Country Pastoralism and Small-Scale Farming Profile – Nigeria

November 2022

ACKNOWLEDGEMENT

The Country Pastoralism and Small-Scale Farming Profile development exercise primary objective was to identify the current status of the governance landscape for pastoralist and small-scale farming in Nigeria.

The SLGA program supports the implementation of the AU Agenda on Land, in addition the program is part of the BMZ unique initiative **'One World, No Hunger**. This programme will have immense contribution to the initiative under the Action Area "promoting responsible land use and improving access to land". The SLGA aims to strengthen the human and institutional capacities required to realise sustainable land policies that recognise the rights of marginalised groups such as small scale farmers, pastoralists, youths and women across Africa. One of the main areas of action for SLGA is the establishment and coordination of the Network of Excellence on Land Governance in Africa (NELGA) under the leadership of the ALPC (African Land Policy Centre).

This study generated evidence to inform SLGA's capacity to provide advisory support on such issues to decision makers and other stakeholders. This information will contribute to the body of literature available on the Land Governance Agenda of the AU to improve land governance in Africa.

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ACRONYMS AND ABBREVIATIONS

ECOWAS	:	Economic Community of West African States
FAO	:	Food and Agriculture Organization of the United Nations
GDP	:	Gross Domestic Product
USAID	:	United States Agency for International Development
USD	:	United States Dollar

1. COUNTRY AND MACROECONOMIC

General data

Nigeria is the most populous country in West Africa situated between the Sahel to north and the Gulf of Guinea to the south towards the Atlantic Ocean which lies between latitudes 4^0 and 14^0N, and longitudes 2^0 and 15^0E. It covers an area of 923,769km^2 (The World Factbook, 2022). Nigeria has a varied landscape. The annual rainfall is 1,500 to 2,000 millimetre per year (Crawls, 2022). Coastal plains are found in both the southwest and southeast (Alexa, 2011). Mangrove swamps are found along the coast. The savannah is between the far south and the far north, where rainfall is more limited to between 500 and 1,500 millimetres per year (Crawls, 2022). The savannah zone's three categories are Guinean forest-savanna mosaic, Sudan savannah, and Sahel savannah. In the dry northeast corner of the country lies Lake Chad, which Nigeria shares with Niger, Chad and Cameroon.

The United Nations estimated the population of Nigeria in 2021 to be 213,401,323, distributed as 51.7% rural and 48.3% urban. Nigeria's population density stands at 218 inhabitants per km^2, and its population is growing rapidly (3% p.a.). Around 42.5% of the population is 14 years or younger, 19.6% is aged 15–24, 30.7% is aged 25–54, 4.0% is 55–64, and 3.1% is 65 years or older. The median age in 2022 is 18.1 years (UNDP, 2022). Nigeria is the World's sixth-most populous country, with a birth rate of 35.2 births/1,000 population and the death rate is 9.6 deaths/1,000 population as of 2017, while the total fertility rate is 5.07 children born/woman (UNDP, 2022).

Socio-Economic Indicators

Nigeria's GDP is estimated at USD 510 billion and per *capita* of USD 2,356 for the year 2022 (International Monetary Fund (IMF), 2022). It is the World's 31st largest economy and West Africa's economic powerhouse. It is also West Africa's largest market for meat and dairy products. In spite of this, 40.0% of Nigerians live below the poverty line of USD1.90 according to World Bank (World Bank, 2022) with unemployment rate of 33.3% (African Development Bank, 2022), and its Human Development Index (HDI) stands at 0.539 (United Nations Development Programme (UNDP), 2022).

Agriculture and Livestock

Nigeria has an arable land area of 34 million hectares: 6.5 million hectares for permanent crops, and 28.6 million hectares on meadows and pastures. Agriculture contributes an average of 24.0% of Nigeria's GDP between 2013-2019. In addition, the sector employs more than 36.0% of the country's labour force, which ranks the sector as the largest employer of labour in the country (Oyaniran, 2020). The country ranks as one of the highest producers of various agricultural commodities, such as palm oil, cocoa beans, pineapple and sorghum. It is the largest sorghum producer in the World after the United States, and ranks fifth in palm oil, cocoa beans and cassava production. Nigeria is also a large global exporter of these commodities. Oil, fruits, nuts, and seeds are among the ten best-performing export categories (Sasu, 2022). Livestock mostly reared by farm families in Nigeria are the small ruminants like goats (76 million), sheep (43.4million), and cattle (18.4 million). The ecology in the northern part of the country makes it suitable and famous for livestock rearing. In addition to small and large ruminants, the poultry population stands at 180 million (Food and Agriculture Organisation (FAO), 2022).

2. SMALL-SCALE FARMING

General characteristics

Small-scale farming is the production of crops on a small piece of land for both subsistence (household consumption) and commercial (for sale). A farm with a low asset base and operating on less than 2 hectares of cropland in Nigeria is classified as small-scale (World Bank Rural Development Strategy in FAO, 2017). Small-scale farming is the driver for food export and raw materials for the agro-industry and provides a livelihood for more than 70% of the population. It also contributes towards agricultural growth by reducing the price of staple food, increasing the demand for labour in rural areas and generating job opportunities for the resource-poor (PWC, 2016). With more than 80% of Nigerian farmers being smallholders, it is obvious that they are the heart of food production in Nigeria. Despite farming on small plots of land, the smallholder farmers drive food production in Nigeria, accounting for 90% of the agricultural produce. They are also responsible for about 98% of food consumed in Nigerian homes (Adeite, 2022).

Role and Place of Women

In Nigeria, women are significantly disadvantaged relative to men with regard to their land rights. This is true for all dimensions of land rights associated with agricultural land ownership, management, transfer and economic rights. Land ownership includes the rights to alienate or transfer, manage or make improvements, exclude others and control the proceeds from the land. The right to manage land is the right to decide how to use it. This includes decisions on whether to plant crops or to leave the land fallow; which crops to plant; what inputs to apply; and when to harvest. The proportion of women who own land in Nigeria is less than 20%, while more men than women own land (FAO, 2018). However, the majority of landowners inherit land from their families (Daudu *et al.,* 2021).

Nigeria women's involvement in small-scale food production is the bedrock of rural livelihood (Edafe, Osabuohien, Osabohien, 2022). Women play a central role in crop production, transportation, processing, and marketing farm products. Women's contribution to agriculture is estimated at 60-79% of labour in food production, processing and marketing. Apart from working on their own farms, they also work on family farms. They dominate buying and selling of agricultural produce. The time spent by women in agribusiness activities is greater than that of men (FAO and ECOWAS Commission, 2018).

In addition to crop production, aquaculture, and livestock rearing, youth in Nigeria are involved in agricultural processing and agribusiness activities along the agricultural value chain, such as input and output marketing, transporting, and processing (Osabohien *et al., 2021*). Major factors that hinder youths from participating meaningfully in agriculture-based activities are; poor social values, poor agriculture support services, experience status, agricultural insurance and society values (Akintobi, 2020)

Assessment of Available Research on Small-Scale Farming

Financing is a major problem for small-scale farmers in Nigeria (Aliyu, 2022). Rural farmers cannot access financial institution credit facilities due to inability to secure guarantors, high-interest rates on loan and non-repayment of loan (Iderawumi & Ademola, 2015; Okoro & Nwali, 2017). Coupled with this, is the inability of the small-scale farmers to access farm inputs especially land, human labour, fertiliser, seeds, herbicides and pesticides (Anyasi *et al.,* 2020; Akintobi 2020). Mgbenka *et al.* (2015) suggest that in order to ensure steady and timely supply of inputs to small-scale farmers, governments should encourage the participation of private sector, while Badiru (2010) suggest the need for both government and non-governmental organisations to support the facilitation of the transfer of credit from formal institutions through microfinance institutions to enhance small-scale farmers access to agricultural credits. Elum and Obiajunwa (2022) recommend the need for awareness creation and enlightenment on

the availability of institutional agricultural credits and how to obtain agricultural loans among small-scale farmers. Inadequate access to information on agricultural technologies is also a problem militating against small-scale production in Nigeria (Adetimehin, Okunlola & Owolabi 2018; Magaji (2021). The studies suggested that government should focus on increasing smallholder farmers' level of awareness of Agricultural technology tools and innovation for information seeking and good farm output.

Public policy in support of Small-Scale farming

Many policies in Nigeria support small-scale farming. Among these policies are: Back to Land Policy (1983), New Nigeria Agricultural Policy (2001), Agricultural Transformation Agenda [ATA] Policy (2011) and Agricultural Promotion Policy [APP] (2016). Back to Land Policy has the objective of self-sufficiency in food production, which supported small-scale farming. The New Nigeria Agricultural Policy has the objectives of self-sufficiency in basic food supply and attainment of food security by introducing improved seeds and recognition of the potential of small-scale farmers as the main food producers in Nigeria. The overall goal is to create an enabling-environment (macro-economic) for the Policy to thrive (FMARD, 2001). The government developed ATA Policy to address the problems neglected by past policies in support of smallholders. APP was designed to address insufficiencies in local food production for domestic consumption and sustainably stabilise export crops' production to generate enhanced export earnings (Olugbire *et al.*, 2021; Ering *et al.,* 2014 and Ibietan, 2011).

On the issue of recommended policies, Olugbire *et al.,* (2021) propose simpler policies for implementation to complement the current APP. The study state that policies should be precise in recognising and acknowledging small-scale farmers as the drivers of the food production sector. In this regard, it is necessary to facilitate Public Private Partnerships (PPP) between smallholder farmers and private sectors to establish and foster end-to-end value chain investment opportunities. Other things that the PPP will help to achieve include an efficient market, enhanced credit/loan availability to small-scale farmers and a better-organised extension system. Agboola (2017) stress that policies and intervention programmes should focus on youth's interest, smallholder farmers, women in agriculture and land access. Furthermore, it is suggested that the APP should address gender biases in land allocation and titling processes.

Access to land and land governance

The State determines the level of access and title ownership. Therefore, the land use system is characterised by several actors including government, community leaders, families, lawyers, intermediaries and estate agents. The government regulates all activities of the different actors through policies and programme. Prior to the colonial era, land was solely owned by families and communities. The community and family heads allocate land based on the needs of their subordinates. Since independence, two key legislations have been enacted to regulate land ownership in Nigeria: Land Tenure Law of Northern Nigeria of 1962 and Land Use Act of 1978.

Land acquisition is governed by the Land Use Act of 1978, which stipulates that all lands belong to the government. The statutory right of occupancy granted by a Governor of a State is presently the highest right to land in Nigeria (Oluwatayo, *et al,* 2019; Udoekanem, 2014). The land tenure system in Nigeria distinguishes three types of landholding: private (family, individual & customary tenancy); public and communal landholding.

Identification of the actors and functions in land governance actions

In Nigeria, the main legal basis for land governance is the Land Use Act of 1978, which limits the role of customary authority in land governance and gives the State a prominent role in the land resources administration. The Act also aims to prevent land speculation by imposing far-reaching restrictions on land transaction. The Land Use Act vests considerable power for land administration on the State Governor, who can, however, delegate this authority to the Commissioner in charge of

Land. According to the Land Use Act, each State should set up a Land Use and Allocation Committee to advise the Governor on urban land management. On security of tenure for smallholder agriculture, the Act makes provision for the registration of rural land using the Customary Certificates of Occupancy instrument, which are supposed to be issued by local governments (Adeniyi, 2011).

Factors that limit the access of small-scale farmers to land

Land availability for agricultural production and other rural-based economic enterprises in Nigeria involves a complexity of interacting variables such as population, land tenure system, level of technology and stage of development. The current Land Use Act is not totally supportive of agricultural activities because land acquire under it cannot be used as collateral for agricultural loans, thus limiting smallholders' access to finance. The process of securing and perfecting land title is cumbersome, time-consuming and often expensive. In addition, there are clumsy rules and poor governance regarding land management. (FMARD, 2016).

In communities where lands are communally owned, the community leadership determines the type of crops that can be cultivated. The plight of the rural dwellers especially migrant is at stake under such arrangement. Consequently, this may have negative effect on migrants' level of production (Famakinwa *et al*, 2017). Apart from this, migrant may find it difficult to acquire land for farming and other economic activities because of cultural issue attached to land.

Land policy assessment (legislative and institutional framework): Land policy is concerned with the definition of the rule of law in the ownership and use of land. Every individual in Nigeria is entitled to acquire land in any part of the country because it serves as a source of material wealth. To regulate the land acquisition, ownership, use and development in Nigeria, there are several laws enacted by State governments regulating such a process. However, the foremost documents where laws regulating the acquisition and ownership of lands and landed properties in Nigeria are encapsulated include the 1999 Constitution of the Federal Republic of Nigeria and the Land Use Act of 1978. Foreigners have the right of ownership to land in Nigeria, however, there are restrictions and conditions imposed by the various State Government regulations to be complied with before such rights can be exercised (Jegede and Idiaru, 2021).

Identification of factors that inhibit better land governance: Good governance in land administration can lead to proper, effective and efficient land administration and strengthen the protection of individuals' and enterprises' property rights. Several factors, including administrative delay, lack of transparency, complexity in the procedures for tenure individualisation, undue gratification and lack of accountability, have been identified as inhibiting land governance in Nigeria (Adebiyi, 2013).

Climate change and small-scale farming

- ***Impact of climate change on small-scale farming***

Climate change poses a significant threat to smallholder farmers who are highly vulnerable to it because most smallholders depend on rain-fed agriculture, cultivate marginal areas and lack access to technical or financial support that could help them invest in more climate-resilient agriculture. Extreme climatic events such as flooding, extreme heat and drought has led to soil degradation which results in low crop yields. Extreme or delayed rainfall affects farmers' cropping activities. Also, increased temperature and windstorms cause heat stress and affect crops at different stages of growth. Climate change affects soil fertility and the output of crops (Anabaraonye *et al.,* 2021; Eludoyin *et al.,* 2017 Agbola and Fayiga, 2016).

- ***Perception of climate change by small-scale farming***

Climate change perception is a complex process that encompasses a range of psychological constructs such as knowledge, beliefs, attitudes and concerns about if and how the climate is changing

(Whitmarsh and Capstick, 2018). According to Madaki *et al.,* (2022), farmers' perception of climate change is associated with climate change knowledge. Some arable crop farmers perceive climate change as punishment from their gods while some perceive that tree cutting and sin are the causes of climate change (Emaziye et al., 2022; Akangbe *et al.,* 2021).

- ***Practices implemented by small farms in the face of climate change***

Rural households in many rural communities in Nigeria are constantly changing their farm management operations in an attempt to mitigate the climate effects. Many of the techniques adopted by farm households in response to climate change are focused on established information and technologies (Khan *et al*., 2020). The practices implemented by small farms in the face of climate change differ significantly based on the regions. Some of these include planting early maturing crops, changing planting date of crops, mixed cropping, multiple cropping, planting of cover crops, crop rotation, use of resistant improved varieties, increasing the frequency of weeding, planting of trees, crop diversification / shifting to new crops, mulching, fallowing, varying land size, mono-cropping and water & soil conservation practices (Anabaraonye *et al.,* 2021; Ojo and Baiyegunhi, 2020; Asfaw *et al.,* 2018 Eludoyin *et al*., 2017; Onu & Ikehi, 2016)

- ***Public policy: implemented actions place of small-scale farming in national plans for adaptation to climate change***

In 2021, Nigeria promulgated the 2021 Climate Change Act, which provides a framework for climate actions at the national level. Most of the initiatives envisioned in the Act builds on prior climate change policies. The Act is the first stand-alone comprehensive climate change legislation in West Africa. The Act provides for an ambitious framework for mainstreaming climate actions in line with national development priorities and sets a net-zero target for 2050-2070.

International or Regional Cooperation in Support of Small-Scale Farming

- ***Global overview***

International or regional cooperation refers to a wide variety of forms of collaboration, ranging from informal cooperation, setting up joint projects, coordinating policies and regulatory frameworks, to shaping joint policies and institutions. Some of these collaborations in support of small-scale farming in Nigeria among the international and NGOs include sustainable smallholder agribusiness and Competitive African Rice Initiative (CARI II) by GIZ. Also, the Living Income Benchmark – developed by the Sustainable Food Lab, ISEAL and GIZ – gives the ability to quantify how much a farmer needs to have a decent quality of life in any specific geographic region. The Good Agricultural Practices, by FAO, on interventions to improve economic and social outcomes for small-scale farmers on the Sustainable Development Goals share blueprint for peace and prosperity. NGOs and the private sector work to create impact from diverse perspectives. The aim is to build multi-stakeholder partnerships and place the small-scale farmers' lives and livelihoods at the center.

- ***Overview of Best Practices and Trends in Support of Small-Scale Farming***

One of the approaches for supporting small-scale farming in Nigeria is building strong farmers' institutions. An illustration of this is Nigeria's experience with the Fadama project series (Fadama I, Fadama II, Fadama III and Fadama III Additional Financing) which creates a large repository of knowledge on the challenges of delivering local development. From the outset, Fadama recognises the importance of strengthening smallholder organisations to empower them in order to better administer shared assets and other resources, facilitate project activities and improve group bargaining power. Group formation is the foundation of the design, with various user-groups sensitised to the advantages of doing business as a group.

3. PASTORALISM

General Characteristics

Pastoralists, living in dry remote areas, are often defined as the "people who derive more than 50.0% of their incomes from livestock and livestock products" (Hassan, 2017), as well as "a social organisation based on livestock raising as the primary economic activity" (Merriam-Webster, 2022). Operators of pastoral systems depend on their livestock's well-being and the deep knowledge of the surrounding ecosystem. Nigeria has different types of pastoralism, ranging from nomadic to semi-settled transhumance and settled agro-pastoralism. There are three pastoralism systems in Nigeria: the extensive system, the semi-intensive system and the intensive system.

Pastoral systems involve moving cattle from place to place in search of pastures and water. Herd size ranges from 100 to 300 heads of indigenous breeds. This system is dominant in Northern Nigeria. Farmers are engaged in growing crops and raising livestock in the agro-pastoral systems. They keep mainly indigenous breeds, with herd size ranging from 20 to 100 heads. In commercial systems, animals are raised indoors in sheds or paddocks. Farmers keep mainly exotic breeds, with herd sizes ranging from 50 to 1000 heads, and feeding is done through high-quality feeds. The majority of the commercial dairy farms are located in the North Central region. Pastoralism plays a key role in the livestock sector, which employs over 15 million pastoralists (FAO, 2019).

Role and Place of Women

Economically, pastoral women are involved in direct livestock production like cattle herding and indirect complementary livestock activities like milking, processing, and petty trading in the sale of dairy products (cheese, butter, and milk), skin/leather works, and extracting rangeland products like firewood and charcoal, among others. Pastoral women are also socially proficient in household management, co-decision-making with husbands, food preparation, birthing and child nutrition (breast-feeding), and leadership in indigenous pastoral women associations. Pastoral women have little control over stock, though in theory themay normally own cattle and control their disposition to some extent (Onyima, 2019).

Among the settled pastoralists, women play key roles in their communities when it comes to

planning and organising events such as naming ceremonies, weddings, and festivities as well as coming together to discuss issues that inform group decision-making. The position of women's leaders in many locations has come about due to initiatives by politicians or government officials as well as civil society organisations rather than organically. Their role is to organise women to hear politicians during campaigns, receive and distribute goods to women, and mobilise women to attend awareness raising sessions and to participate in campaigns such as those around child immunisation (Nagarajan, 2019).

In Nigeria, youth engage in livestock farming as their primary source of income (Oyelami *et al.* 2019). Herding of animals or pastoralism is a major preoccupation of the Fulani in Nigeria is dominated by the youths, while decisions about grazing are mainly made by the elderly family members. The Fulani herdsman make excellent use of sign language, the cane and verbal command to drive the animals, with faster animals occupying the front rows (Chukwuemeka, 2018).

Assessment of available research on Pastoralism

Pastoralism is a production system and livelihood strategy that is based on extensive livestock grazing on rangelands/grasslands and often some form of herd mobility, which has been practised in many regions of the World for centuries. A clan is generally the basis of pastoral organisation, which is responsible for controlling the optimum territory and managing the livestock species herded in every corner of the World. The origin of pastoralism can be dated to 6000 B.P. in the Andes of South America, and even as early as 9000 B.P. in Northeast Africa. A multiple-centre origination is more probable than a single-centre origination for explaining the spread of pastoralism worldwide.

Currently, extensive pastoralism occurs on about 25.0% of Earth's land area, mostly in the developing World, from the drylands of Africa and the Arabian Peninsula to the highlands of Asia and Latin America where intensive crop cultivation is physically not possible because of a harsh environment and poor access.

Pastoralism is globally important for the human population it supports, the food and ecological services it provides, the economic contributions it makes to some of the World's poorest regions, and the long-standing civilisations it helps to maintain. Worldwide, pastoralism supports about 500 million households and herds of nearly a billion animals including camels, cattle, and smaller livestock that account for about 10.0% of the World's meat production. Cattle and sheep ranchers in Western North America, Australia, New Zealand, and a few other regions of the World presently practice a modern form of pastoralism.

However, threats and pressures associated with human population growth, economic development, land use changes, and climate change, etc., at a global scale, are challenging the sustainability of these invaluable social, cultural, economic and ecological assets (Dong, Kassam, Tourrand, & Boone, 2016).

Key services and functions such as food production and biodiversity conservation provided by pastoral ecosystems may be vulnerable to both natural stresses and human disturbances. Professionals and practitioners widely recognise these problems in the field of pastoral sciences. Furthermore, it is commonly agreed that these problems cannot be addressed solely through technical innovations, political reforms or economic development.

New research and monitoring programmes for pastoral areas will need to be designed in a way that can address ecological and socio-economic interrelationships within a framework of coupled human and natural systems by necessitating effective collaborations among social scientists, biophysical scientists and management practitioners, as well as forming an international interdisciplinary research network capable of investigating pastoralism on various scales, from local to global (Dong, et.al., 2016). The newly developed portfolios of coupled human and natural systems may provide important insights into diverse complex systems of pastoralism that cannot be well understood or effectively managed within a single dimension.

Public policy in support of pastoralism

The African Union Policy Framework for Pastoralism EX.CL/631 (XVIII) contains guiding and cross-cutting principles, two main objectives, and a set of strategies for each objective. The two objectives of the framework are as follows: Secure and protect the lives, livelihoods and rights of pastoral peoples and ensure continent-wide commitment to political, social and economic development of pastoral communities and pastoral areas and; Reinforce the contribution of pastoral livestock to national, regional and continent-wide economies. Also, transhumance came about as a result of a policy of Economic Community of West Africa (ECOWAS).

In furtherance of this policy, ECOWAS developed a Transhumance Protocol, 1998 under Decision A/DEC.5/10/98 (Kwaku, 2017). This Protocol was signed by ECOWAS States, including Nigeria. It guarantees the free movement of pastoralists or herders across the sub-region (Ogboru & Adejonwo-Osho, 2018). This explains why there are foreign herders in Nigeria. Undoubtedly, this plays an important role in West African society by providing livestock and its products andevenue from the cattle trade (Ogboru & Adejonwo-Osho, 2018). Thus, the National Environmental (Watershed, Mountainous, Hilly and Catchment Areas) Regulations, 2009 was promulgated. This is a Regulation made pursuant to the National Environmental Standards and Regulation Enforcement Agency Act, 2007. As the title indicates, the objective is to regulate how land owners or occupiers utilise land in watershed, mountainous, hilly or catchment areas, including grazing reserves. Other Policies/Legislation includes: Hides and Skin Act, Law No. 14 of 1942; Grazing Reserve Law N.N (Northern Nigeria), Law No. 4 of 1965; Land Use Act, Law No. 6 of 1978; Animal Diseases Control Decree, No. 10 of 1988; Nomadic Education Act, Law No. 41 of 1989; Laws establishing grazing reserves in several northern States (Kaduna, Katsina, Plateau State, 1960s); Taraba State, Open Grazing Prohibition and Ranches Establishment Bill, 2017; Benue State, Open Grazing Prohibition Law, 2017; National Grazing Reserve (Establishment) Bill, 2016 (rejected by Parliament); Federal Ministry of Agriculture and Rural Development, *The Agriculture Promotion Policy (2016 – 2020).*

Pastoralism and rangeland management

The Federal Ministry of Agriculture declared in 1981 that 22 million ha should be converted to grazing reserves, but by 1980, only 2.3 million ha had been acquired (Oxby, 2011). Nigeria has 415 grazing reserves, but only one-third is in use, as the remainder is established on farmland (Integrated Regional Information Network, 2009). Only 24 reserves have been gazetted by government and have the rights to services as set out in the grazing reserve laws (Kaufmann, Chater, & Blench, 1986).

- ***Risks that Threaten Rangelands***

The risks that threaten rangelands in Nigeria include invasion by undesirable plants (invasive species), over-exploitation of forage resources, bush fires, conflicts, rangeland policy, floods, diseases and pests, farm encroachment, settlement policy, soil erosion, drought, population increase, road construction, urbanisation, illegal mining activities and poaching (Shiawoya & Tsado, 2011; Kubkomawa & Lawal, 2021; Khobe, Akosim, & Kwaga, 2015).

- ***Identification of the Actors and Functions in Rangeland Governance and Modalities of Rangeland Access***

In Nigeria, agricultural land management, including rangeland is the only responsibility of local authorities, together with local advisory councils for agricultural land management. At the same time, a very solid system of customary land tenure is in place (Krassov, 2016). Any individual who desires to graze livestock in grazing reserves is expected to submit an application endorsed by the Chairman of the Local Government Area to the National Environmental Standards and Regulation Enforcement Agency, and the Agency may grant the permit after due consideration of the application (The National Environmental Regulations, 2009).

- ***Land policy assessment***

Land Use Decree (now Act) of 1978 was promulgated by the Federal Government of Nigeria to halt the contrasting land tenure systems in the country and the attendant litigations, fraudulent practices, and difficulty being experienced by various governments in accessing land for public good (Atilola, 2010). The major objectives of the Act are to: To remove bitter controversies and litigations that usually arise over title to land; to streamline and simplify the management and ownership of land in the country; to assist the citizenry, irrespective of their social status, to realise their ambition and aspiration of owning land; to enable government to bring in control into the use to which land can be put in all parts of the country and facilitate planning and zoning programmes for a particular use; to curtail the activities of land speculators and remove the undue influence which certain traditional rulers have on land. The Land Use Act introduced a major paradigm shift in the country's land tenure system since the introduction of freehold to southern Nigeria and the transfer of land to the state in the north in the late 19th century. The Act sought, for the first time, to unify the land tenure systems all over the country in addition to nationalising land in the country's geographical space. To this end, the Act vested all land in the territory of each state in the governor of the state to hold in trust for the citizens. It created a statutory title to land known as the statutory leasehold in the urban areas, and customary rights of occupancy in the rural areas to be granted by the governor or the local government chairman, respectively. Evidence of title is covered by a Certificate of Occupancy, issued to every leaseholder (Akpee, Baadom, Kpalap, Aselemi, & Igbara, 2017).

- **Climate change and pastoralism**

Pastoralism is traditionally practiced in the arid and semi-arid Sahelian and Savannah zones of Nigeria where short and aleatory (random) rainfalls in the range of 100-400 mm/year do not allow agricultural production. In these areas, livestock breeding allows the utilisation of vast areas of land where agriculture is risky or impossible. Though, the existence of pastoralists now occurs throughout the country owing to migration to search for grassland and water. This is partly associated with the negative impacts of climate change on rangeland and decreasing prevalence of trypanosomiasis (sleeping sickness) in the southern parts of the country that used to threaten cattle venturing into these zones.

As a result, pastoralists and their cattle now move further south into the coastal areas (International Organization for Migration (IOM), 2019). According to Zelalem, Aynalem, & Emmanuelle, (2009), climate change's four major effects on pastoralism are feed shortage, water shortage, reduced productivity and decreased mature weight and longer time to reach mature weight. Again, the study revealed that heavy infestation of invasive species due to climate change has reduced the availability of herbaceous species and resulted in a critical feed shortage. In the same way, (Stark, Terasawa, & Ejigu, 2011) report that in some regions, invasive species linked by pastoralists to both restrictions on bush burning and climate change are severely reducing or eliminating viable grazing areas. Trends indicative of climate change, such as increasingly recurrent drought, floods, erratic rainfall patterns, and high temperatures are adding significantly to these stresses (Onah, Akarugwo, Okeke, & Nwakile, 2020).

- ***Perception of climate change by pastoralists***

According to Idoma & Yakubu, (2020), pastoralists are aware of the phenomenon of climate change. However, their level of knowledge about the causes of climate change is low. Pastoralists rely mostly on personal experience because they are aged and with great experience in livestock production. They perceive an increase in temperature and observe a decrease in rainfall volume and a change in the timing of the rains. They perceive the poor performance of animals and physical growth and reduction in forage yield as major consequences of climate change. The pastoralists identified deforestation, overgrazing of farmlands and "act of God" as the causes of climate change.

- ***Practices implemented by pastoralists in the face of climate change***

The pastoralists respond to these changes through increased nomadism, improvement of fodder production and preservation, boring of more wells and livelihoods diversification. Their local intelligence and indigenous knowledge systems also come to play in dealing with these environmental challenges (Idoma & Yakubu, 2020).

- ***Public policy on climate change***

Federal Ministry of Environment (Department of Climate Change) of Nigeria in its National Policy on Climate Change in 2011 considered pastoralism in its climate change adaptation strategies which include: Promote, using existing framework of policy and regulations, sustainable livestock production taking cognisance of declining availability of grazing land and fodder as well as variable climatic conditions.

- ***Relationship between small-scale farming and pastoralism***

The relationship between small-scale farmers and pastoralism could result in positive and negative effects. On the negative side, the two general types of pastoralism, categorised into nomadic and transhumance pastoralism, often lead to the destruction of cultivated crops by small-scale arable farmers and result in to waste of efforts by the farmers. This is one the greatest issues in Nigerian agriculture today resulting in constant conflicts and loss of life & property (Eniola *et. al.,*2016).

Smallholders and pastoralists not only provide food, but also hides, skins and manure for their existence and they are both affected by climate change. The relationship between the small-scale farmers and pastoralists can be mutual. There are long traditions of farmer - herder arrangements in which farmers allow pastoralists to drive their herds over harvested fields and pastures so that the animals can feed on crop residues and, in exchange, fertilise the fields with their manure. This arrangement has changed and monetarised. In the Zamfara Reserve in Northwest Nigeria, cattle Fulani now have to pay for access to stubble grazing and crop residues, and farmers in turn pay for manure. Some settled pastoralists have incorporated small-scale farming into their activities, while some farmers have begun raising livestock.

4. KEY RECOMMENDATIONS AND CONCLUSIONS

Nigerian Government should prioritise certain investments within the existing national development policy framework. There is also a need to come up with additional actions that ensures sustainable livestock production on the long term. The outcome of this will be provision of affordable animal source foods to the growing population while having marginal or no negative impact on the environment and public health; facilitate genuine intergenerational dialogue that helps pastoralist families and communities adapt to changes, supports young male pastoralists with pressures they face, addresses the impacts of shifts in livelihood patterns on women and girls, and improves relations; encourage farmers and pastoralists to rediscover complementary livelihood modalities, drawing on past practice for example grazing on farmland after harvest to increase soil fertility.

Small-scale farming is the driver for food export, raw materials for the agro-industry, provide a livelihood for more than 70% of the population. It contributes to agricultural growth by reducing the price of staple food, increase the demand for labour in rural areas and generating job opportunities for the resource-poor. However, risk is an important aspect of the farming business that affects crop production. Risks are classified as production risk (like Weather, disease and pests), price or market risk, financial risk (credit availability), institutional risk (government policies, regulations for chemical use) and human or personal risk (Accidents, illness, death, and divorce). The constraints to small-scale farming include lack of market information and market access, price of inputs, and availability of inputs. Therefore, policies should be precise in recognising and acknowledging small-scale farmers as the drivers of the food production sector. Also, policies and intervention programmes should focus on youth's interests, women's access to land and gender biases in land allocation and titling processes.

Pastoralism has been identified as an invaluable, social, cultural, economic and ecological income-generating venture which supports about 500, 268 and 15 million households globally, in Africa and Nigeria, respectively. It is important to human beings for the food and ecological services it provides, the economic contributions it makes to some of the World's poorest regions, and the long-standing civilisations it helps to maintain. However, risks that threaten pastoralism in Nigeria, which include invasive species, forage resource over-exploitation, bush fires, conflicts, deficient rangeland policy, floods, diseases and pests, farm encroachment, restrictive settlement policy, soil erosion, drought, population explosion, road construction, urbanisation, illegal mining activities and poaching.Al these are challenges that affects sustainability of pastoralism.

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