

STRATEGIC SUSTAINABLE MANAGEMENT APPROACH TO DESIGNING THE AGRICULTURE SECTOR IN NIGERIA

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Abstract. *The following paper was prepared as the result of the cooperation and development programs that have been run by the authors and Joseph Ayo Babalola University and is the voice in discussion to encourage Nigerian Government to develop strong and effective agriculture sector. Modern-day Nigeria has emerged as Africa's largest economy, with 2014 GDP at over 568 billion USD (The World Bank, 2016). Thanks to the largest population in Africa and the strongest economy Nigeria is often referred to as the "Giant of Africa". Although oil has been playing the mayor role in the structure of Nigeria's GDP the economic growth for over the last five years has been driven by growth in agriculture, telecommunications, and services. Economic growth and stability makes Nigeria according to PwC "one of the potential power economies of the world" (PwC 2016), but one the country is still facing several challenges economic, social and environmental. The biggest challenge is that according to the The World Factbook strong economic growth have not translated into a significant decline in poverty levels (Central Intelligence Agency, 2016). The government and President has announced plans to increase transparency, diversify the economy away from oil, improve fiscal management and working to develop stronger public-private partnerships for roads, agriculture, and power. That actions and activities are very positive, but because of significant differences between for example Europe, North America and Africa they should be designed specifically for Nigeria. The actions and activities should be strategically planed and follow latest developments of management and technological revolution like sustainability, knowledge sharing, Internet of things. The paper presents the challenges and possible scenario for Nigerian agriculture, one of the most dynamic and important sector for Nigerian economy, that produces not only economic output but could be nowadays fundament for welfare society supporting it with food, jobs and place to live.*

Keywords: agriculture; internet society; knowledge management; knowledge sharing; business; sustainability; cradle 2 cradle.

Introduction

According to Barak “Entrepreneurship creates new jobs and new businesses, new ways to deliver basic services, new ways of seeing the world—it’s the spark of prosperity.” The experts see the opportunities to develop SMEs in high-growth sectors like agribusiness, ICT, and clean technology (The World Bank, 2016).

Nigeria is a democratic country which operates the presidential system of government that has gained the independence on 1 October 1960. There are 774 local governments, 36 states and the Federal Capital Territory. The GDP of Nigeria has been constantly growing until 2014 to the level of 568 Billion of USD, but in 2015 has started to fall. The main cause of this “slowdown” of GDP output is because the Nigerian economy is tightly-coupled to “commodity prices” in the international markets especially oil.

The challenge as been noticed by Nigerian government that has proposed several plans to drive economic growth, attract investment and diversify the economy with more focus on the non-oil sectors including agriculture, mining, manufacturing and services (PwC, 2016).



Figure 1. The key figures for Nigeria

(Source: Adeola Falodun, *Doing business in Nigeria*, 2016

<http://www.slideshare.net/AdeolaFalodun/doing-business-in-nigeria-with-a-focus-on-the-fashion-industry> access 2018.08)

Current population in Nigeria has exceeded 180 million of people that makes 2,4% of the world population, ranking the 7th place. Nigeria's population increased by 57 million from 1990 to 2008, a 60% growth rate in less than two decades (IEA, 2008). It is the most populous country in Africa. The Nigerian population pyramid, age population structure has very favorable structure according to social sciences, unlike Poland, Europe or developed countries (Figure 2).

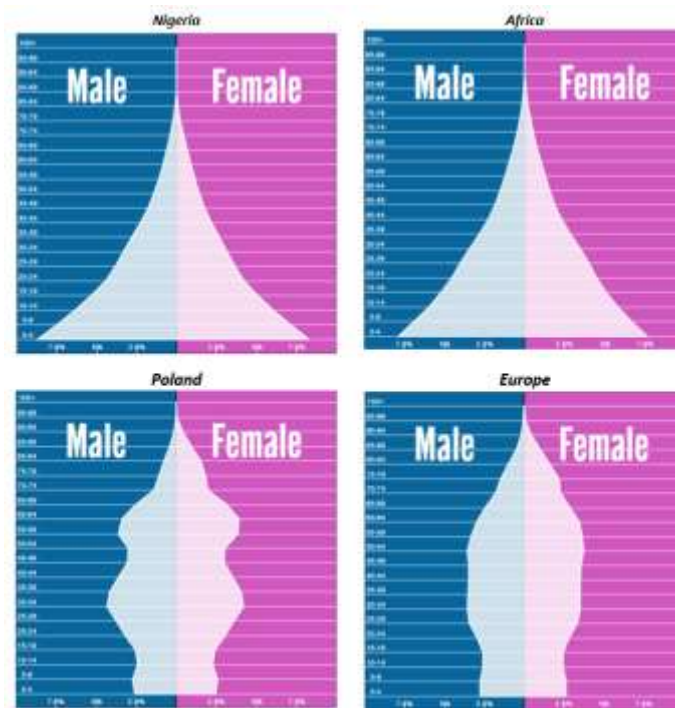


Figure 2. The population pyramids Nigeria, Africa, Europe and Poland 2017
 (Source: <http://populationpyramid.net/> access 2018.08)

Such structure is also another challenge for Nigeria and with other economic factors it determines some key aspects to take under consideration when developing plans to for Nigerian growth:

- Nigeria has totally different number of young people than Europe or developed countries (about 40% of the population is under 14, while in the European population is going older and older);
- Because of demographics, less young people, less hands to work, the priorities for European countries are mainly related to ensuring the economic growth and wellbeing that requires less active jobs. That is why the significant investments in agriculture's technology, manufacturing and services has been made there;
- The very strong investment in technology also is very good idea for Nigeria, but crying to copy industrial model would not solve the problem of poverty and unemployment. Only the implementation of the sustainable model with fundamentals on small and medium enterprises in the manufacturing and services sector and family farms based on private property, could result in economic self-sufficiency for Nigerian families because it creates jobs and gives food;
- Building economic growth on big corporations founded by foreign investments could result in corporate (neo)colonialism because for foreign investments only profit counts, rather than ecological and social situation like income distribution inequality, "Land Grabbing" and ecological disaster (Michalski, 2014).
- Building economic growth on big corporations founded by state remains big economic experiment that was conducted in XX century especially in Central

and Eastern Europe and the USSR. In general, the experiment has result in significant drop in economics and productivity, society degradation.

The effects of inadequate development policy are very tragic and affects all economy of the country society and natural environment so should be planted with care and respect. The example of large scale economic growth policy failure for very big area is the case of “Aral Sea”, where irresponsible management of water resources used for agriculture, irrigation of big cotton plantations has caused drying of one of the biggest sweet water reservoir in the World and ecological and social disaster. The Nigeria with is demography and economical potential is entering new age of possible welling but the Nigerian politicians and economics have to draw their unique scenario because the economic ideas and practices base only on the dictation of high productivity and high profit without care of society and ecology had bankrupted with the 2008+ Global Economic Crisis.

The priority for the decision maker should be to support economically self-sufficient Nigerian family that in business either manufacturing or services sector could result is small or medium family based enterprise that gives stability and employment. The potential of the Nigerian agriculture sector seems to be nowadays even bigger than the rest economy. That sector also faces bigger challenges than the rest of economy, that is why the rest of the paper is devoted to highlight the challenges and try to point he adequate solution in order to build well developed Nigerian society.

The side effect of the pointed practices could also help to overcome the national Nigerian problems like:

- National identity problem and Tribalism;
- Poverty, Unemployment and Inequality;
- Corruption, Home violence, Terrorism and High level of child mortality;
- Poor education.

The facts about Nigerian agriculture

The total agricultural area, according to FAOSTAT, 72 million hectares, that is about 77% of total country area. Arable land is 35 million hectares, that makes less than 48% of agricultural area.

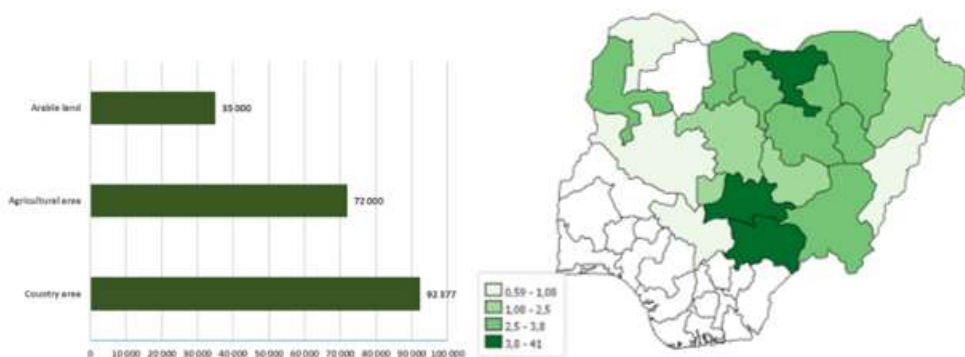


Figure 3. Agriculture statistics and agriculture land in Nigeria
 (*10 000 ha or 10 sq.km) (Source: own work, based on FAOSTAT, 2016)

Total agriculture production of crops was estimated to be 152 million tones. The main 10 crops planted in Nigeria are Cassava - 54 831 600 tones, Yams - 45 004 340 tones, Maize - 10 790 600 tones, Oil, palm fruit - 7 968 440 tones, Sorghum - 6 741 100 tones, Rice, paddy - 6 734 000 tones, Sweet potatoes - 3 478 270 tones, Groundnuts, with shell - 3 413 100 tones, Taro (cocoyam) - 3 273 000 tones, Cow peas, dry - 2 137 900 tones. That 10 planted crops make over 94% of total crops production in Nigeria (figure 4).

Conclusions could be retrieved from the analysis of yields of the main crops planted in Nigeria:

- Cassava – the yield in Nigeria 70 323 hg/ha, the best yields of that crop India – 349 594 hg/ha, the average yields of Cassava in the world was 112 121 hg/ha. That means that the growth of yields in Nigeria has still great potential because the achieved yields there are only 20% of the best yields achieved in the world and 62% of the average;
- Yams – the yield in Nigeria 70 001 hg/ha, the best yields of that crop Ethiopia – 279 805 hg/ha, the average yields of Yams in the world was 92 015 hg/ha. That means that the growth of yields in Nigeria has still great potential also in case of that crop, because the achieved yields there are only 25% of the best yields achieved in the world and 76% of the average.
- Maize – the yield in Nigeria 14 616 hg/ha, the best yields of that crop United Arab Emirates – 367 619 hg/ha, the average yields of Maize in the world was 47 217 hg/ha. That means that the growth of yields in Nigeria has still great potential also in case of that crop, because the achieved yields there are only 3% of the best yields achieved in the world and 30% of the average.
- Oil, palm fruit – the yield in Nigeria 26 667 hg/ha, the best yields of that crop Guatemala – 227 692 hg/ha, the average yields of Oil, palm fruit in the world was 117 416 hg/ha. That means that the growth of yields in Nigeria has still great potential also in case of that crop, because the achieved yields there are only 11% of the best yields achieved in the world and 22% of the average.
- Sorghum – the yield in Nigeria 9 727 hg/ha, the best yields of that crop United Arab Emirates – 241 358 hg/ha, the average yields of Sorghum in the world was 26 000 hg/ha. That means that the growth of yields in Nigeria has still great potential also in case of that crop, because the achieved yields there are only 4% of the best yields achieved in the world and 37% of the average.

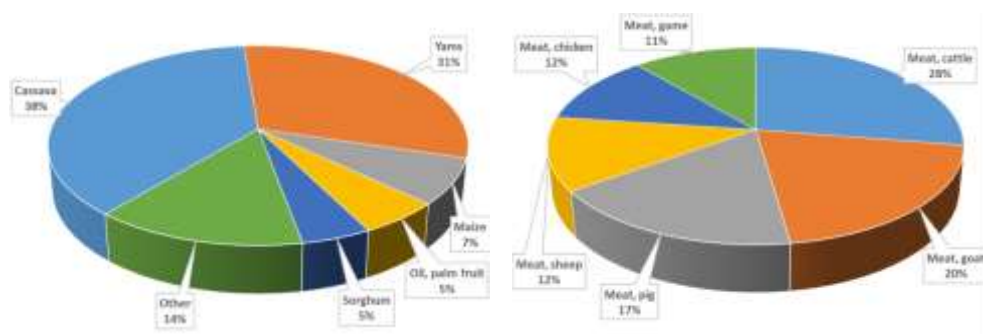


Figure 4. The structure of crops and meat production in Nigeria
(Source: own work, based on FAOSTAT, 2017)

The situation described above could be generally seen according to any kind of crops planted. There are differences because of climate in the certain countries but still when one benchmarks the Nigerian agriculture with the countries with similar climate one should get similar findings. That factor is important in case of drawing the scenarios for Nigeria.

When considering meat and main animal products production the total production achieved in 2014 about 1,4 million tones (figure 4), 650000 tons of hen eggs and 570 000 tons of milk. The analysis made on crops production and meat and main animal products production shows that agriculture is very extensive.

Interesting findings one could made when analyzing agriculture products international trade of Nigeria and OPEC oil prices (figure 5).

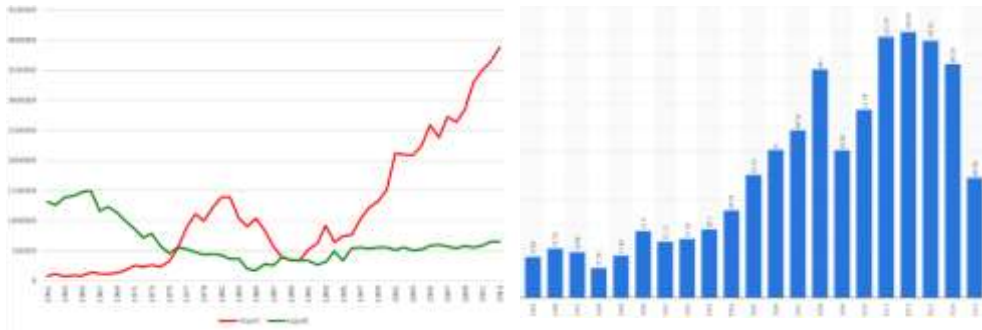


Figure 5. Value of Nigerian export and Import and OPEC oil prices
(Source: own work, based on FAOSTAT, 2017)

The Nigerian economy, as the country is forth OPEC exporter is strongly depended on oil prices, co the form about 1995 then the oil prices had started to grow also the agriculture products trade deficit had grown. During that more or less 20 years of prosperity on the oil market Nigeria had financed their agriculture trade deficit with income from oil export. The dangerous situation has appeared in 2015 when oil price has significantly dropped. Nigeria has not totally been prepared for that situation. Moreover, the situation on the oil market, and also prices, will never be the same again also because of the growing popularity of substitute to oil energy sources like for example shell gas or all palette of the renewable energy sources like wind, sun, etc. That situation draws the new challenges in front of Nigerian economy and agriculture

The new challenges in front of Nigerian economy and agriculture

In management before drawing any plans for the future there is significant need to get as much information as one can about past, current situation ant the trends that could affect the plans, not only according to one issue that is currently researched but also the issues closely related to it. Especially the things that has to be carefully examined are changes.

Charles Robert Darwin has told "It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change." (Senkus, 2013. p.57), in case of Nigeria that means that the only condition for success in developing the economy is to adjust to new trends either economic or ecological or social. Jack Welsh, the former CEO

GE, told “if you do not change you’re dead”, the symptoms of economic troubles for all oil-dependent countries could be noticed with oil price drop that is why they would have to find the way to change in order not to get bankrupted. But the hardest thing still comes ... Albert Einstein has told “We can't solve problems by using the same kind of thinking we used when we created them”. That are words are very actual nowadays. Probably no conventional way to encourage the economic growth would work. It would not work, because external environment has totally changed especially according to technology, knowledge sharing or information flow. So how to draw right plans and chose the good actions? Let us begin from general to specific.

The ability to answer the question is bigger when one understands the “game-changers” or often called the technological waves. The theory of waves has been developed by Alvin and Heidi Toffler. They claim the entire history of mankind is considered by them within the context of three consecutive but simultaneously interpenetrating one another technological waves:

- the agrarian - began about 10,000 years ago and was a consequence of the spread of inventions and skills related to farming that resulted in forcing the settled way of life. The wave has not gone yet. The wave is still present in the countries where the most of the society is depended on agriculture. It does not mean that that countries are worse than others, it only means that in order to achieve success another plans have to be drawn and another actions have to be taken. According to agriculture to make it modern and efficient, the new technologies like Internet of Things, new way of planting or breeding or new platforms, based on Internet, to educate farmers and share the knowledge have to be implemented;
- the industrial - began with the invention of movable type by Johannes Gensfleisch zur Laden zum Gutenberg about 1450 and this wave was surged thanks to James Watt, who improved the atmospheric steam engine in 1763, which was constructed by Thomas Newcomen. However, the invention of a steam engine and launching the industrial era are assigned to James Watt. This wave revolutionized steel production methods, popularized electricity and brought new means of transport and mass communication as well as it popularized standardization and uniformity. Like in case of the agrarian wave that wave has not been over. That wave is characteristic for the countries with strong industry, but without R&D centers. The interesting thing about the theory is that the countries on their way to development do not necessary need to get into all waves. It is only necessary to uncover and implement the new trends that are shaping industry of the future like 3D printing (it allows to manufacture goods directly in the place where they are needed);
- the information - is directly related to the emergence of new technologies enabling unlimited communication amongst people. It is characterized by the development of different services and leaving mass production; it is not a talk about simple services here such as gastronomy or hairdressing, since they cannot, according to Toffler, become the icons of the third wave. The services associated with the third wave are above all the services related to creation and accumulation of knowledge and modern technologies; the third wave is still in the initial phase and faces the resistance of the defenders of the second wave (Toffler, 1997).
- Nigeria and the rest of the world is now at the end of the third wave or even at the beginning so the “proven programs” that were conducted in the other countries would not work the for Nigeria. The easiest way to improve agriculture would be

to use more fertilizers, more heavy machinery and promote monoculture ... such action runs in a straight line to repeat the environmental, economic and social catastrophe of the “Aral Sea”.

Table 1. Gaps in the Nigerian demand and supply across key crops and activities (2016 estimate) (Source: Federal Ministry of Agriculture & Rural Development in the document “The Agriculture Promotion Policy (2016 – 2020) - Building on the Successes of the ATA, Closing Key Gaps”)

Crop	Demand	Supply	Gap (%)	Observations
	(million tons)			
Rice	6.3	2.3	173,9	Insufficient supply chain integration remains issue
Wheat	4.7	0.06	7 733,3	Driven by demand for various types of wheat (white, hard, durum), etc. for bread, biscuits and semovita
Maize/Corn	7.5	7.0	7,1	Limited imports required but can shift due to feed demand
Soya Beans	0.75	0.6	25,0	Animal feed and protein cost alt. driving demand
Chickens	200 birds	140	42,9	Gap filled by illegal imports that enter market at lower price point than domestic producers; gap also a moving target based on fast food/QSR demand
Fish	2.7	0.8	237,5	Fall off in ocean catch and weakness in aquaculture yields due to cost of fish feed a constraint on growth
Milk / Dairy	2.0	0.6	233,3	Driven by insufficient milking cows and low yields (~15-25 liters/day versus norm of 35 - 40 liters NZ/US)
Tomato	2.2	0.8	175,0	Actual production is 1.5 million tons but 0.7M ton is lost post-harvest
Yams	39	37	5,4	Limited gap today but volumes expected to rise in planning period
Oil Palm	8.0	4.5	77,8	Refers to fresh fruit bunch (FFB) from which oil is extracted at a 10% - 15% efficiency rate
Cocoa	3.6	0.25	1 340,0	Demand is global demand which will rise to 4.5M by 2020
Cotton	0.7	0.2	250,0	Demand is for seed cotton and could rise to 1.0 - 1.5 million tons subject to textile sector revival
Sorghum	7.0	6.2	12,9	Demand will rise further as use in feed grows in 2016 - 2020. Import of malt extracts and glucose syrup is currently used to manage gap, hence a commercial threat for Nigerian farmers

Federal Ministry of Agriculture & Rural Development in the document “The Agriculture Promotion Policy (2016 – 2020) - Building on the Successes of the ATA, Closing Key Gaps” has identified the gaps in Nigeria demand and supply across key crops and activities that are presented in table 1.

The figures shown in the table 1 show that Nigeria has a lot to do but the chance for the success is great because even the gap in the production of strategic crops is from about 5 to 7 733% the average value is 793,4 and the modal value is 174,5%. Getting back to the yields analysis one could notice that even when to improve yields about 200% the

yields still remain relatively low to worlds average. The select challenges and production gaps by value chain stage were displayed (table 2). The most important when restructuring Nigerian agriculture is to treat agriculture as the part of the all Nigerian economy system, not stand as alone.

Table 2. Gaps in the Nigeria demand and supply across key crops and activities (2016 estimate) (Source: Federal Ministry of Agriculture & Rural Development in the document "The Agriculture Promotion Policy (2016 – 2020) - Building on the Successes of the ATA, Closing Key Gaps")

Area	Illustrative shortcomings
Input Supply	<ul style="list-style-type: none"> GES's limited focus and exit strategy set aside, with material implications for Ministry's budget, hence the sharp rise in indebtedness to banks. The system has many leakages from farmer registration and data capture to supply and distribution mechanism. Insufficient access to improved variety seeds e.g. still a 300,000MT gap between demand and supply of seeds
Financing	<ul style="list-style-type: none"> Credit access particularly for small holders remains weak Nirsal's 2013 change in credit guarantee rules disrupted market for agriculture financing until mid-2015 when rules were reviewed again Backlog of unpaid GES loans (estimated at N39B) has slowed down bank lending Of ~\$8 billion in domestic and foreign investor commitments often cited, only limited volumes actually moved from idea to reality
Infrastructure & Logistics	<ul style="list-style-type: none"> Investment inflows into infrastructure and midstream logistics e.g. warehouses, storage, processing systems remains rudimentary Staple crop processing zone (SCPZ) strategy has not yield results. For example, Kogi SCPZ has not taken off due to withdrawal of Cargill, the anchor investor from the project
Production	<ul style="list-style-type: none"> Growth in food production remains limited due to gaps in input supplies e.g. rice; hence rice imports still exceed \$1 billion/annum. Outlined below is an <i>illustrative</i> "best estimates¹" of demand-supply gaps given data quality issues still present in Nigeria. It is anticipated that as production gaps are closed via yield improvements, per/ton equivalent costs will also decline, helping reduce food costs and ultimately, inflation.
Market Access	<ul style="list-style-type: none"> Post-harvest losses still an issue but improving moderately Illegal food imports remain an issue, depriving farmers of market opportunities
Others	<ul style="list-style-type: none"> Federal - State coordination of policy became significant challenge; some states made choices at odds with federal approach e.g. continuing direct procurement of fertilizer Absence of program delivery infrastructure / unit at the federal and state levels; held back key implementation and donor funding Data collection and evidence based reporting remains weak, hence tracking results / M&E continues to be a challenge

¹ Based on data drawn from FMARD, NBS, NIRSAL, CNBC Africa, commercial bank project analysis, FAO, USDA GAIN. NDPI Foundation, and private estimates

One of the most interesting of management that is e part of “sustainability trend” is Cradle to Cradle. The application of the model has been already conducted in Ford Motor Company, Deso and many other industries and agriculture (Bouma et al., 2011; Docuyan, 2011). Cradle to Cradle (C2C) is a biomimetic approach to the design of products and systems. It models human industry on nature's processes viewing materials as nutrients circulating in healthy, safe metabolisms. It suggests that industry must protect and enrich ecosystems and nature's biological metabolism while also maintaining a safe, productive technical metabolism for the high-quality use and circulation of organic and technical nutrients (McDonough & Braungart, 2010; Hunter, 2008).

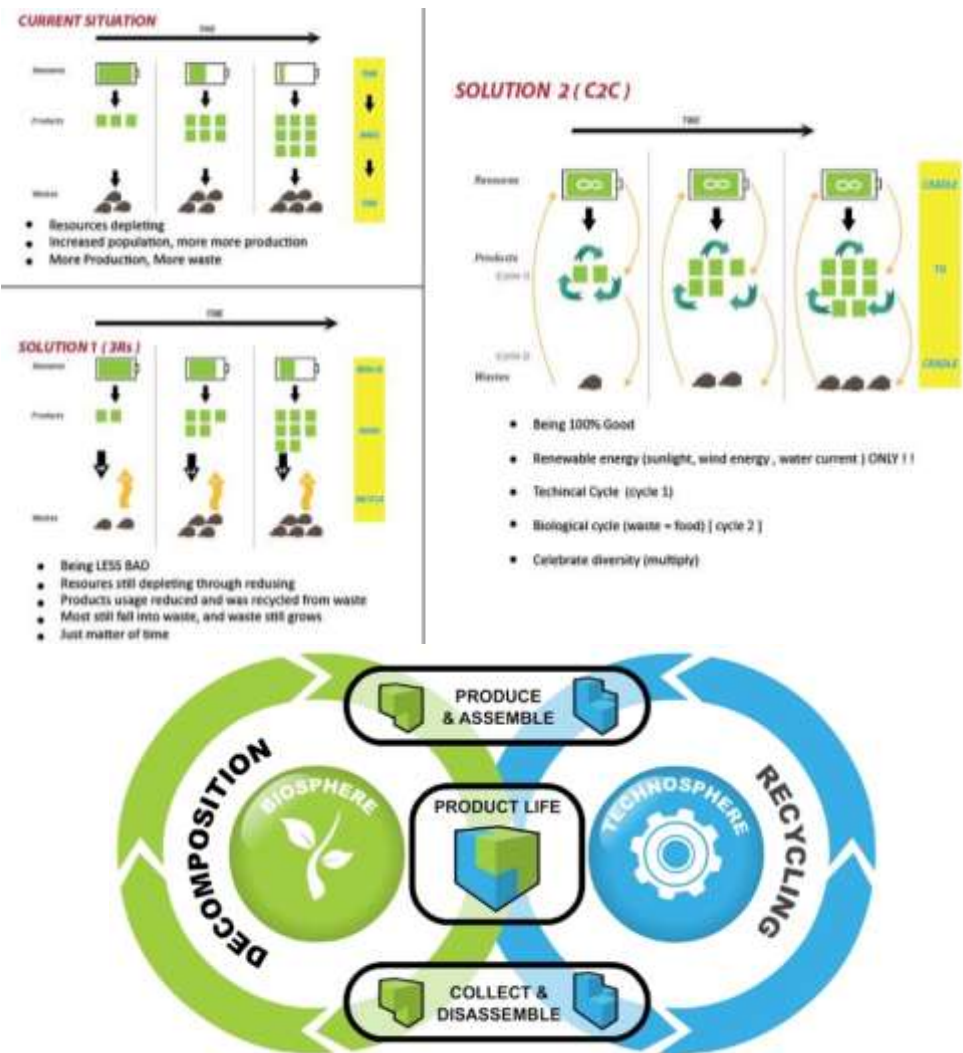


Figure 6. The idea of Cradle to Cradle (C2C) and Model C2C
(Source: McDonough & Braungart, 2010; Cradle to Cradle Products Innovation Institute, <http://www.c2ccertified.org/>, dostep 2013)

According to the "Cradle to Cradle" model (figure 6), all materials used in production or services, such as metals, fibers, dyes, fall into one of two cycles: "technical metabolism" or "organic metabolism":

- The technical – is strictly limited to non-toxic, non-hazardous synthetic materials that have no negative impact on the environment and also can be used in continuous cycles, without loss of integrity and quality. Thus, these materials may be used in a continuous cycle, instead of being "recycled", where part of the product, becomes waste;
- The biological - contains materials that once used, can be thrown in any environment and decompose in the soil, providing food for small life forms without affecting the environment.

The main principles of Cradle to Cradle (C2C) are:

1. Waste = Food is a basic concept of organic waste materials becoming food for bugs, insects and other small forms of life who can feed on it, decompose it and return it to the natural environment which we then indirectly use for food ourselves;
2. Use current solar income – the designers of the method encourage to renewable sources of energy for example powered by sun;
3. Celebrate diversity – that means biodiversity, cultural diversity or conceptual diversity.



*Figure 7. The principles of Cradle to Cradle (C2C)
(Source: McDonough & Braungart, 2010.)*

Nigerian Government and the agencies, universities and specialists who would do the agriculture or other branches of Nigerian Economy reorganization in order to achieve success have to treat their job as project or portfolio of projects and run them under project management regime and except of sustainability, use new management tools and techniques like business process management, lean management.

The scenario for Nigerian agriculture development

Federal Ministry of Agriculture & Rural Development of Nigeria has prepared also the development policy with the certain fundaments:

- Food security;
- Import substitution;
- Job creation;
- Economic diversification.

From the perspective of sustainability and new management trends the policy is well prepared because the policy seems to be treated as system.



Figure 8. Agriculture Promotion Policy Fundamentals

(Source: Federal Ministry of Agriculture & Rural Development in the document (2016) "The Agriculture Promotion Policy (2016 – 2020) - Building on the Successes of the ATA, Closing Key Gaps").

The ministry has also described some priorities (Federal Ministry of Agriculture & Rural Development 2016) but based on experience of the countries like Poland or other countries who has gone through economic transformation some comments and additions should be made. The priorities are mentioned below in points and are commented based on practical and research experience of the authors:

- 1) Agriculture as a business - focusing the policy instruments on a government-enabled, private sector-led engagement as the main growth driver of the sector. This essential principle was established in the ATA and will remain a cardinal design principle of Nigeria's agriculture policies going forward. Comment: The introducing "agriculture as a business" is great idea because actually managing the agriculture farm does not really differ from managing any other business. Peter Drucker told "management is divided only into good or bad management". The thing that has to be mentioned is structure of farms and structure of capital:
 - a. Farm structure – large farms are more effective and more profitable, but definitely do not create jobs. The high effective big farm in Europe or US employ 2-3 workers on each 100 ha while the large state farms in communist times in Poland employed about 12 workers. Unfortunately, Polish government did not care to much about that numbers that has result in very high unemployment in the rural areas. The most effective farm type for Nigeria would be, based on the polish experience, would be family farm.
 - b. Capital structure – the policy makers in Nigeria has to take care also for proper balance between foreign and domestic capital. The foreign capital is welcomed, but no controlling it could result in neocolonialism because foreign capital would invest only in big profitable farms and transfer the profits to their countries. Such mechanism is unfortunately noticeable in Polish banking sector, where 98% of banks are foreign and industry sector where almost none of big companies are Polish. The significant thing is that one who owns the capital decides how many people to employ and how much to pay for the job. That means that in order to company would be high profitable the wages have to remain low. The other way to build very economically effective society is the Japan way described in the Imai Masaaki book "Kaizen: The key to Japan's competitive success" (Masaaki 1986).
- 2) Agriculture as key to long-term economic growth and security - focusing policy instruments to ensure that the commercialization of agriculture includes technologies, financial services, inputs supply chains, and market linkages that directly engage rural poor farmers because rural economic growth will play a

critical role in the country's successful job creation, economic diversity, improved security and sustainable economic growth. Comment:

- 3) Food as a human right – focusing the policy instruments for agricultural development on the social responsibility of government with respect to food security, social security and equity in the Nigerian society; and compelling the government to recognize, protect and fulfill the irreducible minimum degree of freedom of the people from hunger and malnutrition.
- 4) Value chain approach – focusing the policy instruments for enterprise development across successive stages of the commodity value chains for the development of crop, livestock and fisheries sub-sectors, namely input supply, production, storage, processing/utilization, marketing and consumption. Building complex linkages between value chain stages will be an important part of the ecosystem that will drive sustained prosperity for all Nigerians.
- 5) Prioritizing crops – focusing policy on achieving improved domestic food security and boosting export earnings requires a measure of prioritization. Therefore, for domestic crops, the initial focus in 2016 – 2018 will be expanding the production of rice, wheat, maize, soya beans and tomatoes. For export crops, the initial focus will be on cocoa, cassava, oil palm, sesame and gum Arabic. In 2018 onwards, the export focus will add on bananas, avocado, mango, fish and cashew nuts. Investments in closing infrastructure gaps to accelerate productivity and investment in these crops will also be sequenced to reflect capital availability and management attention.
- 6) Market orientation – focusing policy instruments on stimulating agricultural production on a sustainable basis, and stimulating supply and demand for agricultural produce by facilitating linkages between producers and off takers, while stabilizing prices or reducing price volatility for agricultural produce through market-led price stabilization mechanisms (commodity exchanges, negotiated off-take agreements, extended farm-gate price under value chains coordination mechanisms, agricultural insurance, etc.)
- 7) Factoring Climate change and Environmental sustainability – focusing policy instruments on the sustainability of the use of natural resources (land and soil, water and ecosystems) with the future generation in mind while increasing agricultural production, marketing and other human activities in the agricultural sector.
- 8) Participation and inclusiveness – focusing instruments on measures to maximize the full participation of stakeholders including farmer's associations, cooperatives and other groups, as well as NGOs, CBOs, CSOs, development partners and the private sector. This places a premium on the role of these organizations or groups as agents of economic change in general and agricultural economy in particular, thereby drawing benefits from their policy advocacy roles as partners to and watchdog of government.
- 9) Policy integrity – focusing policy instruments on measures for sanitizing the business environment for agriculture, in terms of accountability, transparency and due process of law, ensuring efficient allocation and use of public funding and fighting corruption on all programs involving public resources. This also applies to compliance with international commitments, protocols and conventions that Nigeria is a signatory to. To make real integrated policy and actions the specific frameworks and tools are needed like Business Process Management or Project Management. The implementation of the frameworks and tools could ensure that could ensure transparency, eliminate corruption and finish project with success (Senkus 2013),

- 10) Nutrition sensitive agriculture – focusing policy instruments on addressing the issues of stunting, wasting, underweight and other manifestations of hunger and malnutrition with particular reference to the vulnerable groups, which include children under 5, nursing mothers and persons with chronic illness and disabilities.
- 11) Agriculture's Linkages with Other Sectors – focusing policy instruments on the connected relationship between agriculture and other sectors at federal and state levels, particularly industry, environment, power, energy, works and water sectors.

According to authors the scenario drawn for Nigeria by the Federal Ministry of Agriculture & Rural Development, with could make the success of the Nigerian agriculture development. Moreover, investing in agriculture even when the world is at the end of the third technological wave still could be profitable for the country. The example or that thesis is Denmark. Generally, two thirds of the Danish agricultural production are exported to more than 100 countries all over the world. Only half of the export goes to the EU-countries. This means that Danish farmers are competing with farmers on the world market (Danish Agriculture & Food Council). The significant thing is that Danish agriculture is based on family farms and co-cooperatives.

Another thing should be also included in the scenario of developing Nigerian agriculture and Nigerian economy at all. The thing is Internet and the related to it like Internet of Things (IoT). IoT could dramatically change the business reality in agriculture that could effect in: significant drop of the production costs, better risk management, better decision making and incense of the welfare in the rural areas (Senkus, Łuczak & Skrzypek, 2014). The only thing is to do by Nigerian government is to set up Internet backbone network as a framework for knowledge sharing.

Conclusion

Nigeria is standing now in the front of very big challenge related building their economic security through to reorganizing the agriculture sector but in order to achieve success the three main activities should be undertaken.

- Developing the family farm model to make them food self-sufficient,
- Developing the co-cooperative model for proper quality of agriculture supply,
- Building the broadband Internet infrastructure to spread specific knowledge.

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