Refocusing Agricultural Subsidy for Food Security in Nigeria

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I. Introduction

Food security has remained a key human right-related issue and ranks second only to poverty on the Sustainable Development Goals (SDGs). The third SDG of good health and well-being is intricately linked to the first two SDGs. At the core of these, is the physical, social, and economic access to sufficient, safe, and nutritious food to meet dietary needs and food preferences for an active and healthy life for all people at all times.

Shaw (2007) defined food security as a situation 'when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. At the World Summit on Food Security in 2009, supported by World Health Organisation (WHO) and Food and Agricultural Organisation (FAO), this definition was reaffirmed, and the concept was extended and specified by adding the four pillars of food security which include food availability, access, utilisation and stability (Ecker & Breisinger, 2012). Table 1 summarises the different dimensions of food security and their definitions.

Table 1: Dimensions of Food Security

Dimensions of Food Security	Means of Identification
Physical AVAILABILITY of food	Food availability addresses the "supply side" of food security and is determined by the level of food production, stock levels and net trade.
Economic and physical ACCESS to food	An adequate supply of food at the national or international level does not in itself guarantee household-level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets, and prices in achieving food security objectives.
Food UTILISATION	Utilisation is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals are the result of good care and feeding practices, food preparation, diversity of the diet and

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	intra-household distribution of food. Combined with good biological utilisation of food consumed, this determines the nutritional status of individuals.
STABILITY of the other three dimensions over time	Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.

Source: Adapted from Food and Agriculture Organisation, (2008).

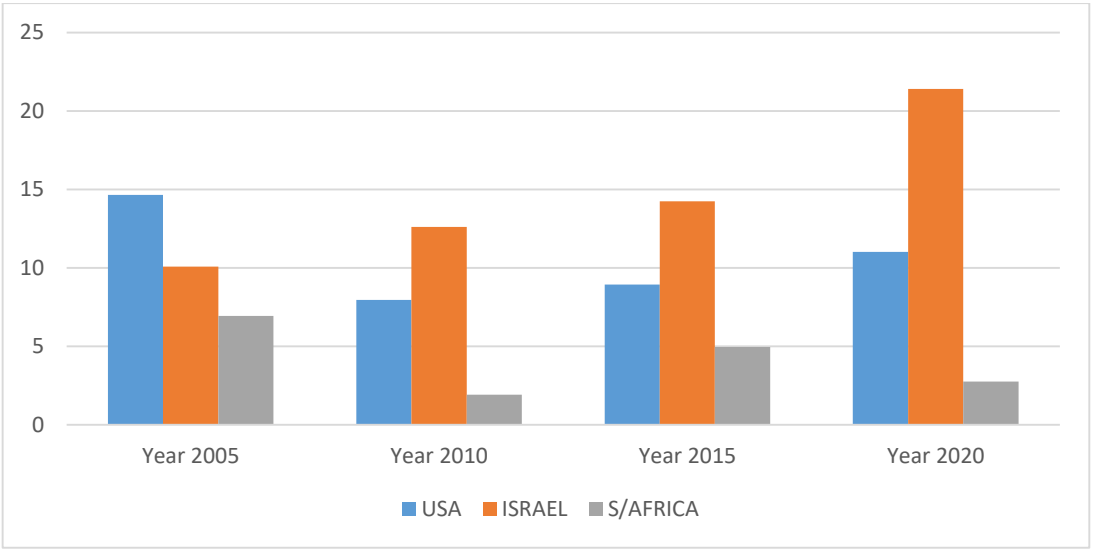
It must be noted that food security objectives are only achievable when all the four dimensions of food security are simultaneously achieved.

Agriculture is at the centre of food security. In ensuring agricultural productivity and enhancing output, agricultural subsidy is a major tool. Agricultural subsidies can be in form of cash payments to farmers to support their operations or indirectly through the reduction of prices of major agricultural inputs to address market failures and promote the adoption of new technologies (Fan et al., 2008). The idea was originally instituted to stabilise markets, help low-income farmers, and aid rural development.

Government agricultural subsidies are categorised into three groups: a production subsidy; an investment subsidy and an entry subsidy. A production subsidy tries to offset the production cost for farmers in a bid to boost output and mitigate losses. The objective of production subsidies is to expand production of a particular product more so that the market would promote it without raising the final price to consumers. We have direct and indirect subsidies. Direct subsidy occurs when government transfers cash straight to the beneficiaries. On the other hand, the indirect subsidy is a situation of no specific cash (monetary amount) paid to the beneficiaries. Rather, it comes in form of government-backed loans or payments in kind.

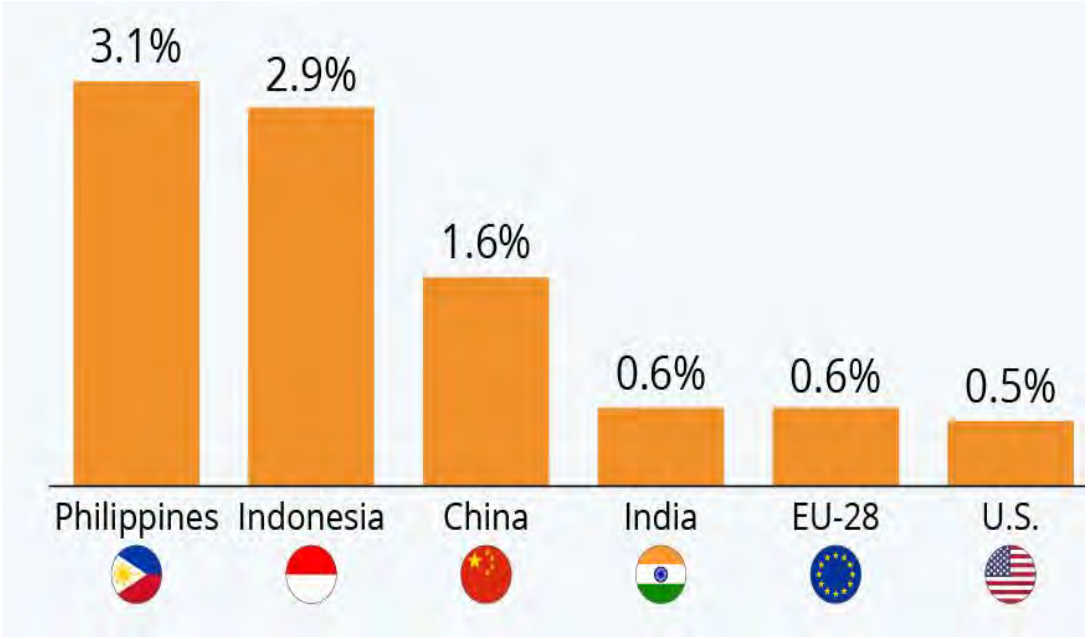
Figures 1 and 2 show the subsidy situation for some OECD countries. Figure 1 shows that South Africa provides the lowest percentage of agricultural support relative to gross farm receipts, while Israel provides the most agricultural support per gross farm receipts.

Figure 1: Agricultural Support (input subsidies) across Selected OECD Countries and the OECD Total



Source- OECD, 2021.

Figure 2: Selected Countries where Agriculture as a Share of GDP is most Subsidised (2019)



Source: Statista (2021).

Figure 2 shows that the Philippines has the highest agricultural support at 3.1 per cent in 2019. The USA committed 0.5 per cent of its GDP to agricultural support. This implies for every dollar of the GDP half a cent is committed to agriculture in the USA.

In the light of the above the paper asks two questions. Is the subsidy regime in the agricultural sector sufficiently situated to support food security? and is there a need to refocus the regime for higher productivity in the sector and food security? To answer these questions the paper reviews the current subsidy regime in Nigeria and in other climes to draw relevant lessons. Thus, the objectives of this paper are to identify the gaps in agriculture subsidy regime; and to identify options for refocusing of the subsidy regime to improve food security.

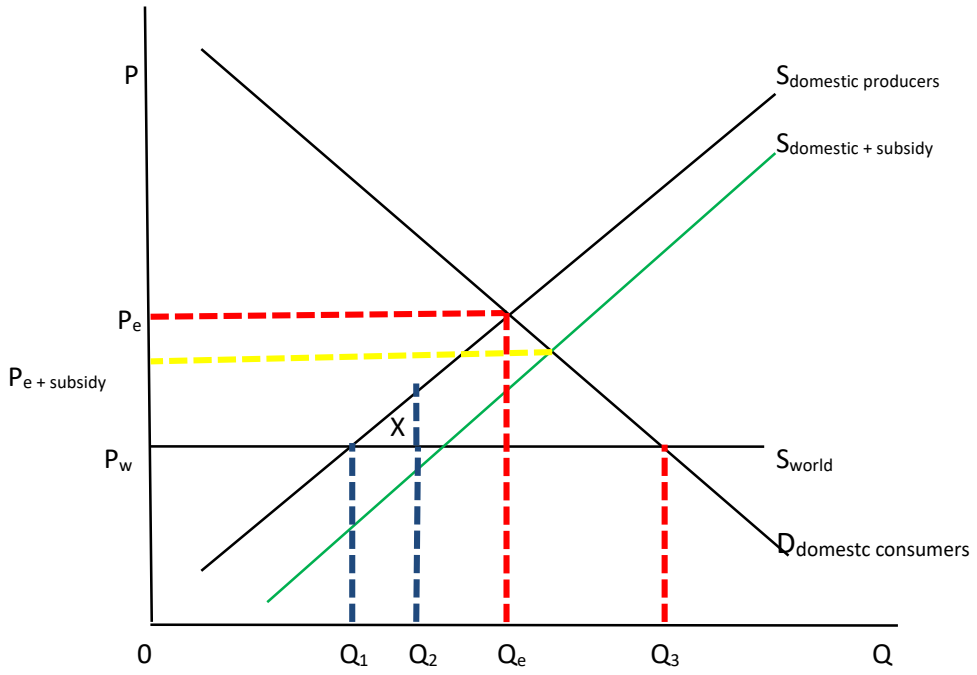
Following the introduction, section 2 explores the nexus of agricultural subsidy and food security, while section 3 reviews the agricultural subsidy regime in Nigeria. Section 4 discusses the input-output dimensions of agricultural subsidy in Nigeria, and in section 5, the paper takes a dive into the agricultural subsidies from international perspective. In section 6, it proposes a paradigm shift for agricultural subsidy for food security, while section 7 concludes the paper.

II. Nexus of Agricultural Subsidy and Food Security

II.1 How will/does Agricultural Subsidy implementation translate to Food Security?

Food production subsidy is a broadly used tool to achieve food security in many developed countries, through the adoption of protectionist policies not only in the agro-industry, but also in others. Subsidy polices very often are used to overcome certain issues such as supporting uncompetitive industries or provide a buffer to an infant industry to influence market participants and therefore to adjust their market behaviour. Although the debate on implications of the continued use of subsidies in supporting food security remains unsettled, the standard subsidy theory is that it helps to increase agricultural output supply, which leads to output price reduction. Figure 3 provides the graphical illustration of the effect of subsidy on output and price of a given agricultural commodity.

Figure 3: Agricultural Subsidy (with trade)



As depicted in the graph, subsidy to domestic producers will shift the domestic supply curve downwards indicating more output because of the subsidy. Prior to the introduction of the subsidy, domestic producers supplied quantity Q1 and they imported Q3-Q1 of the commodity. Given the subsidy and at the world price Pw, domestic producers will produce quantity Q2, while the country only imports Q3-Q2. As a result of the subsidy, the more efficient foreign producers lose at the expense of the less efficient domestic producers. Triangle X represents the deadweight loss to the society indicating overallocation of resources by domestic producers because of government intervention. Consumers still pay Pw without a loss of consumer surplus. However, because consumers' tax is used to subsidise inefficient domestic producers, they may be worse off after the subsidy. In simple terms, agriculture subsidies, to the extent that they provide incentives to producers to increase production, impact on agricultural trade balances, either by reducing the import requirements of, or by increasing levels of exports from, the subsidising country. This results in an increase in excess supply on global markets and, where there are no demand shifters and there is a substantial increase in excess supply from one or more subsidising countries, leading to reduced global prices. These reduced global prices have potential impacts on import and/or export prices for all countries, affecting domestic market prices and the returns to producers and expenditure of consumers. This in turn, impacts development related indicators.

The case for agricultural subsidies in Nigeria or elsewhere is justified by Idachaba (1994) as cited in Idachaba (2014) to include: attainment of desired resource use patterns, market promotion in the early stages of agricultural transition, agricultural subsidies as income transfer, agricultural subsidies to support agriculture as an infant industry and agricultural subsidies as compensating distortions within the theory of second best. Agricultural subsidies in Nigeria can further be justified by the worsening poverty estimated at 40.0 per cent in 2019 which is more pronounced in rural areas at 52.1 per cent (NBS, 2020). The income inequality of 35.1 per cent is also a call for concern just as the raging insecurity in the country. Poverty is more pronounced among male and female agricultural households, compared with other employment categories in rural, urban areas in the country.

III. Agricultural Subsidy Regimes in Nigeria

III.1 Is there an Agricultural Subsidy Framework in Nigeria?

Agricultural development in Nigeria has transcended different stages. Starting from the post-independence period, and navigating through different decades, agricultural programmes especially those that focus on subsidy to the farmers have witnessed many challenges that might make one argue against continuous agricultural subsidy in Nigeria. Prior to the decade of the 1960s, the central role of agriculture in Nigeria's economy was taken for granted with very little support from government. Despite this, Nigerian agriculture was able to grow at a sufficient rate to provide adequate food for an increasing population, supplying raw materials for a budding industrial sector, increasing public revenue and foreign exchange for government and employment opportunities for an expanding labour force. There was report of success emanating from the little support provided by government for agricultural development, as the support was concentrated on export crops like cocoa, groundnut, palm produce, rubber and cotton since self-sufficiency in food production seemed not to pose any problem worthy of public attention then. This made the regional government specialise more on the commodities they had comparative advantages on, such that the western region was noted for cocoa production, the eastern region for oil palm and the northern region for groundnut.

The challenges to Nigerian agriculture started to surface from the first decade of the country's independence through the second decade of the oil boom, resulting in a worsening and rapid deterioration of the country's agricultural situation. To tackle these problems, government initiated several agricultural policies, programmes and projects, largely within the framework of three successive rational development plans from 1970 to 1974, 1975 to 1980 and 1981 to 1985. Experience from these policies, programmes and projects has, however, suggested that there is no alternative to well-designed and articulate agricultural policies as instruments for promoting agricultural growth and development in Nigeria. Accordingly, the government has adopted a comprehensive package of policy instruments to

further develop and improve the agriculture sector especially in subsidies distributions.

Input subsidies are grants given by the government to farmers to reduce their production cost and improve their profit margin. Over the years, the Nigerian government has been making considerable expenditure on the provision of subsidised farm inputs (especially fertiliser). According to Takeshima and Liverpool-Tasie (2013), fertiliser subsidy alone constituted nearly 68.0 per cent of government agricultural expenditure in the past. Specifically, the cost of subsidy per farmer was between ₦22,125 to ₦24,825 depending on the type of crop the farmer cultivates (Federal Ministry of Agriculture and Rural Development, 2016). This has overtime constituted a huge burden on the Federal budget, raising concerns about its sustainability considering the dwindling financial resources of the country (Ayoola & Ayoola, 2016). Subsidy programmes are sustainable if they can be maintained over the long term without draining the public resources, or if the outcomes in terms of wider adoption of agricultural inputs and improved agricultural productivity persist after their termination (Baltzer & Hansen, 2011; Druilhe & Barreiro-hurlé, 2012).

A meso-analysis of the Nigeria Growth Enhancement Support Scheme by Michael et al. (2018) of different publications on the scheme, reveals that Nigeria's past agricultural input subsidy policy (known as the Market Stabilisation Scheme) was widely considered ineffective. The reasons cited, among others include: massive diversion of supply to benefit the middlemen; elite capture; the cumbersome acquisition process; and late delivery of inputs, as well as low quality of some of the input.

The GESS which ensured that farm input like fertilizer, insecticides/ herbicides, and improved seeds are disbursed to registered individual smallholder farmers through an electronic system had as its basis register of 10.5 million farmers across all states of the federation and FCT. As many as 14.4 Million farmers were reached by the scheme between 2012-2014 delivering 1.8 million MT of fertilizer and 174,000 MT of improved seeds respectively delivered to farmers. These combined led to 20.1 Million MT of additional food produced (Oredipe, 2015).

Despite the success recorded in the GESS, it is difficult to conclude that there is a sustainable framework for subsidy regime in Nigeria. This axiom is justified on the fact that farmers in the country have been yearning for such a smart subsidy programme that was able to record a great success in the transformation of agricultural sector. In recent years, the Nigerian economy has faced recession which has affected the capacity of governments to fund programmes like the GESS. Nigeria government is still heavily indebted to input suppliers for inputs they supplied in the past. This has a serious implication on the effectiveness and sustainability of the Scheme for its

planned duration since such debts must be settled and other funds will still be sourced for future implementation (FMARD, 2016). It must be stated that as at July 2021, the agricultural subsidy for the year put at an approved N12.30 billion targeted at 2.2 million farmers is still in the works (Olisah, 2019 curled from Nairametrics, July 19, 2021).

IV. Input/Output Dimensions of Agricultural Subsidy in Nigeria

IV.1 Seed and Fertilizer Subsidy

Fertilizer subsidy programme in Nigeria dates back to the 1970s. This programme has however witnessed instabilities and inconsistencies as one government succeeds another in the country (Salimonu, 2007). The expected gains have been transferred to unintended beneficiaries at the expense of government treasury. It became a bigger problem between 1990 and 1996 when fertiliser subsidy expenditure consistently exceeded total capital on agriculture (Eboh et al., 2006). Also, fertiliser prices had been fluctuating such that farmers could not afford the market prices thus calling for the reshaping of the subsidy programme (Salman, 2019).

In 2013, the Government provided subsidy of up to 85.0 per cent discount for a bag of fertiliser which could explain the rise in Agricultural GDP from ₦16,816.55 billion in 2013 to ₦18,018.61billion in 2014 although the reinforcement in farming and other agricultural activity has been minimal since the discovery of oil. Though the subsidy on fertiliser was well intended, the outcome was lower than expected.

Table 2 presents the subsidy cost and value of subsidy, as well as the quantity of fertiliser and cost of fertiliser supplied between 2001 and 2015.

Table 2: Cost of Fertilizer Subsidy under Market Stabilisation Scheme (MSS, 2001-2010) and Growth Enhancement Support Scheme (GESS, 2011-2015)

Year		Quantity of Fertilizer Supplied (Mt)	Cost of Quantity Supplied (₦)	Subsidy Cost (₦)	Value of Subsidy (₦ / Mt)	Rate of Subsidy (per cent)
2001	Market Stabilisation Scheme (MSS, 2001-2010)	164,012	4,876,554,998	1,683,000,000	10,261	35
2002		163,700	3,605,662,509	1,485,000,000	9,071	41
2003		511,841	4,620,418,025	1,188,000,000	2,321	26
2004		560,150	11,024,019,200	2,459,160,000	4,390	22
2005		600,000	8,341,772,360	1,750,432,213	2,917	21
2006		09,000	16,258,649,932	3,507,200,000	4,946	22
2007		990,000	19,422,363,970	4,855,590,994	4,904	25
2008		691,153	57,055,503,960	14,263,875,990	20,637	25
2009		371,062	38,050,847,750	11,000,000,000	10,261	34
2010		586,145	58,429,230,250	22,327,500,000	38,092	38
2011	Gr	NA	NA	NA	NA	NA

2012		120,097	13,210,670,000	6,605,335,000	55,000	50
2013		536,095	58,970,450,000	29,485,225,000	55,000	50
2014		1,381,818	152,000,000,000	76,000,000,000	55,000	50
2015		NA	NA	NA	NA	NA

Source-: Ayoola and Ayoola (2016).

IV.2 Challenges of Implementing Agricultural Subsidy Regimes in Nigeria- Empirical Reviews

Arising from the studies by Idachaba, (2014); Oredipe (2015); NAERLS, (2012); Adebo, (2014); Ayoola & Ayoola, (2016); Grow Africa, (2016); Oyediran et al. (2015); FSAN, (2012); Fadairo et al. (2015); Motilewa et al. (2015);); Nwalieji et al. (2013); and Druilhe and Hurlé, (2012), challenges of implementing agricultural input subsidies in Nigeria have been identified as follows:

1. Distribution Inefficiencies;
2. Lack of Coordination;
3. Information Asymmetry/Principal Agent Problem;
4. Poor Farmer-Data Management;
5. Low Coverage/Enrolment;
6. Delay in delivery/distribution of Inputs;
7. Inadequate Manpower;
8. Illiteracy and Poor ICT Skills among Farmers;
9. Engagement of many inexperienced agro-dealers who lack formal training on the products they sell and are unable to provide effective extension services to their customers;
10. Elite Capture due to the interference of influential people;
11. Supply and/or Delay of inappropriate inputs in which case the inputs delivered may be sub-standard or counterfeit;
12. Government Debt/Heavy Fiscal Burden;
13. Cost involved, late distributions of vouchers causing farmers not to use basal fertilizers, farmers accepting small amounts of money in exchange of the vouchers instead of buying inputs, thefts of agricultural inputs vouchers, farmers resistance to use of inputs chosen by the government, and financial inabilities of some farmers to copay the price as challenges facing agricultural input subsidy programs in Sub-Saharan Africa;
14. Creation of dependency (entitlement) mentality whereby farmers now expect input subsidies as a right;
15. Provision of input subsidies leading to agricultural policy neglect in other areas;
16. Corruption in the fertilizer subsidy programme caused by government monopoly of fertilizer procurement and distribution; and

17. Protection of inefficient farmers from prevailing price realities and the misallocation of resources.

V. Agricultural Subsidies from an International Perspective

V.1 Agricultural Subsidy in the US

Agricultural subsidy regime in the US follows a five-year cycle based on government reviews of the food and farm landscape and renewal of the Farm Bill. The current five-year farm bill is US$867 billion package titled the Agricultural Improvement Act of 2018. The Bill addresses agricultural and food policy through a variety of programmes relating nutrition assistance, crop insurance, commodity support, and conservation. The 2018 Farm Act is US$1.80 billion (less than 1.0 per cent) higher than the level projected for a continuation of the previous farm act for FY2019-FY2023 spending. The Congressional Budget Office projects that 76.0 per cent of outlays under the 2018 Farm Act funds nutrition programmes, 9.0 per cent funds crop insurance programs, 7.0 per cent funds conservation programs, 7.0 per cent funds commodity programs, and the remaining 1.0 per cent funds all other programs, including trade, credit, rural development, research and extension, forestry, horticulture, and miscellaneous programs (ERS, 2018).

There is also Environmental Quality Incentives Program (EQIP) subsidy under the 2018 farm Act that provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, and improved or created wildlife habitat (Benefits.gov).

V.2 Agricultural Subsidy in China

The OECD's agricultural support estimates indicate China has the highest agricultural subsidy rate, measured as the percentage of GDP, of any of the major agricultural-subsidy countries, except South Korea (OECD 2019). China's agricultural policy has undergone fundamental changes in the last decades. Concerned about national food self-sufficiency and rural household incomes, China changed its longstanding policy of taxing farm households and began instead to subsidise them. This shift has been facilitated by a transformation of the economy and strong economic growth performance in the last three decades, particularly in the non-agricultural sector. This structural transformation in agricultural policies in China conforms with the pattern experienced by other developed countries in the past: as agriculture plays a smaller role in the economy, they shift from a rural to an urban manufacturing and service economy.

China's admission into the World Trade Organisation seems to have had a discernible impact on agricultural subsidy rates that could not be explained by other internal political-economic factors. Accordingly, China's changing agricultural policy can be situated within the national, ideological, and political factors so that the determinants of subsidy rates can be better comprehended. It has been opined that in the next decade, Chinese levels of support to agriculture will mimic those of the United States and other developed countries as measured by producer subsidy equivalents. In spite of the increased levels of support to domestic farmers, even under the WTO, China will remain a potentially attractive market for countries exporting agricultural products, particularly animal products, where subsidies are predicted to remain at lower levels than those targeting crop farmers, and as Chinese diets continue to shift toward animal products. China has been able to attain impressive growth because of the early economic reforms. The reforms have improved economic efficiency in agricultural production, processing, and marketing.

V.3 Agricultural Subsidy in Malawi

In the case of Malawi, the introduction of agricultural input subsidies were able to transform the agricultural sector from a food deficit to that of food security. Some of the highlights of the subsidy regime in Malawi included:

- Direct administration of fertiliser subsidies through various regional and district outlets where coupons are distributed to beneficiaries in all administrative areas in the country.

Chirwa et al. (2011) revealed that the main goal of the Farm Input Subsidy Programme (FISP) in Malawi is to raise incomes and household food security of up to two million (out of 3.4 million) smallholder farmers through improvements in their agricultural productivity. The programme targets smallholder farmers who have land but cannot afford to purchase inputs (principally maize seed and fertilisers) at market prices. In line with this, Holden and Lunduka (2013) submit that low use of agricultural inputs in Malawi is primarily caused by limited ability to buy inputs and not time-inconsistent behaviour. They recommended that the current input subsidy design in Malawi should be replaced by smarter and more cost-effective designs that involve smaller packages of fertilizer and delivery of inputs at harvest time, as well as at planting time. Dorward and Chirwa (2011) reveal that the use of voucher as smart subsidy had similar shortcomings just like the universal subsidy programme. Similar findings were also observed by Holden and Lunduka (2013) in Malawi, where a subsidy programme aimed to provide coupons for purchase of subsidised fertiliser and seeds targeted at poor rural households also faced serious problem. The critical findings were that the poverty and vulnerability reduction potentials of the

programme were not optimal, leakages of coupons and fertilizers and misallocation of coupons away from the needy resulted through rent-seeking.

Chirwa et al. (2011), working on conceptualising graduation from agricultural inputs subsidies in Malawi, considered ways in which the concept of graduation may be usefully applied to the Farm Input Subsidy Programme (FISP). They set out a broad conceptualisation of graduation for potential application in programme design and implementation. For the Malawian farmers to graduate from relying on fertiliser subsidy and be able to purchase fertiliser at competitive price, Chirwa et al. (2011) recommended potential graduation conditions which include reduced input prices, substitution with cheaper inputs, increased working capital for input purchases, diversification out of maize production, and access to low cost credit for input purchases.

V.4 Lessons Learnt from International Best Practices for Effective Agricultural Subsidy Implementation

(i) **Research and Development (R&D) in the US -** The Agriculture Improvement Act of 2018 (2018 Farm Act) establishes the Agriculture Advanced Research and Development Authority (AGARDA) pilot authority to develop technologies, research tools, and products through advanced research on long-term and high-risk challenges for food and agriculture. AGARDA focuses on R&D that private industry is unlikely to undertake. This research will help ensure that the United States maintains its position as a leader in global agricultural R&D (Rubenstein, 2019). New high-priority research and extension initiatives focus on: fertilizer management, nutrient management, dryland farming, hop plant health, and coordination of pollinator research. Others include: mechanisation for labour-intensive tasks; removal of barriers to entry for young, beginning, socially disadvantaged, veteran, and immigrant farmers and ranchers; soil health; collaboration with biomedical researchers; size-controlling rootstock systems, invasive species, natural enemy complexes, soil microbiome, pesticide applications, and drift prevention, systems to improve storage life, greater mechanisation, and pest management. Although these focus areas may not directly impact agricultural subsidies, but they will no doubt impact food security.

(ii) **Unmanned Aerial Vehicles (UAVs) for Inspection in South Korea** - South Korea is one of the highest subsidies providing country, where government support accounts for 54.0 per cent of farmers' income (Park & Park 2015). South Korean local agriculture has been greatly dependent on government subsidy to compete with cheaper imported products and to shift to modern farming practices. However, in response to risks of corruption, fraud, poor internal control procedures and lack of detailed

information, the Korean National Agricultural Products Quality Management Service (NAQS) launched an inspection programme for preventing fraud and securing proper use of government money. The inspection is carried out through site visits and interviews with a sample of the selected application farm. The increasing target area of implementation creates a huge work pressure to the limited numbered investigators. Besides, difficult in accessibility of mountainous areas is also making the job harder. Therefore, it generates more misuse of manpower and government's resources with minimum outcome. Inspection through remotely sensed image can greatly improve the whole system of inspection saving more time and money. Unmanned Aerial Vehicles (UAV) borne image can be used as an alternative actual site visit (Park & Park, 2015). It is advantageous than satellite and aircraft in terms of accessibility, repeatability, and timeliness (Zhang & Kovacs, 2012). In particular, the timeliness is essential to identify crops with a short growing cycle (Park, 2015).

(iii) **Efficient Targeting in India** - In the agriculture sector, one of the challenges faced is to increase the quick delivery of agricultural subsidies and ensures accurate targeting of the beneficiaries. In this regard, in January 2013 the Government of India launched the direct cash transfer scheme under direct benefit transfer for fund distribution and delivery system. In this scheme, the subsidies (cash/payments) are directly credited to the farmer's account and validated by the Unique Identification Authority of India (UIDAI) to bring transparency, reduce fraud and prevent delays by the hierarchy of government administrative offices (Bakare et al., 2021).

(iб) **Smart Subsidies in East Africa -** Evidence from some East-African countries suggests that the smart subsidy initiatives have largely succeeded in increasing productivity, production, incomes, and food security (Wiredu, 2015). Smart subsidy is a new form of subsidy programmes which is expected to improve access and use of farm inputs, increase agricultural production and productivity, and ultimately improve the well-being of farmers (Wiredu, 2015). The concept is based on the economic principles of efficiency, equity, and sustainability (Baltzer & Hansen, 2011). Hence, smart subsidies are provided to specific targets (beneficiaries) over a given period with measurable impacts and achievable goals. Smart subsidy instruments include vouchers, targeting, rationing, loan guarantees, demonstration packs and matching grants (Dorward & Chirwa, 2014) built-in to safeguard against fraud (Gregory, 2006).Smart subsidies are expected to adhere to a number of its cardinal design principles which are, its pro-poor targeting, having market-based solutions (based on demand and

supply), the active participation of the private sector, and implemented within some defined period having a credible exit strategy to put a time limit on the support (Baltzer & Hansen, 2011; Minde et al., 2008; Tiba, 2009; Dorward, 2009; Chirwa & Dorward, 2013).

VI. Paradigm Shift for Agricultural Subsidy for Food Security

VI.1 Refocusing Agricultural Subsidy for Enhanced Food Security in Nigeria

Arising from the discourse in the previous sections, it becomes expedient to provide some guides for refocusing agricultural subsidy for enhanced food security. The discussion is based on the lessons learned from the challenges of agricultural subsidy implementation in Nigeria and the lessons from international experience in agricultural subsidy implementation. It is believed that the suggestions being proposed will help in boosting food security through the different pillars of physical availability, physical and economic access, utilisation and stability. Given that food security has both supply side and demand side implications, it is evident that any efficient and effective agricultural subsidy regime must be holistic and take into consideration the gamut of activities and stakeholders involved in delivering food in the right quality and quantity and at affordable prices over time. Accordingly, the following recommendations for ensuring agricultural subsidies impact positively on food security are being proposed.

Smart Agricultural Subsidy

Smart subsidy is a new form of subsidy programs which is designed to improve access and use of farm inputs, increase agricultural production and productivity, and ultimately improve the well-being of farmers (Wiredu, 2015). According to Baltzer and Hansen (2011), smart subsidies are based on the economic principles of efficiency, equity, and sustainability- hence they are provided to specific beneficiaries over a given period with measurable impacts and achievable goals. Smart subsidy instruments include vouchers, targeting, rationing, loan guarantees, demonstration packs and matching grants (Dorward & Chirwa, 2014) which are built-in to safeguard against fraud (Gregory, 2006).

Focusing on fertiliser subsidies, Morris et al. (2007) suggested ten (10) key features of market-smart subsidies which can be generalised to input subsidies; they are to:

i. Promote input as part of a wider strategy. Interventions designed to promote increased use of inputs should be developed within the context of a wider sector strategy that recognises the importance of supplying complementary inputs, strengthening output markets, and appropriately sequencing interventions.

ii. Favour market-based solutions. Long-term solutions to the problem of inputs will have to be market-based. Interventions designed to promote increased use of inputs should be designed to support market development and not undermine incentives for private sector investment.
iii. Promote competition. Competition in input markets is needed to ensure good performance. Barriers to entry into input distribution should be reduced (except possibly in the very short run), and markets should be competitive to ensure the lowest-cost and best quality service.
iv. Pay attention to demand. Farmers' effective demand, shaped by the current or potential profitability of input use, should be the ultimate driving force of input supply systems and the foundation of a sustainable input promotion strategy.
v. Insist on economic efficiency. Input promotion efforts should be driven by economic considerations. Interventions designed to promote increased use of input should be carried out only where input use is economically efficient.
vi. Empower farmers. Farmers should be in the driver's seat. Interventions designed to promote increased use of input should empower farmers to make their own decisions on the most appropriate way to manage soil fertility in their farming context.
vii. Devise an exit strategy. Governments should not be in the input distribution business for the long haul. Public sector interventions designed to promote increased use of input should be designed with a clear exit strategy, except for a few long-run public-good functions such as market regulation, infrastructural development, and research and development on natural resources management.
viii. Pursue regional integration. Market size matters, so trade matters. Countries should seek regional integration and harmonisation of input policies to reap economies of size and scope, which are especially important in a region such as Africa with so many small countries.
ix. Ensure sustainability. Solutions must be designed for the long term. Interventions designed to promote increased use of input should be economically, institutionally, and environmentally sustainable.

Promote pro-poor growth. Equity considerations matter. Assuming that the previous nine guiding principles have been followed, a final consideration is that public interventions designed to promote increased use of input should also aim to promote pro-poor growth. In exceptional circumstances, poverty reduction or food security objectives may even be given precedence over efficiency and sustainability goals, if it can be determined that input interventions are a cost-effective way of addressing these problems.

Distribution of Smart Subsidies- The Role of Identity Management

Nigeria's National identity Management Commission (NIMC) was established to create, operate and manage the nation's identity card database, integrate the existing identity database in government institutions, register individuals and legal residents, assign a unique national identification number and introduce general multi-purpose cards. The digital identification system assigns a unique national identification number (NIN) per enrolled person, based on a biometric check of uniqueness; issues a national identity (smart) card to each registered individual; provides an identity verification and authentication service infrastructure; and harmonises and integrate existing identification databases in Nigeria (World Bank, 2016a). These functions together with data from the National Social Register (NSR) establishes the uniqueness of everyone using a unique identity number (NIN).

The NSR consolidates information on poor and vulnerable households from states. Also, to ensure that the *poor* in the State Social Register and NSR are unique, the data therein needs to be linked with biometric profiles of individuals under NIMC. Linking individuals in an SR with the biometric profiles in a national identity registry can improve the accuracy and integrity of information (World Bank, 2016b). This database will help to prevent farmers from registering multiple times to get program benefits and de-duplicate the database to prevent possible leakages and corruption (World Bank, 2016a).

Digital identity can be instrumental in supporting agricultural development. This was employed in the GESS program of the Federal Ministry of Agriculture and Rural Development (FMARD) which provided support directly to farmers to enable them to procure agricultural inputs at affordable prices, and at the right time and place. The identities of the farmers were verified from the NIMC database to eliminate the problem of multiple registrations by beneficiaries (Amurtiya et al., 2018). Under GESS program, fertilisers and seeds are made available to farmers at subsidised prices to encourage agricultural activity.

Effective Targeting

Universal fertilizer subsidies (i.e. subsidies for all) are socially regressive because they create rents for better-off producers who would have used fertilizers anyway; the result is known as "displacement" which refers to the non-subsidised sales that are displaced as a result of the subsidy, and in worse case scenarios generate no increment in total fertilizer use. Experience with universal subsidies in SSA, according to Morris et al. (2007) indicates that it was largely negative, as it resulted in inefficiencies, such as adverse selection of programme beneficiaries i.e. elite capture and displacement of commercial sales, and had disproportionate fiscal costs against their benefits.

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In this era of constrained government budgets, development programmes that are targeted towards specific populations with specific policy goals can maximise 'poverty removal benefits accruing from a given burden of cost' (Sen, 1995). To ensure effective targeting in terms of distribution and collection of subsidies, agricultural subsidy programmes should be implemented in accordance with operational guidelines that focus and reach only the intended population as the success of an intervention lies in how it is effectively targeted and achieves stated objectives.

Participatory Subsidy Regimes

Central to the identification of eligible programme participants is the issue of asymmetric information (Ravallion, 2003). While targeted programmes are designed to reach only those who meet certain eligibility criteria, it is rarely, if ever, possible for central administrators to know precisely who meets the criteria at the local level. One of the key arguments in favour of a decentralised targeting approach, such as community-based targeting (CBT), has been based on its potential to identify potential programme beneficiaries accurately by drawing on local knowledge and preferences that might otherwise be unknown to the programme administrators at the central level (Mansuri & Rao, 2012). This assumption propels decentralisation as a potential solution to the asymmetric information problem. However, as Conning and Kevane (2002) aptly explain in the context of decentralised targeting strategies, one of the challenges is to maximise stated welfare objectives subject to the constraining effects of local elite capture.

Information symmetry is key to participatory development, which involves including people who are affected by development processes as planners and implementers (Thomas, 2013). Participatory development broadens the participation linkages to mean not only the top governments and donor agencies) on one hand and the bottom (rural communities who are the beneficiaries) but also those who may not belong to the two groups but were affected by the developmental processes.

Holistic Approach to Agricultural Subsidy

Agricultural Sector is divided into four fundamental sub-sectors, specifically, Crops, Livestock, Aquaculture and Forestry. However, most ground-breaking agricultural subsidy schemes implemented in Nigeria to ensure food security particularly

focused the crop sub sector. In 2020, the agricultural sector contributes about 24.0 per cent to the national GDP. The crop sub sector contributed about highest (90.0 per cent) of the sector GDP, fisheries 4.0 per cent, livestock about 5.0 per cent while the forestry contributes the least (1.0 per cent) (statista.com). However, potentials exist for other agriculture subsectors to contribute more to gross national product if right incentive are provided and properly harnessed holistically. Notwithstanding, the forest subsector plays a major role in providing industrial raw materials for industries, income in form of employment generation and energy supply for domestic and industrial use (Odetola & Etumnu, 2013). In addition to the above, fishery and livestock sub sectors provide the country with the cheapest animal protein source especially among the rural dwellers in Nigeria. In Nigeria, forest is managed by the government which makes no provision for incentives for stakeholders to invest in sustainable forest management which has resulted in uncontrolled deforestation of the natural forest and desert encroachment (Olaoye & Ojebiyi, 2018). A holistic agricultural subsidy which incorporates condition farm financial aid on the protection of forests will not only conserve the natural bio-diversity but will also encourage effort to produce more thereby increases agricultural profitability and provide incentive to increases food production on existing land thus food availability.

Climate Smart Subsidy

Climate-smart subsidy is an integrated approach to managing landscapes cropland, livestock, forests, and fisheries that addresses the interlinked challenges of food security. A growing global population and changing diets are driving up the demand for food. Production is struggling to keep up as crop yields level off in many parts of the world, ocean health declines, and natural resources including soils, water, and biodiversity are stretched dangerously thin. A 2020 report found that nearly 690 million people or 8.9 per cent of the global population are hungry, up by nearly 60 million in five years. The food security challenge will only become more difficult, as the world will need to produce about 70 percent more food by 2050 to feed an estimated 9 billion people (World Bank, 2020). Therefore, to both feed the world and solve climate change, the world needs to produce 50.0 per cent more food in 2050 compared to 2010 while reducing greenhouse gas emissions by two-thirds. However, studies show that agricultural subsidies are currently doing little to achieve these goals as only 5.0 per cent of this funding supports any kind of conservation objective (Searchinger, 2020; Salman 2019). Going forward, climate smart policies to maintain and enhance soil fertility are as follows:

i. review GES subsidy and align with overall fertiliser supply;
ii. crop rotation to improve nitrogen fixation;
iii. soil mapping and testing;
iv. soil fertility reconstruction and formal fallow periods;

v. fertiliser quality control;
vi. use of organic fertiliser;
vii. crop specific fertiliser formulation;
viii. erosion control measures; and
ix. improved conservation, reforestation, and green belt policies.

Agricultural Subsidy should Recognise Research-Extension-Farmers-linkage System for Food Security

One important way of supporting food security is through agricultural extension programmes. Agricultural extension is broadly defined as the process of development of agricultural knowledge and skills amongst farmers, aimed at increasing their productivity and realising other desirable changes (Collett & Gale, 2009). Agricultural extension has multiple goals, including transferring knowledge from global, national, and local researchers to farmers, helping them clarify their own goals and assessing their opportunities, educating them about decision-making processes, and promoting desirable agricultural development (Msuya et al., 2017).

Agricultural extension plays a role in improving farmers' productivity and incomes, thereby reducing poverty, and increasing food security (Raidimi & Kabiti, 2019). If farmers are producing cash crops, increased productivity provides a pathway of earning income which can be utilised for food procurement (Conceição et al., 2016). Furthermore, increased productivity of food crops ensures increased availability of household food. The productivity of farmers is increased through application of appropriate knowledge in response to production challenges such as pests, diseases, and changes in weather patterns (FAO, 2017). Agricultural extension can play a role by ensuring that efforts towards increasing productivity are sustainable. Sustainable agricultural production ensures that current production activities do not compromise the production chances in the future.

Empowering farmers as key agents of change while fostering co-creation of knowledge, integrating traditional, practical, and local practices and skills is required for sustainable production (FAO, 2018). An increase in farmers' incomes is achieved through market information and linking farmers to markets. Introduction of agricultural expertise, farmer responsive plans, feasible credit scheme, free land distribution and effective extension programs can improve the yield of cereals, fruits, vegetables, and animal related products (Fiaz et al., 2018). Self-sufficiency in food production could only be gained by addressing the agricultural problems and keeping the farmers aware of modern agricultural technologies, necessary for improving productivity, by the effective use of extension services. Agricultural extension is considered as a service to spread/extend information based on

research, to the rural people to develop their living standard (IFPRI, 2010). Hence, providing incentives in form of subsidies to address Research-Extension-Farmer-Input-Linkage-System as done in the past can help boost food security.

By developing their farming system and having access to successful agricultural extension services, the farmers have been able to improve their production efficiency for all major agricultural products to assure optimum food production. For example, the important agricultural extension measure of rice production in Vietnam was "Three Reductions, Three Gains" project that aimed to reduce the production cost by reducing the amount of seed, fertilizer, and pesticides, whilst gaining a higher yield, better rice quality, and more profit (Sattaka et al., 2017).

Value Chain Responsive Subsidy and Food Security

Input subsidies is essential at removing the difficulties in production by giving access to important inputs, such as seeds and fertilizers to farmers who would otherwise not be able to afford them. It is often argued that input subsidies can be a temporary "bridge" towards self-sustaining input application by increasing household income, allowing households to purchase inputs in the future (Ellis & Maliro, 2013; Bizikova et al., 2020). When inputs are subsidised, it has multipliers effect as there will be increase in production of farmers thereby increasing their income. When the income of the farmers is increase, it provides more opportunity for the famers to spend more on their essential needs, they can but more for foods they don't produce.

According to Ellis and Maliro (2013) and Kaplan et al. (2016) food vouchers is also an important element that can supports households to overcome barriers to the uptake of subsidised fertilizer, thereby contributing to food security. This suggests that food vouchers/cash transfers are very effective as complementary strategies when combined with input subsidies, particularly to bridge periods of food scarcity. Rutherford et al. (2016) and Cleaver (2013) find that value chain interventions generally increase the quality and availability of foods. The promotion of staple food value chains contributes to increased production and falling prices, which are particularly effective in building food security (Kaplan et al., 2016).

Monitoring and Evaluation with Respect to Tracking Subsidy Distribution, Collection, and Use

Effectively delivering agricultural subsidies will require monitoring and evaluation (M&E). This will include baseline assessments, indicators for assessing the impacts of interventions, and capacity requirements. While monitoring measures aspects of project implementation and aims to improve the project's design and function along the way, evaluation studies the outcomes of the project (e.g., improvements

in food production, uptake of new agro-technologies, changes in farmers' income, cost-effectiveness, etc.) with the aim of informing the design of future programmes.

Monitoring and evaluation are about identifying and measuring the drivers of success just as much as understanding the causes of failure. Effective M&E incurs costs, and these need to be identified upfront, budgeted for, and ring-fenced for this purpose, so that they are not lost through oversight (or over-spending) as the programme/policy is implemented. The uncertainty of the likely effects of climate change on agriculture adds a further challenge.

It is also vital that the subject of M&E has a schedule of pre-agreed deliverables and outcomes, which must be specific and measurable. In this case policies, programmes, projects and activities should be set out in the agricultural subsidy framework. Assessment of the outcomes within this framework will highlight economic, environmental, and social impacts. The schedule for monitoring and evaluation also needs to be identified and planned right at the beginning of the project cycle, and M&E needs to be integrated into the full project cycle through regular planning processes. Failure to undertake this planning at the initial stage of the project cycle will make M&E ineffectual down the line as the project develops.

Furthermore, effective M&E needs the involvement of key stakeholders, and these need to be identified early on. A combination of a top-down analytical approach and a bottom-up approach featuring community involvement/engagement is strongly recommended by all the key institutions. The challenge here is how to integrate participatory and non-participatory monitoring and evaluation, given the diverse range of stakeholders. The use of Unmanned Aerial Vehicles for subsidy monitoring as done in South Korea can help substantially in reducing fraud and corruption while ensuring real time and up-to-date information on subsidy.

Public-Private Partnership

When markets for the delivery of innovation fail, Governments may consider different policy alternatives, such as public investment, policy instruments such as subsidies or tax incentives, and a PPP approach. The decision for the government to adopt a PPP approach to pursue a given objective should be guided by the balance of costs and benefits, compared with other alternatives, as participation in PPPs should be for all innovation actors. The fundamental rationale for public and private actors to join forces in a PPP arises when individual actors alone cannot produce the same service or output or do it at a higher cost. For both the public and private sectors, the benefits from PPPs come from the pooling of resources and the complementarily of capacities, while risks and costs are reduced because they are shared. Compared to subsidies, PPPs help avoid impeding further development, and allow for the development of integrated solutions.

The rationale for PPPs in innovation also includes coordination failures, although other policy instruments could be used to address them (e.g. tax credits for collaboration). The general rationale for public intervention in innovation such as skills development, network development, or the ability to join in global innovation networks are also cited as reasons for PPPs in this area (OECD, 2014). PPPs help build innovation capabilities, improve connectivity between national innovation systems and provide compatible incentives to all stakeholders. Fostering links and understandings between public and private researchers, but also between the research and business/farm community, can be particularly useful in:

- lowering transaction costs between players, facilitating thus future cooperation.
- improving knowledge transfer, where a smaller organisation or country lacks capacity to fund the critical mass necessary to enable spill-in of knowledge.

Furthermore, during the GESS, a private sector channel for input distribution was developed with the primary objective of depoliticising the input sector, this was done by disallowing States from procurement of inputs (Grow Africa, 2016). A scaling-up on this could be explored.

Subsidy Distribution-Right Timing and Quantity

Given that most agricultural activities are seasonal in nature, there is a need for timely delivery and disbursement of inputs. Studies have shown that late delivery of inputs is a major challenge to the successful implementation of subsidy programmes across the country (Federal Ministry of Agriculture and Rural Development, 2016; Nwaobiala, 2015; Oyediran et al., 2015; Fertiliser Suppliers Association of Nigeria, 2012).

Also, Government's inability to release funds to agro-dealers in good time has resulted in late or even non-delivery of inputs in some cases. This has implications for the input suppliers who supply products on credit (Fertiliser Suppliers Association of Nigeria, 2012).

The trend of leadership in the country had led to inconsistencies and instability in fertiliser subsidy polices; and the gains are not widely spread among the targeted beneficiaries –thus having a negative implication on the increased food production programme.

Mode of Redemption of Agricultural Subsidy

Despite innovations in the design and implementation of fertiliser subsidies, one significant pitfall is "vote-buying" where farmers collect vouchers, they have no intention of using or could not afford to use (Banful & Olayide, 2010). They rightly

predicted that there would be periods of shortage of vouchers and sold the vouchers to other farmers who desperately needed to apply fertiliser.

Banful and Olayide (2010) opined that the parallel sales of subsidised and market fertiliser (unsubsidised) in Nigeria tend to create an avenue for lower-priced subsidised fertilisers to be diverted for sale at higher market prices. These shortcomings of fertiliser subsidies led to introduction of vouchers or smart subsidies or coupons. Thus, to achieve food security, there is need to identify forms by which subsidies will be redeemed.

VII. Conclusion

This paper focused on refocusing agricultural subsidy for food security in Nigeria. The paper identified the pathway of agricultural subsidy for impacting on food security. A review of agricultural subsidy in Nigeria reveals the key constraint to include poor database, lack of coordination, corruption, poor targeting, and poor distribution system. The review of international experience shows that research on new technology, effective targeting, smart agricultural subsidy, monitoring through unmanned aerial vehicles are *sine qua non* for effective agricultural subsidy implementation with a possible positive impact on food security.

Based on the lessons from both Nigeria and international experiences on agricultural subsidy; the paper recommends the following possible options for effective implementation: smart agricultural subsidy, proper identity management, participatory subsidy regime, extension of subsidy to other sectors beyond crops, climate-smart agricultural budget and broad subsidy across the value chain. Other effective agricultural subsidy strategies recommended include public-private-partnership in agricultural subsidy, appropriate subsidy redemption mechanism and due timing in implementing agricultural subsidies. Contingent on implementation of the identified new agricultural subsidy possibilities will help improve food security by ensuring availability of food, enhanced physical and economic access to food, improved food utilisation and sustained stability of food security in Nigeria.

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Appendices

Table 2: Programmes with Subsidy Components in Nigeria

S/N	Programmes/Subsidy Regimes	Programme Objectives	Implementation Challenges
1	The National Accelerated Food Production programme 1972 (Ozoani, 2019).	a. To increase food production in the country through education of farmers on productive farming practices. b. To provide credits and inputs to farmers cooperatives to enhance food productivity.	a. Farmers financially sponsored the last two phases of the programme which discouraged some farmers from participation. b. Farmers who could not form co-operatives were left out in the programme since the programme relied on disbursement of credits and farm inputs through co-operative societies. c. Premature withdrawal of funding by the Federal Government due to the introduction of Operation Feed the Nation.
2	Agricultural Development Programme 1975 (Ayoola, 2001)	a. To provide agricultural inputs subsidy to peasant farmers b. To increase agricultural productivity by sustaining domestic food supply c. To provide extension services, technical input support and rural infrastructure to rural farmers	a. Shortage of fund due to decline in oil prices which delayed projects implementation. b. Emphasiss is more on sole cropping while majority of the farmers practiced mixed cropping c. Untimeliness of subsidised input supply for the programme
3	Operation Feed the Nation, 1976 (Wilmot, 1979)	a. To make every available piece of land in urban, sub-urban and rural areas planted. b. To actively involve every discipline in farming activities c. The federal government to provide farming	a. Every available piece of land was farm irrespective of its suitability for agriculture. b. Majority of the participants in the programme had little or no farming background and there was no

		inputs at subsidised rate to individual. d. To bring about increased food in the entire nation	preparatory teaching on farming practices. c. Nepotism in inputs supply d. There was less demand for the food because many people produced partly or wholly food, they consumed
4	River Basin Development Authorities (1976) (Ayoola, 2001).	a. To provide irrigation facilities through dam construction for all year farming. b. To provide hydroelectric power and domestic water in the rural areas for increased agricultural production. c. Provision of rural infrastructural development to stem the rural-urban migration and boost agricultural production.	a. Substantial public funds were wasted to streamline sizes and functions of programme through the disposal of non-water assets b. Operations of the authority suffered intensive political interference. c. lack of continuity in commitment to policy
5	Green Revolution 1980 (Iwuchukwu & Igbokwe, 2012)	a. To provide agricultural inputs and credit facilities to farmers to increase agricultural productivity. b. To subsidize farm mechanisation to peasant farmers. c. To formulate favourable pricing policy for the agricultural products	a. The programme suffered delay in execution of most of its projects. b. Lack of proper monitoring and evaluation of the projects. c. Choice of inappropriate organisational structure for implementation of policies;
6	Nigerian Agricultural and Co-operative Bank 1983 (Ndagwakwa, 1989).	a. To deliver credit for the development of agriculture and other agro-allied industries, including marketing of agricultural products b. To assist and facilitate adoption of modern agricultural technologies and good management practices	a. Strict loan policy which bar smallholder farmers' loan accessibility. b. Lack of adequate data for decision making.

7	Directorate for Food Roads and Rural Infrastructure, 1986. (Idachaba, 1988).	a. To improve the quality of life and living standard of the rural dwellers b. To actively engage the rural people in rural infrastructural development	a. The programme suffered fund mismanagement and highly criticised for lack of proper focus and accountability b. The programme recorded poor quality of infrastructure due to fund embezzlement and mismanagement.
8	National Fadama Development Project, 1990 (Afolayan, 1997)	a. To promote simple low-cost improved irrigation technology b. To sustainably increase the incomes of the fadama users through expansion of farm and non-farm activities with high value-added output	a. Unskilled handling of water application through irrigation degrade and deplete the soil of its productive capacity
9	National Economic Empowerment and Development Strategy, 1999 (Ozoani, 2019)	a. To offer farmers improved irrigation, machinery and crop varieties to boost agricultural productivity and tackle poverty	a. Lack of coordination between and among the stakeholders at different level of government b. lack of fund to pursue specific programme to an expected end
10	National Agricultural Land Development Authority, 1992 (Ozoani, 2019).	a. To give strategic public support for land development. b. To assist and promote better uses of Nigeria's rural land and their resources, 4 c. To raise the living standard of rural people towards achieving food security.	a. The programme collapses due to usurp land that belonged to poor people by highly places officers. b. Lack of adequate data for decision making.
11	National, Special Programme on Food Security, 2002 (Iwuchukwu & Igbokwe, 2012).	a. To increase food production and eliminate rural poverty b. To assist farmers, increase their output, productivity and income; strengthening the effectiveness of	a. Inability of majority of the beneficiaries to repay the loan on time b. Complexity in integrating technology into existing production system.

		research and extension service training and c. To educate farmers on farm management on effective resource utilisation. d. To support governments efforts in the promotion of simple technologies for self-sufficiency.	c. Lack of modern storage facilities and high cost of farm input
12	Root and Tuber Expansion Programme, 2003 (Iwuchukwu & Igbokwe, 2012).	a. To address the problem of food production and rural poverty b. To achieve economic growth and improve access of the poor to social services c. To achieve food security and stimulate demand for cheaper root and tuber staple food.	a. Inadequate virile technical extension services. b. The programme suffered short duration and continuity.
13	Nigeria Agro-Dealer Support Project, 2008 (Grow Africa, 2016).	a. To compile comprehensive directory of agro-dealers to assess where and how product flow could operate through the private sector b. To work with local partners to build agro-dealer capacity c. To strengthen marketing skills and provide technical services such as field demonstrations, soil testing and best agricultural practices to farmers.	a. Delayed and insufficient supply of inputs b. Poor record keeping and reconciliation process c. Rigorous registration and selection process which turned off input suppliers and agro-dealers
14	Comprehensive Africa Agriculture Development Programme, 2009 (Ibietan, 2011)	a. To strengthen agriculture through regulatory transformation b. To creating robust funding through budgetary provisions, subsidies and concessionary loans with single-digit interest.	a. Non interaction between and among stakeholders b. Conflicting role between different programmes and projects c. inadequate monitoring and evaluation of programme

		c. To stabilize market prices and maximizing agricultural revenue in key enterprises. d. To take effective care and management of water and aquatic resources	
15	Agriculture Transformation Agenda, 2011 (Grow Africa, 2016)	a. To industrialize the agricultural sector to become more productive, efficient and competitive through a government-supported but private sector-led agricultural transformation b. To reduce reliance on food imports by adding 20 million metric tonnes to food supply c. To expand value addition to locally produced agricultural production d. Create 3.5 million jobs along agricultural value chains	a. Lack of fund to pursue the programme to an expected end b. Lack of continuity in commitment to policy c. Political opposition during implementation
16	Nigeria Incentive Based Risk Sharing System for Agricultural Lending, 2011. (FMARD, 2011)	a. To generate a $350 million risk-sharing facility to reduce the risk of lending by banks to farmers and agri-businesses b. To unlock access to input suppliers, agro-processors and product marketers c. To introduce a holistic approach that addresses both finance and agricultural value chains	a. Strict loan policy which bar smallholder farmers loan accessibility
17	Growth Enhancement Scheme, 2012(Grow Africa, 2016)	a. To target individual smallholder farmers through a smart subsidy, using a high-tech delivery mechanism	a. Compromise during implementation which defeat policy purposes b. Political insensitivity to policy demands

		b. To increase farmer access to and use of improved seed and fertilizer by smallholder farmers at 50 per cent subsidy c. To break the cycle of inefficient and ineffective fertilizer and seeds support delivery to the targeted beneficiaries.	c. Corruption and lack of adequate data for decision making.
18	Fund for Agricultural Finance in Nigeria, 2013 (Grow Africa, 2016)	a. To generate inclusive growth in agriculture and to increase commercial capital available for agriculture. b. To tailor, long-term capital to small and medium enterprises across the agriculture value chain,	a. Rigorous registration and selection process which turned off most farmers b. Inadequate monitoring and evaluation of the programme

Source: Author's compilation.

Figure 4: Implementation Challenges of Agricultural Subsidy Regimes around the World