarantee for faithful farmers who supply the company regularly and are good repayers (not all)*
- Felling the tree does generate some income from the wood and palm wine but not enough for surviving the required period of 3 years.

### 10. Interview with Engineer Makafui Amedzi

August 31, 2022

# of persons interviewed: 1

Location: Accra

- There are a total of 1,217 artisanal processors of palm oil and palm kernel in Ghana (data from 2013, survey carried out by Solidaridad).
- 90% of processors use the manual spindle.
- 8% use the mechanical screw press with manual cone.
- 2% use mechanical screw press with hydraulic cone (the improved model).
- Main constraints in the artisanal processing sector:
  - Lack of process knowledge

- Inability to address environmental issues: effluent can be used as fertilizer or can be burned to heat the boiler. Currently it is mainly wasted
- West Africa is the next hub for palm oil development; Because of the absence of the availability of large tracts of land, the future growth must come from smallholders.
- The big boom for palm oil has not yet started; prices of FFB have quadrupled over the last 4 years from Gh.C 400 in 2018 to GH.C 1600 in 2022.
- Not advisable to set up more large industrial processing units. The way to go is to set up smaller units with efficient technology.
- Improved machines: 3 tons per hour of FFB with 16% oil extraction efficiency; larger units: 15 tons/hour of FFB with 19%-21% extraction.
- GOPDC has processing machinery with 75 tons per hour and 21% efficiency (largest in the country).