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TRANSFORMING NIGERIAN AGRICULTURE IN THE CONTEXT OF A GREEN ECONOMY: FINANCING CHALLENGES, OPPORTUNITIES AND MECHANISMS

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Abstract
Concern is growing about green economy in the country on account of the bourgeoning population with rising poverty and increasing risk of food insecurity and environmental degradation and in consonance with the renewed emphasis being given to the phenomenon all over the world. Although the agricultural sector has demonstrated improved performance since the inception of ATA in 2011, financing bottlenecks remain; and the major concern is the lack of emphasis on green finance. This paper advocates for financing mechanisms to support a transformation agenda that moves agriculture away from activities that are nature degrading and environment polluting to those that are nature preserving and environment friendly. It argues that an agricultural financing framework to engender a green economy in Nigeria must be pursued within the context of sustainable development and poverty alleviation in which the integration between economic, social and environmental pillars of development are recognized and reinforced. Specifically, the paper examines the gaps between agricultural transformation and green finance in Nigeria, identifies the constraints and opportunities for green agriculture financing and articulates appropriate financing mechanisms. These include value chain financing to support integrated farming systems, support for organic agriculture by NIRSAL, financing of product and agricultural system certification, financing the monitoring of natural resource exploitation and restoration, financing the development of climate change buffers, inter-agency collaboration in financing desert encroachment and restoration of degraded land and mainstreaming green finance in the implementation of the staple crop processing zone component of ATA. In conclusion, the paper calls for the crafting of a "green-print" for a green agricultural economy – a well-informed policy layout for greening agricultural growth in Nigeria with an implementation plan to serve as the solid investment foundation required for the industrialization of the Nigerian economy

Keywords: Nigerian agriculture, green economy, financing challenges, opportunities and mechanisms

1.0 Introduction

Nigeria has a repository of ideas, policies and strategies for the development of its agriculture; and some of them, though unannounced, have helped to maintain a green economy over the years. However, the results have been limited due to instability of government policies as well as inappropriate and inadequate financing. Concern is growing about green economy in the country on account of the bourgeoning population with rising poverty and increasing risk of food insecurity and environmental degradation and in consonance with the new impetus and renewed emphasis being given to the phenomenon all over the world. Global efforts are being galvanized towards its propagation as a way of overcoming the many concurrent and interlinked global crises experienced during the past few years including the financial, food and climate crises through a reallocation of capital into green and greener forms of development.

Nigeria witnessed its own challenges during the last episode of the food crisis in 2008. It rose to the occasion by developing short- medium and long-term strategies to address the situation (Olomola,2013) some of which became fully developed under the Agricultural Transformation Agenda (ATA) under President Jonathan. Nigeria's transformation agenda came on stream in 2011 with emphasis on the diversification of its economy. The agriculture sector is leading this drive with the launch in 2012 of the ATA, which seeks to add 20 million MT to the domestic food supply and create a total of 3.5 million jobs by 2015. The focus is on expanding domestic food production, reducing import dependency and expanding value addition to locally-produced agricultural products. Under the ATA, government is to provide an enabling environment for private-sector investment to modernize and industrialize Nigeria's agriculture through radical policy reforms, reduced role of government and expanded incentives for the private sector. The agricultural sector has demonstrated improved performance since the inception of ATA. Nonetheless, financing bottlenecks remain (Olomola, 2014; Olomola and Gyimah-Brempong, 2014; Olomola *et al*., 2014). The area of concern in this paper is the lack of emphasis on green finance.

The agricultural sector is most vulnerable to the impacts of climate change and so every aspect of the agricultural sector including the crop production, livestock, forestry, fishery and food processing value chain play a vital role in the transition

to a green economy so there can be no green economy without the agricultural sector. With a green economy, agricultural practices in all the sectors will have to be increasingly low carbon, resource efficient and socially inclusive for improved productivity to ensure food and nutrition security (FAO, 2012). According to the UNEP (2011) the greening of agriculture refers to the increasing use of agricultural practices and technologies that would simultaneously (i) increase farm productivity and profitability while ensuring the provision of food and ecosystem services on a sustainable basis, (ii) reduce negative externalities, such as erosion, inorganic agro-chemical pollution, and agricultural GHG emissions; and (iii) rebuild ecological resources such as soil fertility, water, air and biodiversity including animal and plant-genetic diversity. In the long run, greening agriculture is expected to improve crop and livestock resilience to the negative impact of climate change.

An agricultural financing framework to engender a green economy in Nigeria must be pursued within the context of sustainable development and poverty alleviation in which the integration between economic, social and environmental pillars of development are recognized and reinforced. Within the agricultural sector, the essence is to evolve financing mechanisms to support a transformation agenda that is nature preserving and environment friendly rather than nature degrading and environment polluting. This is the challenge of this paper. The challenges and prospects of green finance need to be uncovered early enough in the transformation process in order to inform policy measures aimed at promoting green agriculture in Nigeria. Indeed this instructive on account of the widely acclaimed viewpoint that the missing link in the transition to a green economy is "green finance". (Huberman 2010,). What is the nature of green finance required to catalyze the transformation to a green agricultural economy in Nigeria? What is the role of the public and private sectors providing financing for the transition to a green agricultural economy? What are the prospects for mobilizing such finance and what delivery channels will be appropriate? These are the issues to be unraveled in this paper. Specifically, the objectives of the paper are to: (i) examine the gaps between agricultural transformation and green finance in Nigeria (ii) identify the constraints and opportunities for green agriculture financing, (iii) analyze international experiences in green agriculture financing and draw appropriate lessons and (iv) articulate mechanisms for financing green agriculture inthe country. The remainder of the paper is structured as follows. Section two highlights the challenges and opportunities for mobilizing finance for developing a green agricultural economy. The gaps between the transformation agenda and green finance are identified in section three with consideration of the ways by which such gaps could be bridged. The areas of focus in green agricultural financing and financing mechanisms are also articulated. The paper is rounded off in section four with broad policy recommendations and conclusions.

2.0 Opportunities and Challenges of Green Agriculture Financing in Nigeria

The Nigerian agricultural sector has a myriad of greening opportunities which have attracted huge investment capital in recent times. Nigeria joined seven other African countries in 2013 under the Grow Africa platform to support the objective of its ambitious agricultural transformation agenda. The Agricultural transformation agenda got $8 billion investment as commitments for both projects at the implementation phase and future projects along the agricultural value chain from a combination of both public funding and key private sector funding consisting of international, multilaterals, bilateral and domestic organizations. Out of these investment commitments, $1.25 billion was sourced from the World Bank, African Development Bank, the International Fund for Agricultural Development (IFAD), Overseas Private Investment Corporation (OPIC),; United Kingdom Department for International Development (DFID) and the United State Agency for International Development (USAID). Investment in the agricultural sector is also backed with substantial technical support by the United Nations Development Programme, Ford Foundation and domestic NGO's Like the Tony Elumelu Foundation. Nigeria have also been chosen as a priority country for the Bill and Melinda Gates Foundation investment in agriculture (GrowAfrica Report, 2013). Private sector investors like the world's largest manufacturer of tractors - Massey Ferguson are have also shown commitments to invest in the Nigerian Agricultural sector alongside value chain investors like Dominion Farms, Cargill, SAB Miller and AGCO.

The Nigerian private sector is also taking giant strides in actualizing the agricultural transformation agenda and with investments in the processing of agricultural plant and animal like tomatoes by Dansa foods in Kano, fruit processing into concentrates by Terago in Benue state, Halal-certified products for the meat industry by Famag-Jaland revitalization of agro-processing units by the Leventis group. Other investors already in the agricultural processing business like the Flour Mills of Nigeria, Multitrex and Olam are developing funds for further investments in the agricultural sector. With the committed investment in the agricultural sector and the transformation of the sector from being a development sector to a business-driven sector, agricultural companies now feature prominently as high performing companies on the Nigerian Stock Exchange.

The transformation of the agricultural sector is also revolutionary for smallholder farmers with greater priority given to credit access for farmers to ensure resilience through income expansion and diversification by building sustainable agricultural systems. With a $3.5 billion banking leverage to the agricultural sector and a 350 million risk sharing facility established by the Central Bank of Nigeria in 2012 through the NIRSAL, the lending risks associated with the agricultural sector is no longer a major challenge to agricultural finance. A reduction in the interest rate to the single 8% digit from 18% and wider private sector lending coverage of $400 million by NIRSAL in 2013 would also encourage smallholder and private sector involvement in the agricultural transformation that the country is embarking upon. In addition to these innovative and targeted financing sources, the federal government also recapitalized the Bank of Agriculture to enable single-digit lending rates to farmers. The ministry of agriculture and rural development is also working in conjunction with KfW of Germany to create the Fund for Agricultural Finance in Nigeria (FAFIN) up to the tune of $260 million for capitalization. With all the funds made available through various partnerships, 14 staple crop processing zones have been established in high crop production areas to attract more investment with establishment of infrastructure for easy private sector participation.

2.1 State Government Partnerships to Attract Investors

Exemplary co-operations between the Federal Ministry of Agriculture and Rural Development (FMARD) and state governments launched with the agricultural transformation agenda to drive investment and growth in the agricultural sector are already paying off. Taraba state for instance secured a $40 million investment through the Federal Ministry of Agriculture and Rural Development from US investor- Dominion Farms. With the farm's current operation for rice production on 30,000 hectares of land, rice importation is expected to reduce by 15% and creating employment opportunities for young commercial farmers. Cargill flour mill of Nigeria with Transcorp Group would also produce 250,000 MT of cassava starch to substitute current corn starch import with additional 100,000 MT of cassava syrup as sweeteners. Other successes recorded in the since the inception of the agricultural transformation agenda and agricultural financing through FMARD-state cooperation are fruits concentrates production in Benue and Cross-River, tomatoes processing plant in Kano and Sorghum processing planting in Jigawa state. Other investments have also been secured as a result of the FMARD-State partnership. AGCO-manufacturers of Massey Ferguson also began operations in Nigeria 2012 with an investment of over $100 million in new tractor assembly plants and tractor parts and supply services in Ekiti, Enugu, Kaduna, Rivers, and Ogun states. Global-domestic partnerships are also on the way with the new "Country Cooperation Framework" with Nigeria under the New Alliance for Food Security and Nutrition.

2.2 Investment and partnering opportunities

Other areas that have witnessed substantial investment opportunities since 2012 include intergovernmental partnerships in financing input subsidy which has encouraged investment by major input suppliers and agro-dealers involving huge financing by the banking sector in 2013. Moreover, the Federal Ministry of Agriculture and Rural Development through the Staple Crops Processing Zones will develop the agricultural value chain through value creation and addition on staple crops produced across the country to encourage import substitution and invariably increase food production. Two of the subsectors that provide investments opportunities and where substantial progress has been made since 2012 are cassava and rice. Opportunities for investments in production and processing enterprises are being expanded and considerable progress has been made in attracting domestic and multinational firms into these sub-sectors.

2.2.1 The cassava sub-sector:

As the largest producer of cassava in the world with an annual production of 34 million MT per annum, Nigeria has put in place policies to encourage the optimal production through cultivation of drought-tolerant cassava and develop the processing and marketing sector to ensure resilience in the cassava production system. These fiscal policies would act as a mechanism for developing the cassava market, production of high quality and international quality cassava flour to reduce wheat import and encourage the substitution of 20% cassava with wheat flour for bread production in a cost effective way to maximize farmers and processors' profit. In addition to the farmers that are benefitting from the staple processing zones as a result of the sure market for products that the zones presents, global agricultural processing players like Cargill, Unilever and Nestle are already on the way with the processing of cassava for starch, sweeteners and sorbitol (Grow Africa, 2013).

2.2.2 The rice sub-sector

The rice subsector has seen major and remarkable improvement with the Staple Crop Processing Zones of the Agricultural Transformation Agenda. Local rice production was increased by 690,000 MT in 2012 alone representing over 140% increment in the rice produced in the previous year. The success of the rice subsector is mostly attributed to the use of innovative fiscal policies to encourage domestic rice production. Sales of paddy produced in the country for processing

also increased significantly with the establishment of numerous private-sector driven rice mills with milling capacity of over 240,000 MT by improving the quality of locally grown rice. Collaborations between the Federal Ministry of Agriculture and Rural Development and the Ministry of Finance to acquire 100 large-scale and integrated rice mills with a total capacity of 2.1 million MT have proventhat self-sufficiency in the rice subsector is achievable with the ability to replace all rice imports to the country (Grow Africa, 2013). With the remarkable achievements and opportunities, the role that green agricultural financing can play in transforming the Nigerian Agricultural sector in a sustainable and climate-smart manner cannot be overlooked as green agriculture ensures that the agricultural sector produces high yield in a sustainable manner.

In the light of the foregoing, it is clear that Nigeria is on the right path to institutionalize green finance in the agricultural sector. As shown in Fig. 1, the opportunities abound across the value chains and all players must come to grips with theneed to meet the green objectives of economic viability, environmental sustainability and social inclusiveness as they mobilize funds to finance their various projects.

3.0 Bridging the Gap between Agricultural transformation and Green Finance in Nigeria

The Nigerian agricultural transformation agenda aims to achieve a food secure Nigeria through an agricultural sector that drives income growth for farmers and the economy as a whole and fast-track the achievement of food and nutritional security. It also aims to generate jobs along the agricultural value chain and transform Nigeria into a leading player in global food markets to grow wealth for millions of farmers (FMARD, 2011). The vision of the agricultural transformation is to grow agriculture beyond food production to an agricultural industrialized economy that would lead to the sustainable development of the economy. This will be made possible through the development of the agricultural value chain in crops that Nigeria has comparative advantage in and investment in the agricultural sector. With these objectives of the agricultural transformation agenda, greening agriculture in Nigeria would increase the chances of achieving agricultural transformation even beyond what is envisioned now with the agricultural transformation agenda and in a more sustainable and environmentally friendly manner. Even with the agricultural transformation that Nigeria is embarking on and the success that has been recorded; there is still a huge financing gap for the greening of Nigerian agricultural system. The absence of investment grade policy for agriculture is still a major challenge for getting the private investment needed for sustainable agricultural development. There is still no clear financing path for green agriculture in Nigeria.

The current agricultural transformation agenda can be re-oriented and streamlined to accommodate green finance initiatives in order to achieve better results. This raises critical issues relating to policy and process. For instance, what are the green agriculture financing requirements? That is, what should we finance in greening the agricultural economy? And what exactly are we financing currently? What gaps remain? And how can they be bridged? In directing finance to foster a green agricultural economy in Nigeria, the various pillars or indicators of sustainable agriculture must be incorporated. In this regard, the policies, programmes and projects must be economically viable, environmentally sound as well as socially and politically acceptable. There is no doubt that sustainable agricultural finance is important for agricultural transformation in Nigeria and the financial demands as a result of greening the agricultural economy are enormous. With the increasing view that agriculture is no longer a development project that requires constant aid but a business that is worthy of profitable investment, the possibility of acquiring green investments in agriculture for a green economy is greater. Transforming to a green agricultural economy is dependent on massive shifts in capital mobilization through both public and private financing strategies tailored for green growth in the economy. These financial strategies would be those that can transform the agricultural sector from the current “un-green” state that it is in now to a “green” state. For the current agricultural finance in Nigeria to be green, some basic requirement would have to be attained.

3.1 Green Agricultural Financing Needs and Mechanisms

The path required for green agricultural financing in Nigeria is articulated in this section. Basically, it consists of an integration of existing agricultural finance strategy with a green policy framework including financial instruments as well as green infrastructure and research and public budget support. The current agricultural finance strategy in Nigeria should be backed with an enabling green agricultural policy framework. An enabling policy framework for long term investment in green agriculture would enable the key players in greening agriculture in Nigeria by capitalizing on the natural resources and opportunities available in a green economy. Capitalizing on Nigeria’s natural capital would require private sector investment that is backed by public sector investment and agricultural policy. It would also create market conditions that can attract both public and private donor financial response. An enabling policy framework would also have to be linked with public budget support to enable actualization of the policy framework for green agriculture. Government supported economic and non-economic instruments that can help mitigate the risks that agricultural finance still face in Nigeria is also a necessary requirement for green agricultural finance. Greening the economy would require

investments in technologies and infrastructure that would make the transition to a green agricultural economy. Immediate and long term private financing of agricultural value chains is a crucial requirement for embarking on green agriculture. The success or failure of any green financing plan rides on this requirement. While the role of the public sector in laying the financial foundations for greening agriculture is crucial, there is also a need for a well thought-out exit strategy from the onset and implementation phase to enable private investors enough time to settle in the green agricultural setting.

3.2 Role of Public Sector in Promoting Green Finance for Agricultural Transformation

The public sector is a crucial partner to revolutionize the face of agricultural public finance for green growth in Nigeria. The public sector must act as a catalyst in accelerating private sector investment in agriculture and provide enabling multi-stakeholder partnerships at the initial stage of green financing. Public policy and finance for green agriculture is instrumental in creating an enabling environment for green investments. A public finance with a binding policy investment grade policy as proposed by Hamilton (2009) is necessary to attract the much needed private sector investment that is needed to bring the dividends of green agriculture to reality. As is mostly argued that green financing requires private investment, the role of public investment in green financing cannot be over emphasized. Public sector green financing would act as a catalyst for developing an investment enable environment for private green financing. It would also reduce the risk faced by private investment and ensure the use of public resources and reduce the financing gap that may be caused by private finance failure. Of the $359 billion invested in green finance, $224billion are from private sources while $135billion are from public sources (CCAF 2013). These public sources provide incentives, technical support and risk coverage. While private public green finance partnership exists in some parts of Africa, few or even none is present in Nigeria. Investors prefer to invest in familiar environment that they perceive to have lower investment risk and greater return on investment. Irrespective of the scale, time and nature of public sector provides a backbone for institutional support required for establishing green financing path.

The public sector represented by the national government as shown in Figure 2 is the incentive powerhouse for green financing in any country if well managed and transparently handled. The incentives should also include financing, regulation and targeting of green agricultural practices for the whole agricultural value chain. In this regard, the effectiveness of government intervention depends on the extent of compliance with internationally recognized conditions including the need to rapidly generate green investment opportunities, improve returns on green investment and mitigate risks faced over the lifetime of investment projects (Inderst*et al.,* 2012).

The FAO estimates that an annual $83 billion in net agricultural investment will be required to deliver what is required for greening agriculture in developing countries. This funding requirement will have to be provided by both public and private sources of funding to green agriculture. This case is the same for Nigeria. While public finance is necessary for as a catalyst for green agriculture financing, private finance is necessary to sustain the greening process. Financial institutions are the main drivers of green agricultural financing and they are needed to rejuvenate agricultural financing in Nigeria. Experiences from most developed countries shows that the private sector is played a major role in the sustainability of the green agricultural sector (WEF, 2011). The financial institutions would serve to provide bankable green agricultural businesses. Financial institutions foster the finance supply chains and are important for promoting access to finance for key stakeholders in the agricultural production system.

3.2.1 Key green finance approaches

The key approach to financing green agriculture is to mainstream green finance in the recent agricultural finance policies and strategies with clear delineation of key priority areas that need to be emphasized in transiting to a green agricultural economy. The overarching goal is to mobilize funds to transform agriculture in such a way as to reduce deforestation and land degradation, improve water use efficiency, strengthen agro-ecosystem resilience and reduce the adverse effects of agriculture on the climate. In this context, green finance is to promote climate-smart agriculture while at the same time increasing productivity and profits for farmers, small as well as large, and contributing to national food and nutrition security and development goals. It should be mainstreamed into the ATA to deliver multiple benefits such as more sustainable resource use, reduced greenhouse gas emissions, enhanced resilience and reduced food waste and revenue losses.

The approach being suggested here is to entrench the aforementioned concept and objectives of green finance into the relevant components of ATA such as NIRSAL, SCPZ and AETA. The linkage can be pursued by incorporating the following procedures.

3.2.2 Value chain financing to support integrated farming systems

This approach allows funds to be disbursed or loans granted to farmers to spread their risks and also to use the outputs from one production area as an input to another in the overall agri-enterprise. The integrated approach is exemplified by the use of maize production and value adding as feed to livestock, which in turn is processed to add value as meat and other products and traded to expand income and create employment.

3.2.3 Support for organic agriculture by NIRSAL

Organic agriculture is a production system based on practices that promote environmental quality and ecosystem functionality. Organic systems are knowledge-intensive and are based on replacing the use of synthetic inputs with ecologically based approaches to soil fertility and pest management. One of its advantages is that, by eliminating the use of synthetic fertilizers and pesticides, less nutrient pollution occurs in waterways, groundwater and near-shore environments. The basic principle of organic agriculture is to enhance soil organic matter and soil structure through the supply of macro and micronutrients from animals and legumes.

3.2.4 Financing of product and agricultural system certification

Some green agricultural practices require certain minimum standards. It should be the responsibility of government to finance the required regulations and certification through budgetary allocations. Typical areas that require financial support include specification of standards in the production and use of fertilizers, improved seeds, herbicides, pesticides and other chemicals with high environmental degradation potentials. Others include regulation of the practice of organic agriculture, use of GMO commodities and urban agriculture.

3.2.5 Financing the monitoring of natural resource exploitation and restoration

The opportunity for adopting space technology for monitoring natural resources and food security by the National Space Research and Development Agency (NASRDA) will become very relevant. This space institution can be a stakeholder within the green corridor and their monthly provision of satellite images will be very helpful in monitoring happenings inimical to green growth strategy within the Agricultural Growth Corridor. This is very essential with the recently launched NigeriaSat-2 and Nigeria Sat-X on the 17th August, 2011.

3.3 Financing the Development of Climate Change Buffers

Agricultural financing within the context of a green growth strategy can offer opportunities for investment in natural capital such as mangrove forests and oceans that act as carbon sink and buffer against climate change impacts. In this regard the Costa Rican system for payment for ecosystem services is relevant. With appropriate legislation, the approach can be adapted to the Nigerian situation in view of its inclination to private sector participation and immense benefits. The approach involves mobilization of funds from those that benefit from the provision of environmental services, derived from land uses and production systems that improve the environment and quality of life. Such beneficiaries make payments to those land owners that supply the services especially those that adopt the desired land uses and production systems in the case of forest management, commercial reforestation forest conservation (Ferraro and Simpson, 2000). In this approach, landowners receive direct payments for the ecological services which their lands produce when they adopt land uses and forest management techniques that do not have negative impacts on the environment and which maintain people's life quality. The main environmental services provided by forest ecosystems are (i) mitigation of GHG emissions; (ii) hydrological services, including provision of water for human consumption, irrigation, and energy production; (iii) biodiversity conservation; and (iv) provision of scenic beauty for recreation and ecotourism. The Costa-Rican experience has yielded important benefits including conservation and sustainable use of forest ecosystems in privately owned land outside of national parks and biological reserves. According to Malavash and Kellenberg (2012), it empowers small and medium-scale private landowners in the conservation and management of forest ecosystems and in making choices that contribute to sustainable development. It also benefits regional users of hydrological services by supporting the provision of high water quality and hydrologic stability from forest ecosystems and the global community through biodiversity conservation and mitigation of GHG emissions.

3.3.1 Inter-agency collaboration in financing desert encroachment and restoration of degraded land

The Environmental sector has the plan of increasing forest resource base, restoring degraded land into productive forest, and increasing the supply of timber and non-timber products. In this direction, the sector plans to establish a 1,500 kilometers green wall in eleven frontline states to prevent desert encroachment, the rapid decline in agricultural production and the rising food insecurity and increasing level of poverty. While this is a very laudable venture, it would face challenges in effective execution. Within agriculture that is inclusive and based on green growth strategy, there is

supposed to be profitable partnerships where the influence of government budgetary allocations and control is minimized. Multi-stakeholder decisions are expected to be paramount here for the partnership to derive the advantages of inclusiveness - transparency, integrity accountability and most importantly getting resource inputs to farmers as at when needed with little or no bureaucratic bottlenecks. Operating under such a partnership will go a long way to successful realization of the target set. The "Grow Africa Initiative" if adopted in Nigeria will help to form the necessary partnership in which the Agricultural and Environmental sectors will be stakeholders. This will help to integrate the programs to of the two sectors to reflect a policy thrust in the green growth strategy outlook.

4.0 Mainstream Green Finance in SCPZ Implementation

The Staple Crops Processing Zone (SCPZ) is suitable for the realization of the goal of greening the Nigerian agricultural economy. In this regard green finance needs to be mainstreamed in the implementation of the various aspects right from the appraisal of the various projects to the operation of the identified enterprises. The SCPZ is comparable to the Southern Agriculture Growth Corridor of Tanzania (SAGCOT). It was built in 2010 with an investment blueprint of $2.1 billion of private investment and public sector commitments of US$ 1.3 billion that will be catalyzed over a 20-year period with an expected tripling effect on the agricultural output in Tanzania (Scherr*et al.,* 2013). The SAGCOT provides a platform that allows stakeholders and investors coordinate their investment in a well-defined manner to ensure that bottlenecks to private green agricultural financing are addressed for sustainable impact in agriculture. The SAGCOT initiative was established to address the three pillars of the New Vision for Agriculture in Tanzania by (i) unlocking the barriers to new levels of agricultural productivity for modern, commercial agricultural development, (ii) developing ways of measuring and reducing the environmental impact per unit produced and linking the initiative to an explicit green growth agenda and (iii) empowering smallholders as viable, commercial farmers and valuable parts of the agricultural supply chain. Since inception, SAGCOT has 53 partners with 56 percent from the private sector, 25 percent from civil society and development sector, eight apex and farmer organizations and 11 percent from the Government of Tanzania SAGCOT Centre coordinates investments and has an organizational independence with efficient governance and professionalism whose members are both central and local Tanzanian government agencies, local and international private sectors players, NGOs and donors. Its innovative model brings together various partners – including food companies, processors, service providers, and farmers' associations – to develop viable and green agricultural value chains and enhance the profitability of farmers, especially those which are small-scale. While the SAGCOT strategy is still fairly new, it has shown significant progress in bringing investors into the green agricultural economy while achieving sustainable agricultural growth and improving the livelihoods of agricultural stakeholders. With the SAGCOT, there is a better coordination of both investment efforts and farmers' capacity and need as they provide a level investment field that is transparent and well managed. Although, SAGCOT may not cover the whole economy with this initial phase, the scope covered could be a great learning avenue for future improvement economy-wide.

In the case of SCPZ in Nigeria, it is designed to cover all the agro-ecological zones in the country involving the development of various agricultural commodity value chains. The main idea behind setting up these processing zones is to encourage private sector agribusinesses to set up processing plants in zones of high food production to process agricultural commodities into food products. The Staple Crop Processing Zones link clusters of farmers to food manufacturing plants. The locations of the zones depend on the comparative advantage of the region to produce the identified commodity and the state government's support. The role of the government is to put in place appropriate fiscal, investment, and infrastructure policies for the zones as well as by developing a code for agricultural investment. Such policies include tax breaks on import of agricultural processing equipment, tax holidays for food processors that are located in these zones, and supportive infrastructure, especially complementary investments by the government in roads, logistics, storage facilities, and power. So far, the identified production clusters for rice, sorghum, cassava, fisheries and horticulture have been evaluated based on criteria such as cultivated area, production volumes, surplus volumes and yield. The FMARD working with state governments have identified the locations of the crop production clusters around the country as shown in Table 1.

In addition to the issues of competitiveness, business climate and buy-in of the states currently being emphasized, mainstreaming green finance into further development of the programme should entail the following activities. First, the Agricultural Investment Code being developed by FMARD in partnership with the Ministry of Finance, Ministry of Trade and Investment, and CBN needs to be expanded in two ways: (i) the partnership has to include the Federal Ministry of Environment and (ii) green agriculture code has to be incorporated. Second, a detailed environmental impact assessment that incorporates critical indicators of green agriculture should be a major pre-request for approving investments and commencing business operations in any of the identified clusters. The relevant indicators should include conservation agricultural practices based on the principles of minimal soil disturbance, permanent soil cover and crop rotations which

reduce wind and water erosion and enhance conservation of soil organic matter. Third, the coverage of crops to be included in the SCPZ can be expanded. It should include non-arable crops such as cocoa, cashew, rubber etc. With such expansion, investments that allow the practice of agro-forestry including agro-silvo-pastoral systems should be promoted. Agro-forestry is a dynamic, ecologically based natural resource management system that, through the integration of trees into agricultural production systems, diversifies and increases production, while simultaneously promoting social, economic and environmental benefits for land users. Agro-forestry rehabilitates degraded land; increases above- and below-ground biodiversity, increases carbon sequestration, and protects soils and watersheds. There is growing evidence that agro-forestry can help to reverse the decline in biodiversity and thus provide direct economic benefits to those who depend directly on natural resources for their livelihoods (Pattish, 2008).

Table 1: Locations of Staple Crop Processing Zones (SCPZs)

Location	State	Crop
Adani-Omor	Enugu/Anambra	Cassava
Agbadu	Kogi	Cassava
Amburssa	Kebbi/Sokoto	Rice
Badeggi	Niger	Rice
Edebiri	Bayelsa	Fisheries
Gassol	Taraba	Rice
Kadawa	Kano	Rice,Tomato, Sorghum
MetuEreyun	Lagos	Fisheries
Makurdi	Benue	Citrus
Oban	Cross River	Pineapple
Okorolo	Rivers	Fisheries
Ososa	Ogun	Cassava
Shao	Kwara	Cassava

Source: FMARD, Abuja

5.0 Policy Recommendations and Conclusions

The policy recommendations for green agricultural financing in Nigeria should be tailored alongside those that can lead to a sustainable transformation of the agricultural sector in Nigeria while actively linking all the players in the agricultural sector by creating an enabling environment for green investment. Some policy recommendations as discussed below.

First, there is a need for a comprehensive green agricultural and green fiscal policy that can be incorporated in the agricultural transformation agenda. There should be a "green-print" for a green agricultural economy. A well-informed policy layout for greening agricultural growth in Nigeria with an implementation plan that is backed with responsive action would not only improve the agricultural sector generally and make public sector finance worthwhile, it would also serve as the solid investment foundation that most private investment require to invest in agriculture. For this to happen, policy must meet practice with the development of green inclusive business models for agricultural programmes and involvement of farmers from the grassroots level. The comprehensive green plan would also be a means for promoting private public partnerships that government could leverage on for green investments.

Second, Improved green agricultural technology and green agricultural technology adoption mechanisms that can help increased farmers' output through use of improve quality inputs for increased and sustainable productivity. The rippling effect of these strategies is that it has a tendency to attract green finance since sustainable productivity as a result of improved technology would mean sure income for both investors and farmers. Green technology adoption should also be well coordinated for farmers' use and needs.

Third, there is a need for efficient agricultural financial risk governance for sustainable green financial commitments from investors. Lending in agriculture is usually faced with a myriad of risks that investors are not willing to bear. Significant private investments are not attracted to green agricultural financing due to high risk and relative novelty of the essence green agriculture in Nigeria. With an effective risk coverage and risk monitoring in Nigeria agriculture, access to agricultural finance would increase and the outlook for lending by financial institution would be better and purposeful.

Fourth, climate and green pricing policy is an essential tool for greening any economy and would go a long way in attracting green agricultural finance. Nigeria needs to start attaching a price on climate such that people are more aware of the environment. While financing the greening of agriculture is essential, having an active and sustainable market for environment would also increase the chances of investing in green agriculture in Nigeria.

Fifth, Transition to a green agricultural economy that is backed with financial readiness from investors would require public investment in green infrastructure. As a good business strategy, investors are highly likely to be attracted to a place where they can get better infrastructure for their operations. While the infrastructural development in the country is commendable is recent times, there is still a huge infrastructural agricultural gap in Nigeria which has to be filled. Finally, awareness, knowledge and capacity building for farmers and financial institutions to unlock the investment opportunities in green agriculture is a necessity. For green finance to actually work in Nigeria, all the players in the agricultural value chain must have adequate knowledge on what it takes to achieve green agriculture. There should be adequate financing of the research and extension systems to enhance professional education in the area of agro-ecological production system and sustainable integrated production systems

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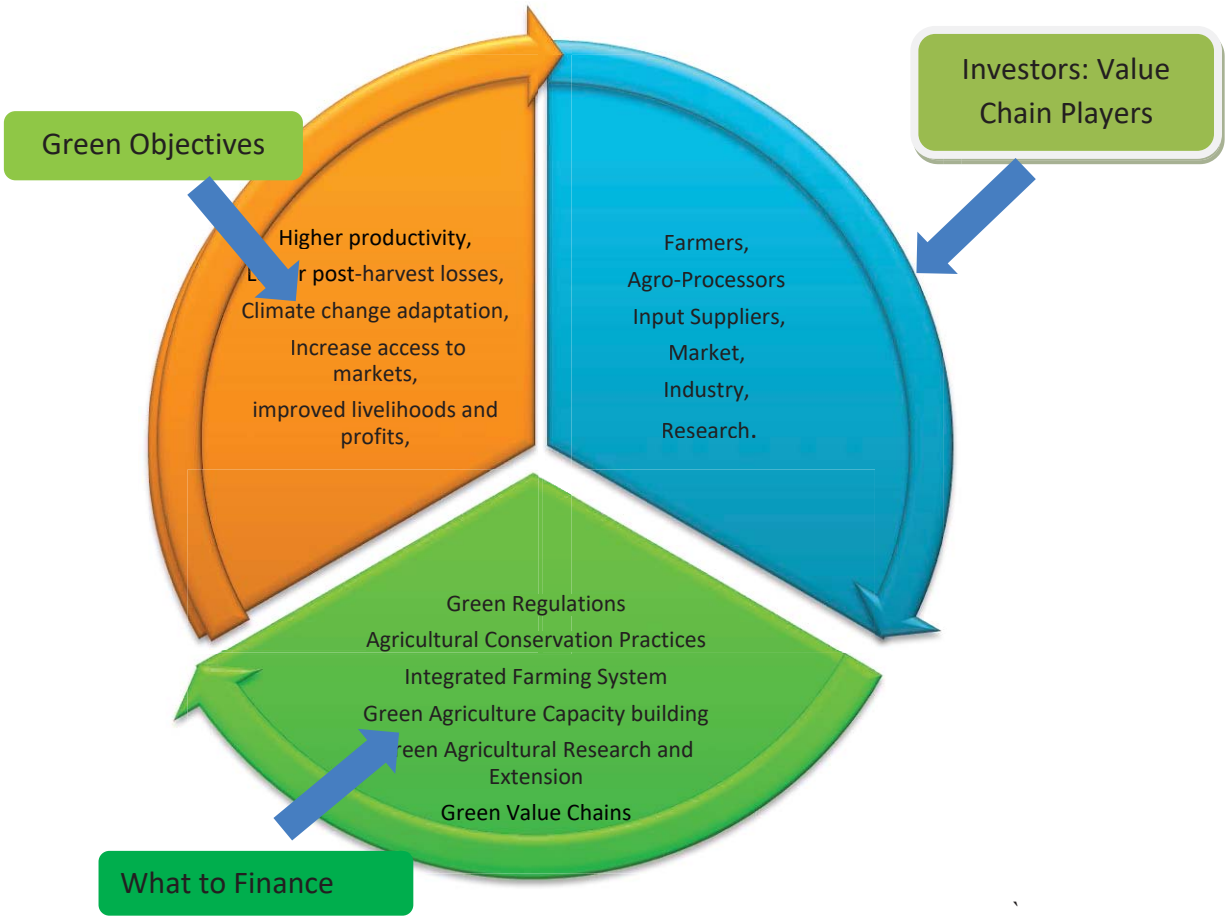

Figure 1: Green Agriculture Financing Framework

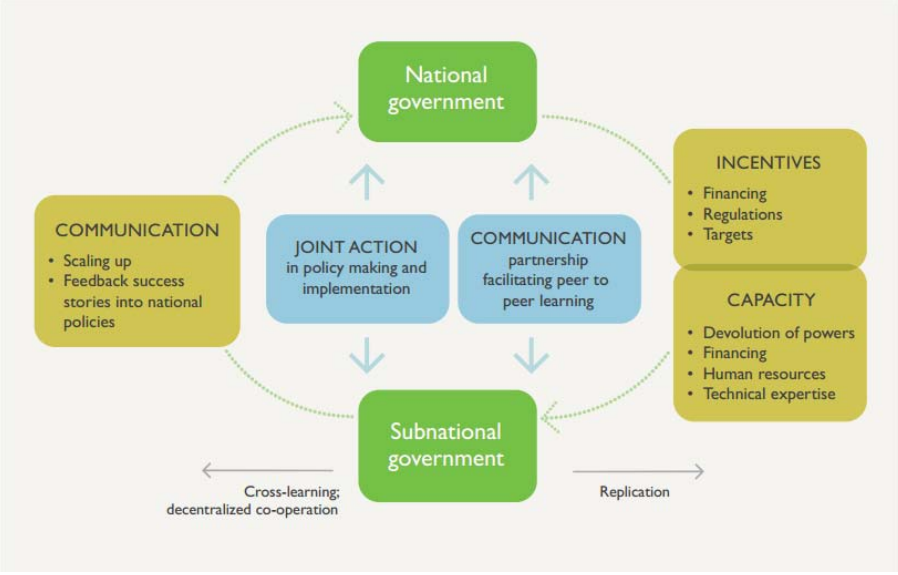

Figure 2: Role of Public Sector in Green Finance for Agricultural Transformation
Source: "*The Green Growth in Practice: Lessons from Country Experiences"*