

SECURING THE KOGI STATE ECONOMIC WELLBEING THROUGH RED OIL PALM PLANTATION, FRUIT PROCESSING AND MARKETING OF THE PRODUCTS

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Abstract

The study examined the potentials in oil palm plantation and related products in sustaining the future economy of Kogi State. The trends in the economy of the State in recent times show that the future is bleak as poverty is daily on the rise; virtually very few persons are being employed in the midst of the teeming youth population of the state. Even those on government employment are not having it lightly in the menace of poverty as the majority is virtually living from hand to mouth to sustain daily living. These happen daily yet we seat on natural resources we are endowed with. However in the midst of this bleak future, is the ray of hope harped on investment in palm plantation and processing of its fruits. According to the World Bank (2010) “ oil palm (elaeis guineensis) is one of the leading tropical vegetable oil plant due to its fastest growing global demand as an input for food products, cosmetics, animal feeds, bio- energy, etc.”. The use of palm oil is innumerable from household foods to cosmetics and international trade in vegetable oils; hence investment in this veritable agricultural sector could go a long way in securing the future of Kogi State. The good news about the State is that there is no part of the state that its land is not fertile for the growth of this tropical crop. Also the climatic variables are all conducive for the growth, fruiting, harvesting and processing. Nigeria as a nation discovered it before and after independence and prospered in it to be the world’s largest producer of red oil, but dumped it at the discovery of the petroleum crude oil from the early seventies. Today we have a national economic downturn as the price of crude oil has crashed worldwide which substantiate the call for economic diversification. Data for the study were sourced from various documents on oil palm plantation and processing, research institutes, library, journals, long time observations and participation in the business locally. The data were analyzed using discreet statistics and presented in tables and graphs. The study concluded that there are varied potentials in oil palm sector and if properly harnessed could go a long way in rejuvenating and sustaining the economy of the state.

Keywords: Economic wellbeing, Palm oil, Fruit, Marketing.

Introduction

Oil palm (*Elaeis guineensis*) has been a major key player in the economy of some evolving industrial nations in the world and has assisted them to rise from economic doldrums to advanced economies. Most typical among these nations are Malaysia, Thailand and Columbia which have today attained to high industrial economies. They achieved this feat through oil palm production. From records they are the world largest producers of oil palm

As the population of Nigeria exploded, the proceeds from petroleum resources could no longer sustain us more so as the international oil price crashed some years past leaving the nation in the struggle for survival with the little that could come out of it. This has compelled the quest for national economic diversification. Gone were the days when agriculture used to be the mainstay of Nigerian economy when it had the groundnut pyramid of Kano, cocoa of Southwest, and oil palm of the mid-west. Nigeria was known all over the world for agricultural production. All the fame went down the drain when her focus went to petroleum, a sector thought to be easiest means of generating funds for national sustenance. The sector however sustained the economy for some years but since every government expenditure solely depended on it there has been a crisis at the advent of the worldwide oil price crash. According to Behrooz and Benjamin (2013), "Nigeria has untapped potentials for massive agricultural production. The critical issue is that policy makers should encourage agricultural production especially areas where the potentials for massive production exist". They further posited that "palm oil for instance which was a major source of foreign exchange for Nigeria, the importance in the world economy is still revered. This corroborates with the national stance on diversification. Also as opined by Ekenta, Ajala Akinola, and Oseni, (2017), "there is an increasing agitation for diversification of the Nation's economy and specifically the rejuvenation of the oil sector". They further stated that the "revitalization of oil palm sector has the capacity of fast tracking the economic development of the country owing to the various products of the palm and multiple uses of the products".

Kogi State of Nigeria was created in 1991 out of the then Benue and Kwara states. It has since then grown in population and physical development due mostly to migrants from other states of the country due to unbridled crises, to settle especially at Lokoja, the State capital. However the economy of the state has been consistently on the down ward trends. This trend has negative impact on the generality of the populace as they are majorly civil servants, and due to some political upheavals many have been plunged into abject poverty. This is why to sustain the ailing economy of the state, there is a need to diversify the economic focus from the civil service. Palm oil sector is identified as the most credible sector to plunge into for quick economic recovery. As opined by Behrooz and Benjamin (2013), "in the world today, palm oil remains one of the veritable means of reducing uncertainties in the crude oil and gas subsector". Actually, Kogi State has passed through a lot of uncertainties and recession in economy due to over dependence on salaries from civil service without which the entire life crashes.

Kogi State has the potential for growth in its economy if it could invest heavily in palm production and harnesses all its products for the total wellbeing of the populace. One good advantage Kogi State has is natural arable land potentials. Kogi State soil is inherently and naturally fertile to sustain oil palm production to an enviable level and reduce poverty to the minimum level. These potentials should stir up indigenes to individually invest in palm plantation for the brighter future of the State. Reasons are easily adduced on the varied importance of the crop namely: uncountable number of persons to be employed, uncountable number of persons in the rural areas will be engaged and so the menace of poverty will be greatly reduced. Also there is no part of Kogi State that is not fertile for palm production except some few places around Kogi central senatorial district because of rocky basement hence investment in this sector is a veritable path to economic recovery.

Almost every part of the tropics have favorable conditions to sustain the growth of the crop as stated by Asiedu (1989), "the oil palm is largely cultivated in equatorial regions of Africa, Asia, and South America and of all the palms, red oil is the highest yielding". In Kogi State yielding is not the problem

as if all the conditions of maintenance is taken care of, there is assurance of bumper harvest at the appropriate time.

From the above, the indigenes of the state should not be suffering and seating on the rich natural resources as the socio economic benefits of palm oil is much. According to Ekenta etal (2017), the “socioeconomic benefits of a sustainable oil palm plantation could include poverty alleviation and long term employment opportunities”. It could even be a life time family investment where generations of family members would depend on it to sustain their living and hence the issue of unemployment would be done with.

Aim and objectives

The study is aimed at showcasing the natural resource potentials in the study area as regards the business of oil palm plantation, fruit processing and marketing as means of securing the future of kogi state through employment generation, and reduce poverty which have caused several uncertainties in the state. The objectives are:

- To show the path of discovery of a veritable area of economic sustainability through job creation and poverty reduction.
- To corroborate the stance on diversification quest as a means of economic recovery.
- To explain the means of exploiting natural resources especially the oil palm sector.
- To elaborate on the avenues for self-reliance through natural resource exploitation.

Theoretical Analysis

Agriculture will ever remain the mainstay of Nigerian economy no matter how long petroleum might sustain us. It was pivotal to what brought Nigeria to prominence in the world economy in the sixties especially the oil palm. The oil palm is largely cultivated in the equatorial regions of Africa, Asia and America. Physical and climatic conditions of these regions are conducive for its growth. Nigeria exploited these potentials to attain the peak as the largest producer of oil palm in the sixties and in the early seventies. According to Asiedu (1989), “ of all oil bearing plants, palm oil is the highest yields, and in humid regions of west Africa, yields amount to about 4.5 tons per hectare, the estimate went to 7.6 tons per hectare in 1985”. This estimate would have gone higher as improved varieties of seedlings are available today.

Commenting on the origin of oil palm, Bassey (2016), stated that “oil palm derived from the palm fruit (*elaeis guineensis*) is indigenous to Africa and particularly to west Africa and Nigeria. It constitutes an essential ingredient of a typical Nigerian diets and meals and now serves as commercial product as well”. This fact was also corroborated by Aghalino (2000), who noted that “ the oil palm is an indigenous plant not only to the people of the Niger delta but also to the people of tropical Africa”. For centuries past most parts of Nigeria have been into palm oil plantation and processing although on local level which contributed much to family up keep. Even today palm tree grow naturally on our farms and if left alone and maintained to maturity level it will start fruiting. To enhance the production so as to contribute more to economic recovery of Kogi State is the substance of this paper.

The Benefits of Palm Oil Industry in Securing the Economic Wellbeing of Kogi State

As of now, Kogi State government is not largely involved in palm plantation. Previously there was one oil palm industry in Egume, Dekina local government area but has been grounded for long, so it is the rural poor that are into the full business of either plantation farming or the processing of the products, hence they contribute to poverty alleviation and provision of rural employment outlets. Commenting on this, Ayodele (2010) opined that, “an efficient and strong palm oil sector in Nigeria will enable the rural poor to be part of the solution to poverty challenges through provision of employment and a means of livelihood”. Sharing the same view, Begun, Er, Ferdous Alam, Siwar & Ishak (2013), as they posited that “ world population continues to increase creating increasing demand, as such oil palm will continue to be cultivated worldwide. The growing of oil palm needs to be economically viable and environmentally sustainable”. In Kogi state farmers are rated based on the amount of land invested for oil palm plantation which affects his economic substantial base without which other farming activities cannot meet up with their general needs. During harvesting time, a single harvest could go a long way to solving myriads of family problems.

How the above may be boosted for expansion as done by the largest producers of oil palm in the world namely Malaysia, Thailand, Columbia which eventually catapulted them to be among the evolving industrial and technological giants of the world today. The table below shows their current feat as far as palm oil production is concerned:

Tab1: Top oil palm producing countries in the world

Rank	Country	Continent	Production (in metric tons)	% of world production
1	Indonesia	Asia	36, 000,000	35.6
2	Malaysia	Asia	21,000,000	20.8
3	Thailand	Asia	22,000,000	21.8
4	Columbia	South America	13,20,000	13
5	Nigeria	Africa	9,70,000	9.6
6	World output	-	101,900,000	

Source: Extracted from Benjamin, E.S document, July 19, 2018.

Above table shows Nigeria’s oil production level being rated lower than the other nations because of lack of focus, if not Nigeria came to the limelight in the world due to plantation agriculture. From records it is found that Malaysia imported palm seedlings from Nigeria at the inception of their voyage into plantation agricultural development. The difference came to Malaysia when the nation invested much time, researches and money into it for the development of every aspect of it. Palm tree by virtue of its peculiarity, every part of it is useful so no investment in its development can be a waste. As stated by Ayodele (2010), “ because of the usefulness of every part of palm tree, many other low cost and low technological economic activities will spring up around oil and non-oil elements of oil palm there by creating employment for others”. This corroborates the fact that no investment in this agricultural sector will fail the investor at all, but to boost this sector of economic development for all encompassing benefits, government of Kogi State needs to be directly involved in the business through such program as Nigeria has had before namely the green revolution and operation feed the nation.

Even though the part played by government in moving palm production forward for higher benefits is very crucial yet most governments from creation of the state since 1991 have given minimal attention to it and is the reasons why the sector has not impacted maximally on the lives of the populace. The same issue was noted by Ayodele (2010), as he posited that “the problems with palm oil production in Africa are largely government induced rather than environmental. The challenges being faced by palm oil producers are aggravated by inappropriate agricultural policies that have stiffened agricultural potentials”. As pointed out above, over the years succeeding governments of the state and in fact Nigeria as a whole have done not much to address the problem of low yields, on the contrary, government decisions sometime appear to stifle local efforts at local productions.

Small scale oil production activities in Kogi State

Although based on long time observations, palm oil production has been part of the agricultural activities of Kogi people as the main economic activity is farming. Most farmers are much involved to the extent that they took care of any naturally growing palm tree seedling on their farm land and ensure they grow to maturity. Others went out rightly into the business and devoted a large portion of their land to it. The characteristics of this local effort are that it lacks expansion and ego to boost it for higher benefits as the effort were geared mostly towards subsistent productions. The onus lie on government and other corporate organizations to dabble into the business either for direct involvement or devise means of awakening the effort of local producers or even exploit the teaming population of the youths in the state for greater productions. This idea was substantiated by Nwaleji and Ojike (2018), who opined that “the major constraints to oil palm production were related to incentives, productivity and socio economic. The need to improve productivity by encouraging increased use of modern technologies and ensure good markets for palm oil to encourage farmers to take up the enterprise more seriously”. A critical observation of agricultural business in kogi state show that government impact on this sector is minimal as there are no definite plantation fields owned by government currently being maintained.

The Population, Economic, and Physical Characteristics of Kogi State as Synergy for Enhanced Production and Economic Sustainability

The state was created in 1991 from parts of Kwara State and Benue State. The state as presently constituted, comprises the people of the Kabba Province of Northern Nigeria. There are three main ethnic groups and languages in Kogi: Igala, Ebira, and Okun (a Yoruba Group) with other such as Bassa-Nge, a people of Nupe extraction in Lokoja and Bassa Local Government Area, Bassa-Komo of Bassa Local Government Area, Gwari, Kakanda, Oworo people(A Yoruba Group), Ogori, Magongo, Idoma and the pure NUPE people of Eggan community under Lokoja Local Government. The population of Kogi State as at 2006 population census was 3,314,043(National population commission as retrieved in 2017).

Agriculture is the mainstay of the economy. There are many farm produce from the state notably coffee, cocoa, palm oil, cashews, groundnuts, maize, cassava, yam, rice and melon. These show the potential of the state to grow and advance through agricultural investment if government and other corporate organizations could wave into it. The soil is fertile especially for palm oil development and with a land area of 29, 833 km² (Wikipedia, May 2019), it is sufficient to accommodate any proposed palm plantation business in the state.

Mineral resources include coal, limestone, iron, petroleum and tin. The state is home to the largest iron and steel industry in Nigeria known as Ajaokuta Steel Company Limited and one of the largest cement factories in Africa, the Obajana Cement Factory and the evolving cement factory at Itobe, Kogi East Senatorial district.

Average temperatures, precipitation and sun intensity of Kogi State

Prevailing climatic conditions are conducive for the growth and processing of oil palm as shown in the following table:

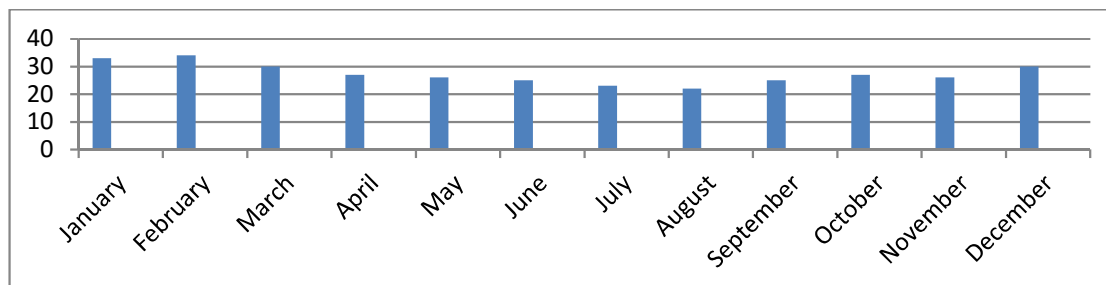
Table2: Average monthly temperature and the impact on palm fruiting and processing

S/N	Month	Temperature ranges	Hottest/Coldest month	Impact of temperature on palm fruiting and processing
1	January	30-35	Hottest	The hottest months of the year are the months of December to April. Incidentally, they are the months of fruiting of palm trees and harvesting. In fact bumper harvest of the crop is in the months of April and May of the year. Average cost of red oil is usually low this time.
2	February	30-35	Hottest	
3	March	25-35	Hottest	
4	April	25-30	Mildly Hot	
5	May	25-30	Mildly Hot	
6	June	20-30	Mildly Cold	
7	July	20-25	Coldest	
8	August	20-25	Coldest	
9	September	20-30	Mildly Cold	
10	October	25 -30	Mildly Hot	
11	November	25-30	Mildly Hot	
12	December	25-35	Hottest	

Source: Extract from Metroblue climatic data, and the Author’s surveys and observations 2019.

The peculiarity of palm tree is that the weather elements in Kogi State especially air temperature are all conducive for its growth, fruiting and harvesting.

The graph below explains more clearly the monthly variations in air temperature



The precipitation is as well okay for it. In kogi state sometimes even in February they could be showers to mark end of harmatan season, after which there is a period of high temperature with air

being still and human living is often impaired.. Much rains sometimes starts in April but state wide rains start in May. The table below shows the monthly precipitation distribution of Kogi State:

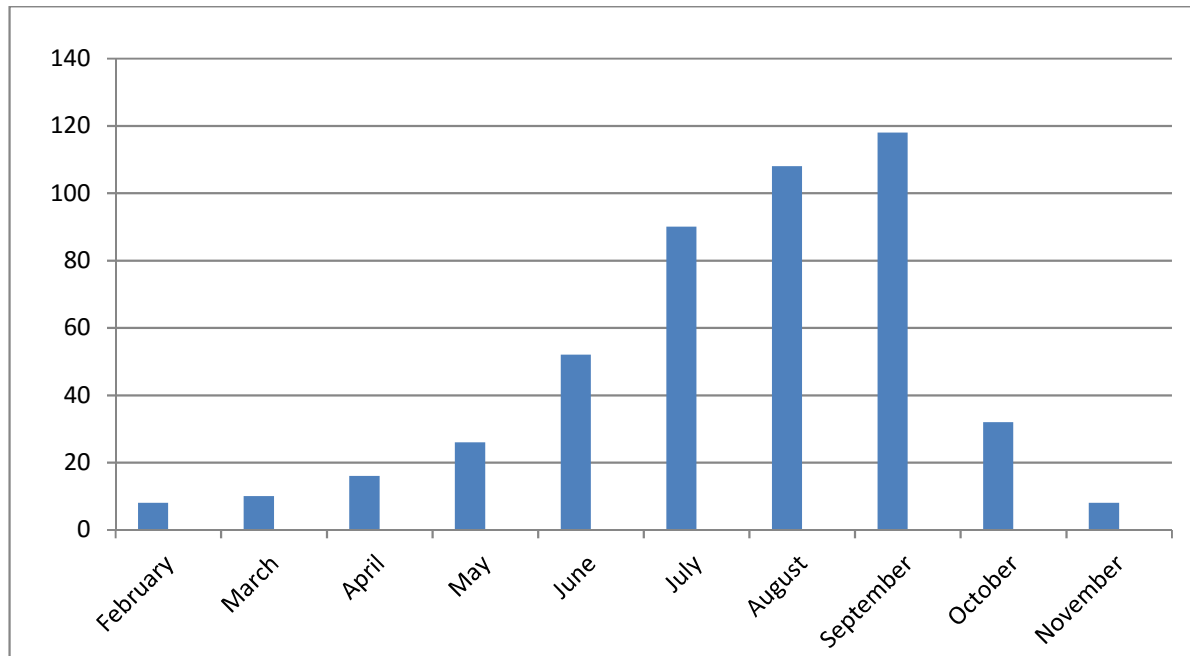
Table 3: **Monthly Precipitation of Kogi State**

S/N	Month	Monthly Precipitation distribution (mm)	Period of lowest and highest precipitation
1	January	Not likely to shower	Lowest precipitation period
2	February	0-8	
3	March	8-12	
4	April	12-20	
5	May	25-30	
6	June	Just above 50	Period of highest precipitation
7	July	90-100	
8	August	100-115	
9	September	115-120	
10	October	25-40	
11	November	0-8	Lowest precipitation period
12	December	Not likely to shower	

Source: Extract from Metroblue climatic data May, 2019 and the researcher's field surveys and observations 2017 -2019.

Below shows the graph to depict clearly the monthly precipitation variations.

Figure1: **Monthly precipitation variation of Kogi State**



The precipitation distribution as shown above is conducive for all round business in red oil palm as the period of low rains coupled with high temperature are good parameters for growth and fruiting of the crop.

Economic Activities of the People of Kogi State

The major source of economic activities are civil service and farming but because of the general slide in the economy, civil service no longer absorb the teeming youth and so multitudes are into farming and other menial jobs to earn their living. What has even exacerbated the already complex poverty problem in the state is many have lost their jobs due to retrenchment and those who are still in the employment have lost the normal job satisfaction seeking for alternative. The table below shows the major economic activities of Kogi people.

Table4: Major Economic Activities of Kogi people

S/N	Economic activity	Benefits	Employment creation and poverty reduction rate	% of engagement (rough estimate)
1	Agriculture	Feeding of family members and supporting entire population	High	25
2	Civil service	Limited to catering for linear family members	Moderately High	18
3	Transportation	Limited to nuclear family and meeting personal needs.	High especially intra city through motorcycling and taxing	15
4	Fishing	Done at subsistence level.	Low	4
5	Trading	Many are into it to meet family needs. Corporate organizations are as well into it.	High	10
6	Tailoring	Many youths are into it due to high rate of unemployment.	High	10
7	Artisans	This use to be source of earning living but as the economy is on the down turn, many are no longer building so few hands are being engaged in this area.	Low	10
8	Others	Menial source of engagement are on the increase so as to find a living source.	High	8
9	Total	-	-	100

Source: **Researcher's Field surveys, 2015 – 2019**

Above table depict that majority of the populace are into agriculture hence a need to boost the sector for high benefits. Gone are the days when people used to snub farming as today even core and well placed civil servants are into farming to supplement cost of living, and in fact farming is a prospering business today.

Methodology

The study data were acquired through primary and secondary sources. The primary sources were made up of field visits, observations, years of interactions with farmers and participation in plantation and processing. Secondary data were also used which encompassed extracts from works on plantation agriculture, journals, relevant texts, magazines and newspapers. My experience as an indigene of Kogi State shows that Kogi State has the potentials for excelling through agriculture as the state has all it takes with enough land mass, fertile land, available and willing population ready to be stirred up. The results were analyzed using discreet statistics and presented in tables and graphs. The result revealed that agricultural sector; specifically palm plantation is a credible area for job creation and poverty reduction. Some nations of the world have been catapulted to high level of technological advancement through this sector, and Kogi State cannot be an exception.

Findings and Discussions

The results from data collected through various media are presented in tables as shown below:

Palm plantation as means of job creation and poverty alleviation

List of companies involved in palm plantation for employment creation and poverty reduction

Several organizations in Nigeria are into palm processing and outright plantation agricultural activities as shown in the table below. Through these lots of employment avenues have been created and poverty reduced to some level.

Table5: Lists of oil dealers in Nigeria.

S/N	Name	Address	Services	Job creation outlets
1	Bola Oil mills	Back of Dumez quarters, Ore, Ondo State, Nigeria	Crushing of crude palm kernel oil and palm kernel cake	Skilled and unskilled hands are needed to facilitate operations in the factory hence a potential source of job creation.
2	Fadajoyce Nigeria Ltd.	Ogboye-Famuyiwa village, off Kobape- Oba road Obafemi, Owode Local government Area, Abeokuta, Ogun State.	Processing of palm fruits, palm kernel cake and other products like brooms.	Varying job creation outlets are very high as both skill and unskilled hands are needed.
3	Amberneg Ventures Ltd, Ochi-Adegbe community, Ofu local government Area	Ochi-Adegbe community, Ofu local government Area	Processing and extraction of naturally occurring palm trees, kernels etc	Source of job creation for women and men unskilled people. Few skilled hands are needed

4	Amakco palm farmcare Nig. Ltd	Umuona Oboama Ngwu Aboh, Mbaise Owerri, Imo State.	Processing of palm fruits into end products of quality palm oil and palm kernel oil.	High job creation avenues
5	Billy Gold palm oil	26 Sami Menege off Aminu Kano way, Kano State	Involve in the sales of non adulterated oil in Kano	Few hands are needed
6	Chukwudi palm oil mill.	3 University of Agriculture road Makurdi, Benue State.	Production and supply of quality palm oil.	Job creation potentials is high
7	Delight pure palm oil	10a Abiondun close, off Adokiti road Lekki, Epe express way, Ajah Lagos	Production and sales of quality oil	Job creation potentials is high
8	Demax Farm Nigeria Ltd	3 Thomas Ehiguese Street, Agua Irrua, Esan Central Edo.	Production and Sales of pure oil palm	Few hands may be needed
9	Ezianku red palm oil Nigeria Ltd.	Ubani, Abia state	Involves in supplies of quality and delivery in any part of Nigeria	potentials is high
10	Osinachi Palm oils	No 2 Isaac Okoro Street, Emene, Enugu	Production and distribution of palm oil at lower prices.	Few hands may be needed

Source: Field survey, 2019.

Above shows the evolving importance of oil palm in terms of meeting many basic needs of man especially in the area of job creation and poverty alleviation as all the oil dealers need many hands to succeed in their business. However only private and corporate organizations are currently taking the lead, so government intervention is needed to boost their effort through direct participation, incentives and tax holidays to such evolving organizations.

Natural Benefits of Palm oil to the Human Body

As extracted from the works of Courage (2017), the following are some benefits of palm oil to human subsistence: Oil palm has so many health benefits as shown below:

- i. **Lessons the risk of Stroke:** Studies and researches have revealed that intake of palm oil reduces the risk of stroke. It has the anti-inflammatory and cholesterol properties and reverses atherosclerosis build up in the blood vessels and brain.
- ii. **Help to decrease cancer tendencies:** Palm oil has anti-cancer nutrients known as tocotrienol which helps in blocking and mopping harmful free radicals and prevents them from causing oxidative injury to vital body organs.
- iii. **Improves the heart health:** It helps to improve the cardiovascular health in several ways. The carotene found in some quantities in palm contributes to this improvement.

- iv. **Improves skin's health:** The presence of tocotrenols, vitamin E and carotenes in palm oil can help put the skin in good condition by protecting it against harmful ultra violet rays.
- v. **Help to improve vision:** Palm oil helps in improving human sight when consumed. It has enough vitamins; alpha and beta carotenes which are part of vitamin A. Recent studies have shown that they can lead to decrease of cataract and macular degeneration in eyes.
- vi. Palm oil also helps in boosting hormonal balance and the vitamins in it help in vitamin deficiencies in women and children.

Above clues substantiate the claim that oil palm is veritable every wit for man and so investment in it cannot fail the test of time.

Varying prices of red oil as being sold in cans: In Kogi State they two seasons of varying prices as shown below on a table for a period of three years:

Table5: Prevailing price of oil at harvest period between March and May.

S/N	Can type (in litres)	Price (#)	Price (#)	Price (#)
		2016	2017	2018
1	20	8000	7500	9000
2	10	5000	4000	5000
3	5	2500	2000	2500

Source: Author's field surveys, 2016 to 2018.

At harvest season there is always a glut of the oil available for sales and so those involve in buying and selling could exploit the privilege and buy and store for some time until the price appreciates, or buy and take them to other cities where they may be price difference.

Table5: Prevailing price of oil beyond harvest period between October and January.

S/N	Can type (in litres)	Price (#)	Price (#)	Price (#)
		2016	2017	2018
1	20	15000-20000	15000-20000	11500
2	10	8000- 10000	7500- 10000	5500
3	5	4000-6000	3500	2000

Source: author's field surveys, 2016 to 2018.

Above prices varies also from one part of Kogi State to the other depending on the quality based on frying by processors. Within Ankpa local government terrain processors there are known for quality frying and so their red oil attracts higher price in the markets.

Properties of oil palm and palm kernel

Red oil and palm kernel have varying properties that could sustain any evolving related industry such as industrial processing outfit like soap making, cosmetic, pharmaceutical enterprises and others. Red oil and kernel products with the bye products are the major raw materials needed in such industries. When individuals, corporate and government organizations invest in red oil production aggressively and effort is made to create the enabling environment, shortly Kogi State will come into

creation of more employment and hence poverty is reduced to the minimum. The table below shows some of the properties:

Table 6: **Properties of red oil and palm kernel**

S/N	Property	Palm oil	Palm kernel
1	Saponification value	195-225	242-254
2	Iodine value	44-58	14-20
3	Unsaponification matter	<0.5%	0.2- 0.8%
4	Solidifying temperature	30-37°C	23-30°C
5	Refractive index	1.453-1.456	1.449-1.492
6	Carotene content	0.05 -0.2	-
7	Viscosity at 50°C	24.81	17.73
8	Density at 15°C (g/cm ³)	0.921- 0.947	0.925- 0.9

Source : Hardley, 1977- Extract from Asiedu's book processing tropical crops (1989).

Findings

The study was carried out through field surveys, observations and interaction with the stakeholders, and consultations in relevant texts and it was discovered that oil palm plantation and processing is a credible sector that could lift up Kogi State to an enviable state and would immeasurably contribute to employment creation and reduce poverty to a minimum level. The following are some of the findings:

- a. Varieties of oil palm seedling: They are three varieties of oil palm tree as briefly explained thus:
 - i. **Tenera oil palm:** According to Ebiloma (2019), "every process in the world today has gone digital so also farm products". This is an improved variety of oil palm so when the seedling is transplanted it starts fruiting after three years. It emphasizes so much on oil as the kernel is naturally small. The fruiting potential is much and increases with age and at some point a tree stand could produce up to 30 bunches. Another peculiarity of it is that, ten bunches of it could generate up to 20 liters of oil.
 - ii. **Dura oil palm:** This is another improved variety but it emphasis on kernel hence the kernel is naturally large with the flesh being lean. It produces up to 10-12 bunches from age three and continue to increase with the age. As kernel is an important product, Dura variety is needed to meet up.
- b. **Indigenous palm tree:** This is the local type and we have them all over the state both on our local and urban lands. The output is not much compared to the improved type in terms of fruiting and amount of oil.
- c. **Establishment of oil palm plantation:** It is very easy to go into but entails some cost. It involves the following:
 - i. **Planting:** After clearing the land, it is planted after raising from a nursery and normally the planting is done between the months of April and June so that the roots could develop properly before the end of the rainy season of the planting year.
 - ii. **Effective spacing for growth and fruiting:** the seedling is planted at a spacing of 9 meters to enable good foliage development and fruiting. The spacing is to allow proper airing, sun bathing and minimum hindrance to foliage spread. This enhances fruiting throughout the life 'span of palm tree.

- iii. **Weeding and fire prevention:** This is very important for consistency in growth and fruiting. When the plantation is overcome by weeds, it leads to stunted growth, moreover if fire catches the weeds, the fire could adversely affect the growth, sometime for about three years before recovery so effort should be made to avoid weeds and fire occurrence.
 - iv. **Addition of manure:** For effective growth manure is added right from the point of transplanting the seedling. This enhances growth and fruiting especially where the soil is not fertile enough for bumper fruiting.
 - v. **Treatment of soil before and after planting:** Where there is repellent termite zone, the soil is treated with termiticide. This reduces their impact on the planted seedlings so that seedlings will not be eaten before proper rooting.
 - vi. **Dressing:** Palm trees need to be dressed seasonally for proper growth and fruiting. The dressing is done by removing some fronds not needed to allow development of new ones, but care must be taken to avoid over dressing.
- d. **Determinants of quality and time of storage of palm oil and kernel :** The following are some of the factors briefly explained:
- i. **Content of free fatty acids:** The more of the fatty acid the ease of getting congealed which affects the quality. The way out is effective boiling to enhance the quality and long storage?
 - ii. **Contamination with water:** Water naturally affects the quality of oil and so must be extracted out through boiling so water content could reduce to the minimum of 0.2%. If this is not done it could affect the quality to the extent of it smelling and hence cannot be stored.
 - iii. **Level of contamination by impurities and bleach ability:** The more impurities left untreated, the less the quality and its storage for some times. Some time when the oil is efficiently bleached, it could be packaged as bleaching increases its duration of storing.
 - iv. **Level of storing of Kernel nuts:** Before packaging of kernel nuts for further processing, it must be allowed to dry properly either naturally or mechanically if not kernel nuts quality will be impaired and might not be stored long before they get bad.
- e. **Variation of red oil quality with locations in Kogi state:** The local production of red oil varies in quality with locations. The highest quality of processed oil is gotten from Kogi East senatorial district as the processors there take their time to efficiently boil the crude to extract water content to a minimum of less than 0.2%. The quality of red oil from there is high for meals and could be stored for years without fear of contamination and impurities. However, the oil costs more in the market compared to other processed ones.

Conclusion and recommendations

The study revealed one of the greatest resources bestowed on Kogi state and Nigeria in general which if properly harnessed could go a long way in reducing unemployment and the plague and affliction of poverty. Poverty has been on the rise in various parts of Kogi State because of over dependence on civil service, but consequent upon this study, it was discovered that it is possible for people to live well through investment in this sector. As a result of the great potential in oil palm government should muster effort to encourage local productions to reduce the use of strenuous processing methods through incentives so they can use mechanical means of productions. As other technologically evolving nations like Malaysia, Thailand and Columbia did, effort should be made by our government to learn from their steps and invest more in this sector and eventually employment

would be generated and poverty reduced to the minimum. Consequently, the paper makes the following recommendations:

- i. Kogi State government should aggressively pursue such programs as green revolution with the goal of all round involvement of the youths, civil servants and others to plant and process oil palm.
- ii. Incentives should be given to local oil processors for them to advance in planting improved varieties of oil palm and processing methods
- iii. The total land coverage of Kogi State is about 29 kilometer squared but are majorly inherited lands, so government should wave into it to acquire them and lease to those interested in oil palm production, and compensate the inheritors.
- iv. There should be free agricultural extension services to give proper orientation on the importance of oil palm to spur all to invest in this sector. Palm trees could even grow around our dwellings so people should be encouraged to plant.
- v. Improved varieties of palm seedlings like tenera should be made available at subsidized rate to encourage large production.
- vi. Tax holidays should be granted to evolving palm tree farmers and where they need loans, it should be granted to them at low interest rate.
- vii. Processors should be encouraged to have their own plantations instead of purchasing palm fruits. This will reduce cost of transportation and purchasing the fruits". Almost all women local oil palm processors in Kogi State don't have plantations of their own so have to depend on others for fruits for processing.

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