Open Peer Review on Qeios

Unravelling The Contributions Of The Nigerian Livestock And Other More Prominent Sectors In Mitigation Of Global Green House Gas (GHG)

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Funding: The author(s) received no specific funding for this work.

Potential competing interests: The author(s) declared that no potential competing interests exist.

Abstract

The Study was aimed at evaluating the contribution of the Nigerian's livestock to global GHG emission and proffer efficient ways to mitigate emission from its livestock sector, while seeking for alternate options suggested by FAO. The report of US and EU research on GHG mitigation provided information and best practices for this study. The US research implicated livestock as one of the major human activities that was responsible for 24% contribution to global warming. Another report by FAO reported that the emission intensities of livestock sector to global warming ranges from beef, sheep, goat, dairy, pig, egg chicken and meat chicken.

Although the global livestock emission was high, the proportion of the Nigerian livestock population as a component of the global livestock and its genetic composition indicates that Nigeria's livestock has an insignificant contribution to the global livestock population. Consequently, its GHG emission is equally infinitesimal with respect to the global GHG emission. The small population size of Nigerian cattle, sheep, goat and swine represents 0.93%, 1.9%, 3.2% and 2% GHG emission of the world cattle, sheep, goat and swine.

The study uncovered alternate sources of emission like high loads of burning oil and gas produced by bad roads and bad vehicles, plastic waste (crude oil waste), deforestation and fertilizers as factors that play key role in GHG emission in Nigeria. Moreso, the Study considered some FAO climate change adaptation solutions particularly, Institutional changes (International collaborations); Shift from the usuals; Planting of trees; Increased mobility of resources (saw-mill, paper production, plastic waste recycling); On-farm and off-farm diversification (automobile, road construction); as well as Reconversion (fruit juice production, Wine press, vegetable oil companies).

The study showed that the Nigerian Livestock climate change mitigation project will require a total expenditure of three trillion, one hundred and thirty million, nine hundred thousand naira (#3,130,900,000.00) only. At the end of the third production cycle (3years) a total of eighty-one trillion, four hundred and sixty million naira (#81,460,000,000.00) will be raised from the project.

A net profit of seventy-four trillion, five hundred and seventy-eight million, one hundred thousand naira is expected at the end of 3 years.

The livestock mitigation project promises stupendous profit. The high profit from this project can fund Nigerian's Annual budget for than 10 years.

The cost and profit analysis of the Nigerian Livestock global warming mitigation plan revealed that the Livestock and its Alternate project is indeed a splendid project that qualifies for a milch cow.

It represents efficient project that will ensure exponential growth of the economy,
- Expedite the diversification of Nigerian economy.
- Raise Nigerian Manufacturing index.
- Capable of eliminating poverty and hunger.
- Expedite Nigeria's move to Meet Sustainable development goals (SDGs)
- Raising Nigeria's per capita income and consumption.
- Wiping out Nigeria's indebtedness of 33.1 trillion naira to World Bank.
- Building Nigeria's foreign exchange earnings, expand Nigeria present export value of 4% as it reduces Nigeria import value from 96% of all its trade.
- Increase Nigerias contrbuton to Africa's trade from the present value of 4%
- Change Nigeria from the list of under developed to a civilized nation.
- Generation of jobs for a great proportion of its working age.

CHAPTER ONE

UNRAVELLING THE CONTRIBUTIONS OF THE NIGERIAN LIVESTOCK AND OTHER MORE PROMINENT SECTORS IN MITIGATION OF GLOBAL GREEN HOUSE GAS (GHG)

World organization and scientific research are deeply concerned about global warming given its devastative effect, which could make the earth an inhabitable place for all living creatures, (humans, animals and plant alike) and cause negative impact on labour, capital. Many disastrous climate conditions have been associated with global warming. Example of some conditions resulting from global warming are climate change, disease outbreak like covid 19, emergency of mutation of some disease causing organism, resistance to antibiotics, soil infertility, encroachment of desert, drought and emergency of some devastating plant pests.

Global warming: The sun rays has short wavelength. These rays [short wave length] fall on the surface of the earth. They are reflected back to the sun from the earth surface. Such Natural phenomenon maintains a minimal air

temperature. The magnified growth in industries and increasing industrial activities all over the world has a resultant effect on the earth's temperature, because it leads to pollution of the air with GHG which trap the sun wavelength leading to increase in the earth's temperature. It is implied that without industrial activities in the world the earth temperature ought to have been 10^{0}C. There are basically two sources of GHG, nature and man. The concentration of those that occur naturally are increasing due to human activities, particularly carbon dioxide (CO2), methane (CH4), nitrous oxide (NO) and florinated gases.

The amount of CO2 released into the earth by human activity have been ranked as the largest contributor to climate change. Its contribution in 2020 has risen to 48% above the level in pre-industrial age (before 1750). Other GHG emission are small. Methane is a more powerful GHG than CO2, though it has a short life span in the atmosphere. Nitrous oxide behaves like CO2, which has long lifespan. It has accumulated in the atmosphere over decades to centuries. Florinated gases have stronger warming effect, 23,000 times greater than CO2.

Agriculture has several endowments that can play significant role in climate change. Presently an all-inclusive study concluded on the causes of global warning in America revealed that **11%** of global warming is due to human activities. The study also implicated livestock as one of the major human activities that is responsible for 24% of the global warming (2020). The total contribution of all livestock sector to global warming was 14.5 % (Brown 2019) (www.down to earth.org.in). They amount to 7.1 gigatonnes (GT) of CO2 equivalent (CO2-eq) per year (www.FAO.org/gleam). The sources of emission from livestock supply chain comprises feed (46.7%), enteric fermentation (39.1%), manure (9.7%) and energy consumption (4.7%). Emission intensities among livestock in kg CO2-eq kg Protein is Beef (342), Sheep (189), Goats (175)), Dairy cattle (84), Pig (52), layer chicken (42) and Broiler chicken (40) (FAO 2020). According to FAO (2020) the efficient practices that are fundamental to reducing emission by 14-41% comprises feed quality, animal health and husbandry, manure management, energy use and efficiency.

Causes of rising emission:

Some factors that are fundamental in global warming comprise

1. Burning coal, oil and gas produces CO2 and nitrous oxide
2. Deforestation.
3. Increasing livestock farming. Cows and sheep produce large amount of methane during digestion of food.
4. Fertilizers made of nitrogen produces nitrous oxide emission.
5. Florinated gases are emitted from equipment and products that uses them (European union, SS2020).

FAO Adaptation solutions

The intervention of environment and GHG researches is pretty timely and beneficial. These studies revealed that the global climate is at the verge of destruction and advocated urgent and all inclusive collaboration between adept experts, Policies with community based schemes that prioritize poverty alleviation. America GHG research team have reiterated that global warming can be addressed by best practice and technologies in all the stake holders.

European Union (2020) suggested that climate change adaptation solutions should consist of the following

i. Institutional changes.

ii. Shift in species.

iii. Breed or production system.

iv. Cooling (indoor system).

v. Provision of tress.

vi. Changes in cropping.

vii. Agroforestry.

viii. Increased mobility for resources.

ix. On and off farm diversification.

x. Insurance and

xi. Reconversion both at the national and regional production zonings.

CHAPTER TWO

Possible contribution of Nigerian Livestock and Global Livestock to global warming

The global report on livestock output gives a more elaborate insight into the GHG emission of livestock sectors at national and continental levels. This estimate is possible given the fact that population size elicits the amount of GHG that can be generated at any point in time. Furthermore, the system of livestock production has a strong connect with GHG emission. For instance the intensive system of livestock production will most certainly produce far more yield of manure and GHG than the extensive system, because of two essential factors, namely individual size and population size. The large size of exotic animals (dairy, beef, pig and broiler) produce exceedingly more manure, when compared to its native counterparts reared in the extensive system. The body weights of indigenous cattle, pig and chicken weigh 250-350kg , 80-120kg and 1.0-2.5 kg, respectively. The exotic cattle, pig and broiler weigh 600-1,000kg, 250-450kg and 2-7kg, respectively. Corollary, a dairy or beef cattle will produce 3 times the amount of manure produced by an indigenous cattle. The same situation applies to the manure output of a Landrace and broiler chicken, which can produce 3 more quantity of the manure output of a local and local chicken, respectively.

An overview of the global poultry, swine and cattle further gives credence to the fact that Nigerian livestock contribution to global GHG is absolutely small. Shahbandeh (2021) reported that there were 25.9billion chicken worldwide in 2019. US produce 20.4 million metric tons of chicken meat in 2021. US is the largest producer of chicken meat in the world. China the 2nd largest produced 15 million metric tons chicken meat that same year. China is the largest world egg producer accounting for 37% of global output. US and India are the 2nd and 3rd world largest egg producer with 7% and 6% of global output, respectively. The world poultry is approximately 3,049 million and the total number of US chicken in 2021 is 518,279,000. The implication is that Nigerian exotic poultry, which is estimated to be 16% of the 120 million chicken will be equivalent to just 3% of the American chicken and 0.5% of the global chicken population. This analysis reveals that the

contribution of Nigerian poultry to global GHG is less than 0.5%, due to its body weight and genetic composition.

The global swine was 677.5 million in 2021. In 2021 China is the largest world producer of swine. It produced 406.5 million pig (58% of the world pig); European union, the 2nd produced 151.1 million and America, the 3rd largest world producer produced 77.3 million pigs (Shahbandeh 2021). Nigeria's swine population, which is 11 million comprising 84% indigenous and 16% exotic (FLD 2012) represents an infinitesimal proportion (2%) of the world pigs. Again this corroborates that Nigerian swine contribution to the global output of GHG would probably be less than 2% or close to none.

Nigerian cattle, goat and sheep are not left out in the discus. The world population for cattle, sheep and goat was reported to be 1.49b, 1.22b and 1.05b, respectively (FAOSTAT, 2019) in 2017, while Nigeria's cattle, sheep and goat population were 13.9 million, 22.1 million and 34.5 million (www.intechopen.com) in 2020. This report vividly presents the proportion of the Nigerian's cattle, sheep and goat to the global counterparts. Nigeria's cattle population equally has very little contribution to global cattle production. Consequently, it would not be a surprise that its GHG contribution to the global output will be small. Nigerians proportion to global cattle is 0.93%, hence Nigerians cattle contribution to global production is not important. Again it reveals that Nigeria's sheep and goat contribution to the global sheep and goat are 1.9% and 3.2%. Thus only 1.9% and 3.2% of the global sheep and goat were caused by Nigerian sector. There is no gain saying that the GHG contribution of Nigerian sheep and goat is insignificant.

The report on the contributions of countries to global livestock population has further revealed that 3 countries, US, China and EU produce over a half of the world's livestock population. Therefore the US, China and EU may be implicated as the principal contributor to the livestock share of global warming. This fact is substantiated by FASCAMP (2020), which reported that 50% of world egg are produced by China, US and EU (37%, 7% and 6%), respectively. Ninety-four percent (94%) of the world swine are produced by China (60%), EU (22%) and US (12%), respectively. 30% of the World poultry meat is produced by US and China (Shahbandeh).

Disagreement with US Global warming input

The result of US global warming study ironically revealed that the contribution of the developing countries to global warming is significantly higher than the developed nations. This is not absolutely true especially with the livestock sector, since empirical evidence show that Nigerian livestock has very low contribution to global warming. This finding is really perplexing, as one would expect exceedingly high contribution from the developed countries, where all economic hub of the world complex and largest industries, business, commerce and transportation activities are domiciled. In spite of the infinitely large industrial content of America, global warming has remained relatively low. High efficiency of the systems adopted by these developed countries have been accorded the merit. Machines with high efficiency for use of fuel has great advantage, because they only permit relatively small percentage of GHG emission. Hence, The report, which implicated inefficiency and poor technology in developing countries, as the major cause of global warming may therefore not be farfetched. Again some major contributors of global warming in Nigeria do not exist in America, while some of such

factors are only due to the peculiarity of the nation.

Nigeria, a key player in Global GHG Mitigation

Nigeria incidentally ranks 3% among the developing country of the world. The large geographical size and exponential growth of the human populace elicit its role in the growth or mitigation of GHG. Nigerian is so richly endowed by sumptuous human and natural resources that are highly essential for global sustenance and food security of the world growing population which is expected to be (billion) by 2050. Again a bold stride to wield the power of Nigerians natural endowment will expeditiously move Nigeria to its predestined glory as the Giant of Africa and the global prediction that Nigeria will take over from Americas as the 3rd largest economy in 2025 (Saweda, 2018). This is substantiated by FAO (2019), which reiterated that sustainable agricultural crop, livestock, fisheries and forestry and natural resources management are critical in tacking the root causes of poverty and hunger, an overarching challenge for achieving the sustainable development goals (SDGS).

This study has proposed an efficient global carbon mitigation project in Nigeria borrowing some FAO climate change adaptation solutions proffered by European Union (2020), which comprise Institutional changes, Shift in species, Breed or production system, Cooling (indoor system), Provision of tress, Changes in cropping, Agroforestry, Increased mobility for resources, On and off farm diversification.

The study has proffered some pertinent schemes below, as a appropriate schemes that promise great hope for efficient reduction of world global warming.

1. The use of best practices and technology in all Livestock sector.
2. International collaborations.
3. Policy creation.
4. Poverty alleviation.
5. Roads and transport system.
6. Automobile industry.
7. Plastic waste.
8. Vegetation

Bad governance a challenge

In spite of Nigerian natural endowment, its economy has continued to devolve since the past four decades. The institutional inertia and ineptitude characterizing government have metamorphosed into unnecessary beaurocracy corrupt leadership at the local, state and federal government levels. Every discrete sector of the public service suffer decay, mismanagement, lack of accountability policy. The resultant effects of dishonest leaders are execrable and has mesmerized the moral, social, economic as well as the production index of the nation. The per capital income of an individual in Nigeria is below poverty level placing Nigeria among the poorest countries in the world, where 2% out of every 3% are malnourished and smitten with hunger and hardship. In most civilized countries of the world disparity is minimal [less than 10]. The implication is that the income of the richest is only 10 times more than the poorest. Nigeria

disparity index is over 1000. This Statistics means that the income of the richest is over a thousand times more than the poorest.

CHAPTER THREE

TARGET SECTORS TO ADDRESS GLOBAL WARMING IN NIGERIA

1. POULTRY FARM

The project will consider 5 aspects of poultry product [both intensive and subsistence] as the experimental material. Factor to be considered in poultry house will include;

1. Source of heat and GHG during brooding stage [Electricity, charcoal and lantern and cooling system for rearing)
2. Vehicles used for conveying farm outputs like transport of day old chicks, feeds, marketing matured birds or egg will be assessed.
3. The third aspect of the study will assess the use of manure, herbicide, and pesticides during feed production.
4. The forth will address the method of waste disposal in the farms.
5. The planting of trees around the poultry house and highways as an off shoot of the project

POPULATION OF POULTRY FARMS: 10 Commercial poultry and 10 small scales farmers; 10 large scale maize and soya beans farmers will be enrolled in each LGA. Each Local Government will be enrolled for training. These farmers shall be invited to three months work shop for education of carbon mitigation and best practices

2. CATTLE FARMS

A critical look at the Nigerian industry showed very little or Zero practice of intensive cattle farming with majority being nomadic system. The predominant system is such that does not lead to large amount of manure and GHG release, as we find in intensive cattle farms of the civilized country. The Nigerian swine industry may also not compete in GHG release with the developed country, because it's main contributors are the subsistence and semi intensive system.

According to the report of CSIRO the Nigerian cattle industry is composed of 82.1 % extensive, 16.8% semi intensive and 1.1% intensive farms. [www.research.esiro.aul live GAPS}. Nigerian extensive farming system cannot be left out in the discus. They are made of poor quality materials and are small holder farmers. These account for 90% of Nigeria's agricultural produce. Agriculture is the largest employer in Nigeria, employing more than 76% of the labour force. This again uncovers less application of machines. In addition Nigeria tractor density is put at 0.27 hp/hectare. This again is far below FAD'S recommended tractor density of 1.5 hp/hectare. The ongoing discussion corroborates the fact that the Nigerian crop and livestock system may have relatively low contribution to global GHG.

POPULATION OF CATTLE FARMS: Commercial poultry and 10 small scales farmers; 10 large scale maize and soya

beans farmers will be enrolled in each LGA. Each Local Government will be enrolled for training. These farmers shall be invited to three months work shop for education of carbon mitigation and best practices.

3. PIG FARMS

The same approach used in cattle farm will be adopted for the pig farms.

4a. BEST PRACTICES

The use of best practice can be achieved and readily adopted by farmers. International presence, expertise and training with the needed infrastructure will easily address this need. Nigeria has showed great excellence under diverse conditions when the international leadership and monitoring is involved. Management has been underscore as the major weakness in its institution, hence an excellent result will be realized with international control. Policies bordering on climate change will equally be implementable under strict surveillance and laws.

10 Commercial livestock farmers and 10 small scales farmers; 10 large scale crop farmers and 10 small scale farmers will be enrolled in each LGA. Each Local Government will be enrolled for training. These farmers shall be invited to three months work shop for education of carbon mitigation and best practices

4b. POVERTY ALLEVIATION SCHEME:

Poverty, unemployment and hunger make Nigeria a most suitable soil for assorted types of climate change mitigation projects. This is stating the obvious considering the fact that over 23 million people are jobless according to Punch news, March 2021, 100million people at the verge of extreme poverty by Barrister Oguche in an TV address on repositioning Nigeria Government for change and the world statistic which revealed that Nigeria per capital income is 300 dollar per year. While per capitals income in America is 16,000 dollar per year. That is to say that an individual in Nigeria leaves on less than one dollar a day, while an individual in America leaves on 32 dollars a day.

What a traumatic gap?

Most sympathetically corrupt leadership has severally widened the disparity index over a million. Hence, an infinitesimally small proportion of the populace (0.1%) earn over a million times more than the 99.9% of the population, who wallow in extreme poverty. The object of this study therefore is to create an efficient system of GHG mitigation in the Nigerian poultry sector, livestock sector and other hidden sector through an international collaboration with world organization, which has carbon mitigation mandates for the purpose of developing sustainable policies in Nigeria and addressing poverty from the grass root.

5. CERTIFICATE COURSE/WORKSHOP.

This project will target one million Nigerians who dwell in the rural areas. Farmers will be enrolled for the Certificate programme/ workshop titled “Carbon mitigation and best practices”. The programme shall run for a duration of 3 and 6 Months. Participants will be issued a certificate at the end of the course to grant them approval to partake in poultry production.

Methods; A total of 2,000 participants shall each be enrolled in the entire 770 Local Government of the federation.

6. International Collaboration and National Institutes

Target population: 2,000 farmers will be enrolled in each LGA Policy. The world organizations in collaboration with Nigerian Government through Nigerian Institute of Animal science and related Institute shall pass an international law on all farmers in Nigeria with great emphasis on livestock especially poultry farmers and crop farmers

The body will wield strong power in Nigeria by putting into place a strong presence, monitoring and provision of guidelines and subsides, which are essential for a sustainable livestock production with strict carbon mitigation compliance policies.

The collaborating bodies shall include World organizations, Nigerian Government, Nigerian, Institute of Animal Science, Nigerian Institute of Crop Science, Nigerian Institute of Soil Science and Central Bank of Nigerian.

Policies

Policy emphasis will employ the following strategies,

i. Use of highly efficient machine that expeditiously burn of fossil fuel on farms

ii. A ban on and replacement of all substandard machines and vehicles

iii. International control of all manure generated from Livestock farms (poultry, pig, cattle, sheep and goat farms).

iv. Place a Premium on the entire manure raised forthwith from all livestock farms.

v. Shift of ownership of manure from farmer to the carbon mitigation sector with some premium.

vi. Generate jobs from the manure processing sector, which will assume the ownership of all national manure with a premium.

vii. Turn the sector into an income generating sector for sustenance and revenue generation.

viii. Ban on the Use of all vehicles rated with low efficiency of carbon.

ix, Transfer ownership of vehicle to international organization.

x. Generation of many driving jobs for many Nigeria.

xi. Construction of International standard roads by international organization for revenue generation and control revenue from it.

7. OPENING OF NEW ROADS

According to GICRC (2019) Nigerian has 195, 000km of road network of which 60,000 km are paved . Most of the major road networks in Nigeria were constructed in the 80's and 90's (dlca. Log cluster. Org. servant). It is sad that most of the roads have failed to stand the test of time. The road network has become grossly inadequate due to large size of the country and its ever increasing large population.

Cost: A kilometer of asphalt road in Nigeria's is currently estimated to cost #1bn (about 4 times the average cost of an asphalt road on the African continent) (www.proshareng.com).

Why address Road: Transportation plays a vital role in the social and economic development of a nation. It has been argued that a good means of transportation serves as a life time of an economy and again a pre-condition for the full

participation of rural communities in the benefit of national development. It allows for full contribution of the remote communities in the economic development through supply of raw materials and resources. (Oladipo 2014).

Latest figure from Nigeria Bureau of statistics (NBS) showed that were 11.8 million licensed cars on Nigeria's road as at 04/2018 and Nigeria's human pegged at 198 million. The figure implies that the country has only one car per six Nigerians. The bad state of Nigeria road have great fatal effect of the lives of road users and have raised road accident victims up by 19%. The report showed that the number of people involved in road accidents increased to 18,729 in 2018 against 15,696 persons in 2017 [Bamidele].

The entire roads in Nigeria is endemic with bad roads, which are covered with pot holes far too scary for anyone to ignore. Nigeria roads are the second most dangerous out of 193 member countries and fatalities accrued on them are second only to Thailand's. Nigeria road traffic accident has outrageous high proportion of death in the country. Although Africa has about only 2% of all cars in the world, yet it remains appalling that it contributes 16% global death from road accident. The highest fatality rates in Africa are in Nigeria's and south Africa, with 33.7 and 31.9 deaths per 100,000 a year, respectively which is almost double the global average of 18/100,000 deaths [Oyepeju 2017].

Road transport systems in Nigeria are highly populated with thousands of vehicles that are not road worthy. The heavy GHG load thus emitted by the factors of bad road and low efficiency of bad cars is exceedingly multiplied by the number of cars implied. Consequently, causing an exponential growth in GHG production in Nigeria highways and its surrounding.

Suffice it therefore to say that the evacuation of bad vehicles, creation of good roads and creation of auto mobile industry must rank first in the global carbon mitigation plan if a phenomenal venture is expected. This project will serve as emergency businesses that will generate stupendous income both at the national and global premise. The in cooperation of the Nigeria automobile industry holds substantial prospect for the realization of the objectives of the global mitigation research, economic growth, as well as emancipation from poverty.

8. AUTOMOBILE COMPANY

Research has shown that the automobile industry is a highly profitable business.

Production capacity/day: A car factory is able to produce 120 cars per day. (www.study.com). It requires $10 million for a smoothly startup phase. For instance, for every car production the auto manufacturer makes an estimated profit of $17,000.00. This study calls for a international policy that will ensure local production of auto mobiles in 10 urban area or state capitals. These companies will find superfluous raw materials. The Ajaokuta steel Rolling company harbour abundant raw material. Especially old vehicles which presently constitute menace to the entire surrounding of Nigeria. Presently it has About 10 million cars as raw material to produce new vehicles. The economy shall swing in affluence, if it eventually produces 10 million cars worth a net profit of 17,000 per car.

9. PLASTIC WASTE RECYCLING COMPANY

One notorious environmental menace in Nigeria is the plastic waste menace. These plastic waste can constitute great hazard on man and its environment, if not given some urgent attention. This is because research has shown that plastic is one of the most persistent pollutants on earth. It often last for 400 yrs or more and plastic creates emission (www.fao.org.au)

Unfortunately, these plastic bags and the plastic papers are found littering the entire urban area, rural area, surrounding of most livestock farms and crop farm. They are mostly produced as packages for livestock and crop products. They are thrown carelessly around the residents without conscious effort to dispose them carefully or burn them after use. Consequently, thousands of hectares of Nigerian land, streets and farm land in urban and rural areas are presently covered with this wastes.

It may therefore not be surprising that plastic may have far more contribution to global warming due to the exponential growth of the plastic industry and the unchecked disposal of its products in every nook and cranny of Nigeria.

A pragmatic approach for carbon mitigation in Nigeria must as a necessity address the plastic waste using the international policy. There is also the need to establish an institution and companies, which will have a mandate to gather all plastic waste in the urban and rural settlements of Nigeria, such companies will ensure that the entity of Nigerian plastic wastes are frequently recycled into more plastics or treated to produce new products that cannot emit GHG.

Materials and method: Two million youths will be employed across the nation to service this sector of the global warming reduction plan. A total of 10,000 youth will be engaged in the plastic recycling. 5 trash collection trucks will be procured for ach local government for evacuation of plastic wastes. Plastic materials that are gathered from the environments shall be disposed in a central collecting underground tank from where they will be transferred daily to the recycler for processing into more stable products such as boron triflouride e.t.c

A total of 12 recycling stations will be put in place. This industry will open a new opportunity for better diversification, exponential growth of Nigeria economy, creates jobs, address poverty, while curbing the menace of GHG.

10. LAND AND VEGETATION

The most effective way to address GHG in Nigeria is to employ the use of its most abundant and ubiquitous resources, the uncultivated land, grasses and trees. Rather than adopting advanced techniques, that are exorbitant and require scarce great expertise, we can leverage the surplus land and vegetation for maximum reduction of GHG and exponential growth in our economy.

Intensive use of the vast underutilized land (76% of Nigerian land) for plantation will create a perfect natural environment that is excellent for massive uptake of GHG by plants, thereby reducing drastically the GHG load generated by most Civilized countries.

The outcome of the global carbon mitigation projects through land utility and plantation within Nigeria will seemingly lead to stupendous positive effect on several facet of the economy. Nigeria can be sure to have ubiquitous raw materials that can adequately support diverse discrete companies after a period of 5 years. The tree planting and plantations will conveniently open up diverse manufacturing companies that possess the needed raw materials and financial backing for sustainability, creation of jobs among the rural dwellers, hunger and poverty alleviation.

Efficient management of Nigeria's natural resources will further expedite the predicted role of Nigerian in provision of food for the globe in 2030. FAO had blamed Nigeria's mismanagement of its natural resources as the principal cause of poverty and hunger. It is therefore a veritable project, which would grow discreet companies, as well as conglomerations of companies including plastic company, automobile company, Road construction, plantations, palm plantation making, tooth pick company, palm oil companies, vegetable oil companies, feed vegetable oil, Fruit juice/Wine press, Saw mill/Cabinet making industry. The entire sectors will not commence generation simultaneously. While some sector (the livestock, plastic, automobile, Road) may start yielding income immediately, others like plantation, vegetable oil, Fruit juice/Wine press, Saw – mill / Cabinet making may begin to yield income 2 or 4 years later.

CHAPTER FOUR

TABLE 1. COST ESTIMATE FOR MITIGATION OF CARBON IN THE NIGERIA LIVESTOCK INDUSTRY AND ENVIRONS

S/N	ITEMS	QUAN TITY	UNIT COST	TOTAL COST
A	**WORKSHOPS AND TRAINING**			
1	personnel	20	2,400,000/yr	48,000,000
2	Laptops and computers	10	120,000	1,200,000
3	Projectors	2	300,000	600,000
4	White boards (projector)	2	10,000	120,000
5	Makers	20	1,000	20,000
6	Apartments (1 lecture room and 3 offices)	4	1,000,000	4,000,000
	Total			**53,940,000**
B	**POULTRY 10 LARGE SCALE AND 10 SMALL SCALE/LGA**			
1	Evacuation of poor heat source and ventilation	30	1,000	30,000
2	Evacuation of manure (200bags/month)	24,000 bags/yr	1000	24,000,000
3	Manure reservoirs	5	500,000	2,500,000
4	Manure processing house	10	5,000,000	50,000,000
5	trucks	4	10,000,000	40,000,000
6	Procurement of solar heating	30	300,000	9,000,000
7	Solar ventilation system	30	300,000	9,000,000
8	**Total**			**134,530,000**
C	**PIG PRODUCTION COMPANY** 10 large and 10 small scale/LGA			

1a	Evacuation of manure	1500	1000	1,500,000
1b	Evacuation of heat and ventilation	30	1,000	30,000
2	Manure reservoirs	5	500,000	2,500,000
3	Manure processing machines	10	5,000,000	50,000,000
4	Procurement of solar heating system	30	300,000	9,000,000
5	Trucks	4	10,000,000	40,000,000
6	**Total**			**103,030,000**
D	**Cattle production**			
E	**Feed milling**	5	2,000,000`	10,000,000
	Feed stuff Personnel **Total**	1000tons. 100	150,000/ton 240,000	150,000,000 24,000,000 **174,000,000**
F	**FEED PRODUCTION**			
1a	WORKSHOP and training(manure, herbicide and pesticides)	3 months 3/week		
1b	personnel	10	2,400,000/yr	24,000,000
2	Green house	5	3,000,000	15,000,000
3	Research—Soil fertility Mineral composition	10 locations	10,000	100,000
4	Maize mineral uptake	10 locations	5,000	50,000
5	Soyabean min. uptake	10 locations	5,000	50,000
6	Farm monitoring vehicle	2	5,000,000	10,000,000
7	**Total**			**49,200,000**
G	**ENVIRONMENT**			
	Tree planting Livestock farms	50/LGA		
1	Personnel's	10,000	12,000	120,000,000
2	Seeds palm, mangoes, iroko, Gmelina, ogbono, cashew, oranges.	Bags/plant (10,000)	500	3,500,000
3	Manures	100 bags/kg (100 plants)	5,000	500,000
4	Green house(30mx10m)	10	3,000,000	30,000,000
5	Tractor	2	5,000,000	10,000,000
6	Hillux long Dafoe	2	5,000,000	10,000,000
K	**PLASTIC COMPANY**			
1	Recycling machine	1	25,000,000	25,000,000
2	Trash Collection Trucks	2	10,000,000	20,000,000
3	Personnel (2 persons 20 palm fruit /day	1,000	240,000	240,000,000
4	Reservoirs	4	500,000	2,000,000
5	Recycling machine	4	25,000,000	100,000,000
6	Trucks for conveying products	2	5,000,000	10,000,000
7	Vehicles	5	2,000,000	10,000,000
8	Waste Balers or grind	1	2,500,000	**10,000,000**

	Waste Balers or grind		(Albia's 2020)	
	Total			**417,000,000**
L	**SAW-MILL**			
1	Wood Processing and Cabinet Making Industry	2	100,000,000 (Business Finance daily 2019)	200,000,000
2	Personnel	100	15,000/Month	180,000,000
3	Saw-Machines	2	20,000,000	**40,000,000**
4	Cranes	2	7,000,000	**14,000,000**
5	Factory House	2	10,000,000	**20,000,000**
6	Vehicle	2	5,000,000	**10,000,000**
7	Truck	2	10,000,000	**20,000,000**
8	Tree Truck	2	8,000,000	16,000,000
	Total			**500,000,000**
M	**PAPER MAKING INDUSTRY**		(by smpreneurs.com 2017)	
1	Machine (producing plant)	2	15,000,000	**30,000,000**
2	Staff- (Machine operator)	5	600,000 (50,000/Month)	**3,000,000**
3	Marketers	10	240,000 (20,000/Month)	2,400,000
4	Delivery personnel	10	180,000 (15,000/Month)	1,800,000
5	Accountant	5	4,800,000 (400,000/Month)	24,000,000
6	Laborers	70	240,000 (20,000/Month)	16,800,000
7	Vehicles	3	2,000,000	6,000,000
	Total			**84,000,000**
N	**PALM OIL COMP. (capacity 50 ton/day)**			
1	Complex palm oil press	10	2,800,000 ($7,000)	28,000,000
2	Small palm oil press	10	1,200,000 ($3,000)	12,000,000
3	Engineers	5	4,800,000 (400,000/Month)	44,000,000
4	Machine operators	10	620,000/yr (50,000/Month)	7,200,000
5	Marketer	20	360,000 (30,000/Month)	7,200,000
7	Delivery personnel	10	4,800,000 (40,000/Month)	4,800,000
8	Accountant	5	4.800,000 (400,000/Month)	24,000,000
9	Manager	1	250,000/Month	3,000,000
10	Laborers	100	240,000 (20,000/Month)	240,000,000
11	Vehicles	3	10,000,000	30,000,000
12	Trucks	2	10,000,000	20,000,000
	Total			**400,200,000**
O	**VEGETABLE OIL COMP. (5 ton/day)**	10	3,200,000	32,000,000

O	**VEGETABLE OIL COMP. (5 ton/day)**	10	($8,000)	32,000,000
	Staff	100	240,000 (20,000/Month)	24,000,000
	Vehicles	3	5,000,000	15,000,000
	Machine	10	3,200,000 ($8,000)	32,000,000
	Total			**71, 000,000**
P	**FRUIT JUICE/ WINE PRESS**			
	Small wine press	20	16,000,000($32,000,00)	320,000,000
2	Complex wine press	10	3,200,000 ($8,000)	32,000,000
3	Staff	100	360,000(30,000/Month)	36,000,000
4	House	2	5,000,000	10,000,000
5	Vehicles	2	5,000,000	10,000,000
6	Trucks	2	10,000,000	20,000,000
7	Personnel (Junior staff)	1000	240,000(20,000/m)	240,000,000
	Total			**668,000,000**
	GRAND TOTAL		**A+B+C+D+E+F+G+H+I+J+K+L+M+O+P**	**3,130,900,000**

TABLE 2. REVENUE GENERATION FROM NIGERIA GHG REDUCTION

	ITEMS	QUANTITY	PRICE	TOTAL PRICE
1	Workshop	10,000	5,000	10,000,000
2	Poultry Manure	10,000 tons	5,000	500,000,000
3	Pig manure	2,000 tons	3,000	15,000,000
4	Milk	2,700,000 kg	1,000	2,700,000,000
4b	Dairy calves	250	500,000	75,000,000
5	Grasses	20,000tons	200,000	4,000,000,000
6	Environment			
I	Iroko	10,000 trees		Later
Ii	Gmelina	10,000 trees		Later
Iii	Ogbono	10,000 trees		Later
Iv	Banana	100,000	3,000	300,000,000
V	plantain	100,000	2,000	200,000,000
Vi	Coconut	100,000	5,000	500,000,000
Vii	Palm tree	100,000	6,000	600,000,000
7	Automobile	100	10,000,000	1,000,000,000
8	Road	5,000,000	10,000	50,000,000,000
9	Plastic recycling	100,000	1,000,000	1,000,000,000
10	Saw-mill	100,000	150,000	15,000,000,000
11	Papermill	10,000	1,000	10,000,000
12	Palm oil produce	100,000 (10 Gallons)	5,000	500,000,000
13	Vegetable oil	10,000 (10 Gallons)	5,000	50,000,000
14	Fruit juice/wine press	5,000,000	1,000	5,000,000,000
Total				**81, 460,000,000**

TABLE 3. REVENUE AND EXPENDITURE OF NIGERIAN GHG MITIGATION

	Revenue	Expenditures	Net profit
	81,460,000,000	**6,881,900,000**	**74,578,100,000**

This is a gigantic project that promises huge financial benefit and highly profitable. The efficient heating system will be sold to farmers at the rate of 50% profit. The trapped methane will be sold to the public. The crops and plantation shall begin to raise revenue within one year. The automobile and roads shall yield enormous scheme for the firm. The Saw-mill, Palm oil company, Vegetable oil and Fruit juice companies are long term investment that will not yield income immediately until 3 years later.

The study showed that the Nigerian Livestock climate change mitigation project will require a total expenditure of six

trillion, eight hundred and eighty-one million, nine hundred thousand naira (#6,881,900,000.00) only. At the end of the third production cycle (3years) a total of eighty-one trillion, four hundred and sixty million naira (#81,460,000,000.00) will be raised from the project.

A net profit of seventy-four trillion, five hundred and seventy-eight million, one hundred thousand naira is expected at the end of 3 years.

The livestock mitigation project promises stupendous profit. The high profit from this project can fund Nigerian's Annual budget for than 10 years.

The cost and profit analysis of the Nigerian Livestock global warming mitigation plan revealed that the Livestock and its Alternate project is indeed a splendid project that qualifies for a milch cow.

It represents efficient project that will ensure exponential growth of the economy,

- Expedite the diversification of Nigerian economy.
- Raise Nigerian Manufacturing index.
- Capable of eliminating poverty and hunger.
- Expedite Nigeria's move to Meet Sustainable development goals (SDGs)
- Raising Nigeria's per capita income and consumption.
- Wiping out Nigeria's indebtedness of 33.1 trillion naira to World Bank.
- Building Nigeria's foreign exchange earnings, expand Nigeria present export value of 4% as it reduces Nigeria import value from 96% of all its trade.
- Increase Nigerias contrbuton to Africa's trade from the present value of 4%
- Change Nigeria from the list of under developed to a civilized nation.
- Generation of jobs for a great proportion of its working age.

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