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## Agriculture, Environment, and Sustainable Development in Nigeria

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CHAPTER

## 27 Agriculture, Environment, and Sustainable Development in Nigeria

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### Abstract

Agriculture is the most critical economic activity in every society. It has historically remained the source of food that sustains the population and a source of wealth accumulation. This chapter looks at the intersection of environment, agriculture, and sustainable development. Whether it be crop production or animal husbandry, suitable agricultural production is dependent on a suitable and sustainable environment. This article looks at the link between the environment, agricultural productivity, and sustainable development. It also examines the link between contemporary agricultural crisis and environmental crisis and how both issues have posed a challenge to continued and future suitable, sustainable development.

**Keywords:** [agriculture](#), [agricultural crisis](#), [environment](#), [environmental crisis](#), [food crisis](#), [sustainable development](#)

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### Introduction

AGRICULTURE was one of the most significant advances in human civilization. Agriculture is the complex process of cultivating the soil, growing crops, and raising livestock to sustain the human population. Agricultural activities extend to the preparation of agricultural and animal products for human consumption or use and their distribution to markets. Advances in agriculture and the attendant food security it provided enabled humans to settle and develop complex civilizations. These early advances in human civilization lay at the root of contemporary development in other spheres of human endeavor.

Over time, agricultural production has been influenced by sustainability discourses. Traditional agricultural practices such as “slash-and-burn cultivation and crop rotation, for example—are now driving the sector’s decline” (Adenle et al. 2019). These conditions are exacerbated by the long-term ecological impacts of

chemical-heavy farming systems, which are unsustainable practices that contribute to land degradation. The situation is further exacerbated by changing weather patterns and unstable sociopolitical dynamics. However, agricultural sustainability means using farming practices and systems that maintain or enhance the economic viability of agricultural production, the natural resource base, and other ecosystems that are influenced by agricultural activities. In the rural agricultural setting, sustainable agriculture helped enhance productivity over time through strategies that minimized the adverse impacts <sup>4</sup> on the natural resource base and minimized the risks associated with climate and market vagaries.

The inability of rural farmers to practice sustainable agriculture and the impact on the environment have led to an agricultural crisis—a term described as the manifestation of low agricultural productivity, food insecurity, and a decreasing farming population in the rural areas (Berry 1993). This definition helps explain how farmers' or farming practices, demography, the environment, and ecology conditions may shape the agricultural conditions in rural societies. According to *National Geographic*, "Sustainable agriculture takes many forms, but at its core is a rejection of the industrial approach to food production developed during the 20th century." While sustainable agriculture in the developed societies with its "reliance on monoculture, mechanization, chemical pesticides and fertilizers, biotechnology, and government subsidies, has made food abundant and affordable, such practices have significant ecological and social cost, including erosion, depleted and contaminated soil and water resources, loss of biodiversity, deforestation, labor abuses, and the decline of the family farm" (National Geographic 2020). While sustainable agriculture helps the environment, there are concerns about its efficiency, especially in developing economies. For pastoralist communities dependent on the rearing of livestock, climate change and changing ecological transformation have forced herders to continually encroach further into agricultural communities.

An essential piece of the agricultural crisis and lack of sustainable practices is agricultural involution in the form of land intensification and movement away from agriculture to non-agricultural activities. Thus, agricultural involution is the process of adaptation in which cultivators respond to a rising population by increasing land intensification. This process can absorb increased numbers of cultivators per unit of cultivated land (Geertz 1970, 32–37). Another form of agricultural involution is both the movement away from farming due to the deterioration in the condition of agriculture and the gradual exchange of staple crops for new crops in response to environmental change and low yields (Liffitt 1971, 32). The response to the agricultural crisis in parts of Nigeria has involved both processes.

## Overview of Nigeria's Agricultural Systems

In Nigeria, as elsewhere in West Africa, human life, including agriculture, is dominated by climatic and vegetation belts. Agriculture is influenced by environmental conditions, including rainfall patterns, climate, terrain, traditions, and available technology. In the extreme northeast, as Keith Buchanan (1953, 452) observed, "vegetation of thin grass and fine-leaved or thorny trees links the valley of the Komadugu Yobe and the Nigerian shores of Lake Chad with the Sahel zone and provides a setting for the nomad economy <sup>4</sup> of such groups as the Shuwa Arabs." Between these two extremes is a wide belt of savanna lands, which falls into two major subdivisions, the Guinea savannas of the south and the north's Sudan savannas (ibid.). In the extreme south of the northern region lies a narrow zone of degraded high forest that transit into the Guinea forest zone toward the southwest and the eastern parts of Nigeria.

Nigeria's precolonial societies were predominantly subsistence cultivators, farming with local implements under a system of bush fallowing. In northern Nigeria, farmers practiced some irrigated crop production and intensive rotational farming. Intensive farming is practiced in the urban environs of such cities as Kano, Sokoto, and Zaria. This differentiated aspects of farming in this region from farmers in the southern parts of the country. In the Sudan zone, cereals such as millets, sorghums, and maize are the main crops cultivated.

Also, groundnut production was the major source of oil. In the southern part of the northern zone, which coincides with the Middle Belt, both grains and root crops such as yams and cassava are cultivated. A variety of other crops, such as a local variety of rice, is widely grown in the Bida and Zamfara Valleys.

In contrast, sugar cane, a typical crop on alluvial valley lands, is grown in the Sudan zone. The so-called “pagan” cereals, acha (*Digitaria exilis*) and tamba (*Eleusine coracana*) are grown on the more deficient upland soils of the Middle Belt (Buchanan 1953, 452). In addition to crop production, the northern region is also a pastoral economy. The relative tsetse fly-free savannas of the Sudan zone support cattle rearing, most of which is dominated by the Fulani. The Fulani nomadism requires constant movement in search of pasture and water as dictated by changing seasonal climate shortages. The mixed farming culture in the northern zone differentiates agricultural practices in this region from what obtains in the south, where the tsetse fly infestation limits animal husbandry, especially cattle.

The southwestern parts of Nigeria’s precolonial economy were primarily based on subsistence agriculture and craft-related trade. Thus, agriculture provided the foundation for the Yoruba economy. For most precolonial and early colonial periods, the main food crops cultivated included beans and yams. Cassava and maize were later additions to the agricultural economy. The main tools are still hoe, ax, and machete. Historically, men provided the bulk of the agricultural labor while women engaged more in trade. Until the colonial period, when cocoa became an important cash crop, farmers in Nigeria’s southeastern region also produced kola as an important cash crop. The agricultural system has been characterized by intercropping and swidden methods, with fallow periods that range between three and ten years. Although agriculture was primarily for subsistence, the political economy was shaped by agriculture leading to the emergence of large settlements in Yorubaland before the colonial period.

Environmental conditions also influenced the agricultural pattern and the staple crops produced. Most of the forest region produced yam, cassava, and maize were the primary staple foods for most Yoruba. Mixed and varied crops, including yams alongside other savanna crops like guinea corn and millet, are grown in Ilorin, Igbomina, Okun, and Oyo areas’ savanna environment.

p. 541 A variety of labor methods are used in traditional agriculture among the Yoruba of southwestern Nigeria. While the household is the basic unit of labor, with each family working the plot of land allotted to it by the lineage head, other labor sources include “cooperative labor group formed by men of agnatic kin and similar age group” (Ojo 1966). The labor system also relies on other familial, kinship, and lineage networks and obligations. Like other Nigerian societies, the agricultural task is influenced by gender ideology. Men and women are assigned different tasks, while farmland allocation is based on age and marital status. The land tenure system affects the agricultural system. For societies in southwestern Nigeria, most land is held communally by descent groups and allocated to members according to need.

In the southeastern region of Nigeria, the agricultural system is shaped by the forest environment. The most important crops are a variety of tubers, especially varieties of yam, vegetables, and oil palm. The variety of crops and plants domesticated in the region attest to the antiquity of agriculture. According to Bede Okigbo (1980, 11), this complex’s crops included African rice or red rice, Guinea corn, bulrush millet, hungry rice, Bambara groundnuts, cowpea, okra, fluted pumpkin, gourd, and several other plant species.

The introduction of new crops of Southeast Asia origin by the Portuguese, including new species of yam, cocoyam, banana, maize, manioc (cassava), peanuts, and sweet potatoes, revolutionized agriculture, transformed the agricultural system, and provided new varieties of crops of high nutritional value. These crops spread unevenly in West Africa, but they eventually affected the agricultural patterns in the forest region and gender ideology. Such new crops as cocoyam, for example, influenced the gender division of crops among the Igbo. Cocoyam and cassava came to be regarded as women’s crops, and their production

was increasingly controlled by women. Besides, women's role in subsistence food production increased their role in food security.

Other significant impacts of introducing new crops in the forest region included the intensification of land use and population increases. Among the Igbo regions of southeastern Nigeria, population pressure and land scarcity have affected the scope of agricultural production and agricultural sustainability. In most of Igboland, the degree of land intensification has increased significantly over time due to population pressure. As Floyd (1969) noted in the late 1960s, the Igbo occupy a little over half of the land area of southeastern Nigeria but comprise over sixty percent of the area's total population. In the 1940s, for example, Forde and Jones (1950, 10–13) estimated a population density of 600 to 1,000 persons per square mile over much of the Okigwe Division in the Eastern regions (Forde and Jones 1950, 10–13). And a population of over 1,000 persons per square mile has been recorded in northern Ngwa, Owerri, and Orlu (Onwuejeogwu 1987, 21). Overall, the regional population density is more than four times the Nigerian average as the 1963 census indicates (Smock and Smock 1972, 21). A combination of a very high population and extensive modification of the natural environment exposed the soil in many parts of the Eastern Region to leaching and erosion.

## Transition and Transformations in Nigerian Agriculture in the Colonial Period

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Agriculture was the most important instrument of colonial modernization in Nigeria. From the beginning of the twentieth century, Nigerian farmers increasingly made the transition to cash crop production. The attempt to modernize indigenous agricultural production systems was a major strategy in achieving the goals of colonization. In Nigeria, colonial authorities sought to draw local farmers into the modern economy through encouraging export crop production and other supplementary products that supported the colonial state and provided the local population with income (see Chapter 15). At the ideological level, the colonial administration was eager to draw local farmers into the “modern economy” through a combination of political and economic policies.

Before 1900, the colonial agricultural policy was characterized as the “botanical garden era” because colonial development efforts in agriculture and forestry focused more on horticulture than crop production (Kay 1972). The colonial agricultural development model in Nigeria was part of the “so-called Nigerian Land Policy of the nineteenth century in which the British wanted agriculture carried on in the traditional forms of African land tenure without mechanization or plantations” (Ijere 1974, 298). The second phase, from 1900 to 1921, was characterized by establishing departments of agriculture in the Northern and Southern Provinces.

From 1900, the colonial government took steps to encourage the expansion of palm produce production, Nigeria's traditional export. In addition to expanding palm oil production, some Nigerian farmers experimented with cotton, cocoa, and coffee. Colonial officials persuaded some farmers to grow cotton, although the agriculture department recognized the unsuitability of foreign varieties to local conditions and the low prices paid for native varieties. During this era, the indigenous agricultural production system's efficiency was emphasized because plantation agriculture, colonial observers noted, had caused major economic and social upheaval in East Africa. Colonial officials like Sir Hugh Clifford, the British consul in Southern Nigeria, “saw more advantage in peasant production, despite its relative inefficiency than in plantations” (Ijere 1974, 298). He argued that the African producer was deeply rooted in his land and as such had a greater propensity to remain in his land in an economic crisis, “feeding himself and his family, selling what he could for money when bankrupt planters were fleeing to their homes in Europe, leaving their plantations derelict” (cited in Ijere 1974).

The colonial authorities invested significant resources and attention to agriculture for two main reasons. First was the desire to increase the production of the traditional export of palm oil and kernels, which were essential to British industrial production and the desire to develop other export crops such as cotton and groundnuts from the North and cocoa from Western Nigeria. Second, the need to raise the necessary revenue from export duties and local taxes would support the colonial administration. So, the colonial economic strategy was, essentially, the extraction of agricultural products without any major structural change of the local economy. This emphasis on export production and the administrative changes introduced linked Nigerian producers to the global capitalist system.

The agricultural economy was controlled by three main interests. These included the metropolitan interests which consumed the crops; the large trading companies which organized the collection of cash crops and their subsequent export; and the colonial state, which was interested in the extension of commodity production to increase its revenue from taxation, meet the cost of administration and infrastructural development, and contribute to imperial investment funds. Throughout the colonial era, therefore, the industrial interests, the trading companies, and the colonial state combined to regulate what was grown and how it was grown through the establishment of pricing and marketing arrangements (Korieh 2010).

The encouragement given to local farmers in export production areas was clearly in the minds of colonial officials as they sought ways to balance the needs of the state and the local farmer. O. T. Faulkner, the first director of the Agricultural Department, admitted in a 1922 report that the government had dealt too largely with products which are or might be exported. (Government of Nigeria 1922, 11). For Faulkner and many of his contemporaries, an increase in the farmers' income was seen as an important parameter of progress and the step that would lead to general progress and economic development. Such progress, however, depended on the transformation of the political and administrative structures of Nigerian societies and greater control of local and foreign trade. As Governor Hugh Clifford told the Nigerian Legislative Council in 1920, the administration's task would be to maintain the conditions—political, moral, and material—upon which commercial enterprises' success or failure depended (Clifford 1920).

Such conditions included effective policing of the economic system and structure through the introduction of new administrative control. To a large extent, the state was quite successful in this direction. In the palm oil-producing belt, for example, the immediate organization of palm oil production remained in the hands of the local farmers, but the marketing and pricing mechanism and trade came increasingly under state policy and control. In 1903, for example, Nigeria exported 131,898 tons of palm kernels and 54,257 tons of palm oil to Europe (Helleiner 1966). In 1921, the departments of agriculture in the Northern and Southern Provinces were merged to form a single Department of Agriculture. The colonial government relied on an existing, well-developed export market for palm produce. By 1929, the value of exports had increased more than sevenfold and export volume fivefold. This represented an annual growth rate of seven percent and 5.5 percent, respectively, and five percent to seven percent of the Gross Domestic Product (Helleiner 1966).

Significant steps were taken to improve production capacities and the efficiency of rural farmers and their capacity to meet the demands of the export market (Wells 1974). New regulations, including improvement schemes, credits, and extension services, linked the rural producer to state institutions. As early as 1913, the department of agriculture offered agricultural instruction and practical demonstrations to teachers and senior pupils (Korieh 2001; NAE, CALPROF 14/8/712). From 1921, following the merger of the North and Southern Provinces' agriculture departments, the department increased the dissemination of agricultural techniques, training, and extension services. However, the emphasis was on the cash crop sector, although the food sector was expected to benefit from introducing new and improved seedlings, soil conservation, and improvement. Other programs such as agricultural shows and demonstration farms instilled new work ethics in local farmers. Another measure introduced by the colonial state that affected farmers' lives and the general population was the introduction of taxes, which had to be paid in cash and with the European currency. This policy drew the local population into a new economy through the production of export crops.

Colonial agricultural policies and improvement efforts were, however, very patriarchal and gendered. The focus on the male farmer led to the neglect of female farmers who often provided the bulk of the farm labor and soil management. The extension and educational services, based on the philosophy of the male “genuine farmer,” meant that only men and boys were considered for extension services and forms of support for the local farmer. This ideology of the male farmer, rooted in European experience, ran contrary to the indigenous farming systems in most parts of Nigeria. So, women were neglected from 1922 when the Agricultural Department provided subsequent educational services and extension programs to assist the native farmer (NAE OWDIST 4/13/70, File no. 91/27). When the Director of Agriculture, O. T. Faulkner proposed to start two courses (a higher and a lower) of agricultural education at Ibadan in Western Nigeria, the goal of introducing new modes of production, limited mechanization, soil management techniques, and general agricultural processing improvements, focused on male farmers. In 1929 in the Eastern Region, boys from the Awka and Nsukka divisions were selected for training in palm oil extraction and nut-cracking machine operation (Korieh, 2010). The department of agriculture began offering instruction to “farmers’ sons,” in practical and demonstration work in addition to instructions in crop science, elementary mathematics, and bookkeeping in 1934 (Government of Nigeria 1935, 26). The policy was pursued throughout the country. From the Western Region in 1936, farmers were selected for training in maintaining soil fertility in the Ogbomosho area of Oyo Province (Government of Nigeria 1937). Similar policies of training farmer’s sons as mixed farmers were implemented by the Katsina Native Authority in northern Nigeria. In 1938, twenty-eight boys who attended the first course were established as mixed farmers either “on their own or on their father’s farms.” This was followed by another batch of forty-eight boys later in the same year for the second course. In the Bida Native Administration, school farms were established in the Niger Province as a scheme for “establishing boys” from these schools on suitable farms in Nigeria (Government of Nigeria 1938).

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The transition to cash crop agriculture throughout Nigeria was varied and depended on the various ecological niches. In northern Nigeria, the predominantly subsistence farmer transitioned to cash crop production as improved communications, the expanding urban market, and the burden of taxation increased. Unlike the Eastern Region, the northern Nigerian agricultural economy was varied even as the cash economy expanded. With the spread of a cash crop economy in other areas, farmers in the Middle Belt concentrated on producing foodstuffs for the internal market. In the Sudan savanna zone, farmers concentrated on the production of cotton and groundnut for export. There are two major crop belts in northern Nigeria: “a northern one on the light-textured drift soils; and, to the south, a cotton Zaria-type soils.” Outside this major region the only export of any significance was the cotton production of Kabba, the bean production of Benue Province, and the small-scale in Zaria Province (Buchanan 1953). Another important crop from the northern region was groundnut from the Sudan provinces of Bauchi, Borno, and Sokoto.

Cocoa was the main thrust of economic development in western Nigeria. The cocoa industry development can be traced to the late nineteenth century, when the earliest cocoa farms were established by Lagos merchants and traders (Familugba 2016, 44). Sara Berry noted that Lagos merchants and traders established the earliest cocoa farms in the region who took up farming when their trading and commercial activities were no more yielding the desired dividends. Most of these cocoa farms were established near Agege and Otta in the present Ogun State. However, a few Ijeshas and Ondos planted farms near their trading communities in Southern Ondo. They combined farming with their trading activities, and some of these farms were established at various points along the routes from Lagos to the interior, such as Aiyesan, Atijere, and Ajebandele.

In the 1950s, Nigeria’s share of the world cocoa trade increased from roughly fourteen percent to eighteen percent. In the mid-1960s, cocoa export volume grew from approximately 100,000 tons to 229,000 tons yearly over the 1963–1967 period. Cocoa export grew at a compound average growth rate of about seven percent per year in the ten years between 1956 to 1967. By the early 1960s, cocoa production had risen by



about 80 percent above the previous 1950–1951 high following the acreage increase in cocoa cultivation of about fifteen percent. The increase was attributed to the widespread use of insecticides, fungicides, improved seedlings, and other improvements that had been seriously promoted through subsidies, credit schemes, and extension services by the western regional marketing board (Oluwaseyi 2017).

In the Eastern Region, this period's central economic transformation was an expansion in the oil palm industry and trade. Starting about 1912, the government urged local farmers to expand palm oil, and later kernels production, arguing that oil palm would give better returns if systematically cultivated (*Annual Report of the Agricultural Department* 1912). The protection of wild groves increased tremendously. For most of the early colonial period, however, palm oil was mainly produced from natural groves and by an expansion in labor by rural farmers who used their skill and knowledge to improve and expand production from native grooves (Dyke, cited in Korieh 2010). The quantity of palm oil and kernels produced increased considerably in the first quarter of the twentieth century. The value of palm oil and kernel exported in 1912 was about £4.5 million (*Annual Report on the Agricultural Department* 1912, 4). By 1928, the export figures for palm oil and palm kernels were 246,638 tons and 127,111 tons. Revenue from palm kernels exported in 1921 amounted to £3,189,000, and by 1930 it reached £4,429,000. In 1932, there were about 200 native-owned new oil palm plots and fifty-four extensions of old plots in the southern provinces. Farmers took advantage of demand in Europe to expand production and accumulate cash.

## World War II and Agricultural Policy

Colonial agricultural policy changed significantly as a result of the outbreak of the Second World War. From 1938, in anticipation of war, the government recognized the need for increased food production while expanding the production of traditional export crops and developing new ones that may be required due to the war. To address the food crisis, the report on the agricultural department for 1938 remarked, "the production of export crops, important as this is to the wealth of the country and the revenue of the government, must not be subordinated to the production of foodstuff for local consumption, for those who are underfed cannot do the maximum amount of work" (*Annual Report of the Agricultural Department* 1939–40, 1). The changes introduced were a recognition that the biggest problem facing the colonial administration at the outbreak of the war was the rising cost of living and food shortages. Beginning in September 1939, the department of agriculture concentrated on achieving increased food production. The government implemented new policies to improve the food and export products to support the British war effort and make Nigeria self-sufficient in food. The policies of the agricultural department in this period included: (1) to be ready to help the Imperial Government by producing such crops as it may ask; (2) to ensure that Nigeria was, as far as possible, self-sufficient in foodstuffs, including those that are normally imported from elsewhere; and (3) to do what we can to make the West African colonies as a whole self-supporting (*Annual Report of the Agricultural Department* 1938).

London expressed the urgency of increasing food and export production. This was a significant shift from the previous years' laissez-faire policy when the state intervention in the rural agricultural production was minimal. The government urged the colonies to exert every possible effort to obtain the maximum production of export crops. Significant growth was achieved in the export sector. The value of the major export of cocoa, palm oil, palm kernels, and groundnuts doubled between 1940 and the end of the war in 1945. For example, in the palm oil industry, the colonial government initiated several policies designed to increase the supply of palm oil and kernels, both of which were essential for the war. A palm produce drive team consisting of six colonial officials was formed in 1943 and tasked with stimulating production (NAE File No. 1642-ABADIST-1/26/907). The stress on Nigerian oil was due to the loss of the British Far-Eastern colonies. Throughout the oil palm belt, the government called on farmers to harvest and process their palm



fruits. Palm-nut cracking machines were installed at various locations in Nigeria. The export duty on rubber was abolished to encourage increased production of wild rubber (ibid.). The growth in the export sector continued in the post-war period. The government also hoped that there would be continuity in food production and the development of new export crops.

Under certain conditions, local farmers responded positively and bolstered production. In 1941, for example, the Department of Agriculture acknowledged that the demand for all the principal crops and products of Nigeria increased on an unprecedented scale and that peasants had responded positively with increased output. In British West Africa, the increased production of iron in Sierra Leone and tin in Nigeria, and the development of processing facilities, contributed to a doubling of the region's export trade from \$176 million to \$344 million between 1938 and 1946 (Coquery-Vidrovitch 1993, 292).

## Environment, Agriculture, and Sustainable Development in the Colonial Period

To what extent was colonial agriculture in Nigeria sustainable and capable of economic development? This question can be addressed by drawing on the literature on sustainability. Gordon Douglas's three main conceptual frameworks that comprise sustainability are food sufficiency, sustainability as stewardship, and sustainability as community (Douglas 1984). According to this explanation, agriculture is sustainable when farmers produce enough food "to meet reasonable projections of global market demands." Essentially, a sustainable agricultural system exists when the economic and environmental costs of production remain constant or fall as production expands to meet future demands for foodstuffs without increasing social costs of production (Korih 2003). Sustainability as a process, as explained from an ecologically informed approach, is a system that can be maintained without interruption, weakening, or loss of valued quantities (Daily and Ehrlich 1992, 763). This approach to sustainability advocates for a condition that is necessary and sufficient for a population to be at or maintain its carrying capacity. Sustainability has also been likened to the ability of a system to maintain productivity, whether of a field or a farm or a nation, in the face of stress or shock including increasing salinity, erosion, or debt (Conway and Barbier 1990, 37).

From the ecological perspective, sustainability as stewardship entails preserving resources while sustaining the yield capacity of agriculture. According to Altieri (1987, 41), "sustainability is the ability of an agro-ecosystem to maintain production through time, in the face of long-term ecological constraints and socio-economic pressures." Within various conditions, sustainable agricultural practices are concerned with maintaining equilibrium between resource use and resource renewal rather than economic security. In this context, sustainability is concerned with maintaining soil quality and preventing soil degradation through excessive extraction of nutrients and soil erosion. Ecologists share a view that, in the absence of sustained yield management, agricultural systems may suffer an irreversible decline in production. For this reason, population growth and growth in economic demand are often seen as the principal threat to agricultural sustainability (Korih 2003).

Development programs during the colonial period had important environmental impacts. The extensive exploitation of natural resources and the expansion of cash crop production took place in an increasingly fragile environment overburdened by high population density and a dramatic rate of deforestation (see, for example, Osemobo 1988). Although deforestation had a deep history, most of Nigeria lost its forest cover in the first half of the twentieth century due to the expansion of cash cropping, agricultural intensification, and increased pressure on land and labor demanded by the economy and high tax burden. Additionally, the extensive use of land for agricultural production affected soil fertility, as farmers devoted most of their labor and land resources to export production (Korih 2010). The relentless pursuit of cash crop expansion also led to permanent farming practice, reduced fallow periods, and the neglect of traditional soil

management practices. Thus, colonial agricultural policies, the pursuit of an exported-oriented agriculture, and environmental conditions progressively led to a fall in crop yields, increased soil erosion, and environmental degradation, and food insecurity during the colonial period (Njoku 2014; Opat 2014).

## Agriculture in the Post-Colonial Period

The postcolonial era in Nigeria was a period of optimism. In the economic sector, agriculture remained the centerpiece of economic development. The indigenous agricultural policy in Nigeria began in 1954, even though the country was still under British rule. The Constitution of 1954 ceded agricultural policy and other aspects of economic planning to the regional governments. From this period, the regional governments began to play a significant role in economic planning focusing on industrialization, but agriculture remained the sector that supported foreign exchange earnings (Siddle and Swindell 1990). Thus, the agricultural sector faced greater state intervention, generating contradictions and an agricultural crisis that matured in the 1980s. Agricultural planning by the indigenous elite led to the reversal of aspects of colonial agricultural policy, especially in plantation agriculture and the strategic importance of food production. These ideas played a central role in Nigeria's agricultural and development programs in the postcolonial period. In several Nigerian regions, farmers responded to the new initiative by establishing small-scale oil palm, cocoa, and rubber plantations.

The emergence of internally self-governing regions led to the emergence of Ministries of Agriculture (MOA). For example, in the Eastern Region, the Ministry of Agriculture resulted from the consolidation of the Department of Agriculture, Fisheries, Forestry, and Veterinary Services, and Produce Inspection into a single ministry. The MOA's establishment increased the role of government in the future development and the utilization of resources. Like its colonial predecessor, the regional government continued to invest in the export sub-sector to generate income and earn foreign exchange for economic and industrial development (Ajagbu 1976). In the Eastern Region, the reform-minded Premier M. I. Okpara launched one of Nigeria's most ambitious agricultural programs. Sometimes referred to as the "Okpara Revolution," the premier's vision was an agricultural transformation that consisted of large-scale state-run plantations in addition to the production by local farmers (see Eastern Nigeria, *The Development of Agriculture in Eastern Nigeria* 1965). In Western Nigeria, the Regional Government provided financial assistance to indigenous entrepreneurs, mainly farmers and low-level industrialists, through the Nigeria Local Development Board. Following regional autonomy, the Nigeria Local Development Board became known as the Western Region Development Board in 1949. As was the case in Eastern Nigeria, the Board pursued quick economic development through the development of agriculture. The Eastern Region Produce Development Board (later the Eastern Nigeria Development Corporation, ENDC), a division of the Ministry of Agriculture, pursued the same goal in the Eastern Region (Eastern Nigeria, *Development Programme, 1958–1962*, 1959). The Corporation spearheaded the agricultural revolution of the Eastern Region government, focusing on the development of plantations, oil palm rehabilitation program, intensification of rubber and cocoa planting, and turning rural farmers into "modern farmers," among other things (*The E.N.D.C in the First Decade, 1955–1964* n.d.).

A major innovation in this period was establishing farm settlements, a program that dated back to the post-Second World War period. Funds from the Colonial Development and Welfare Fund helped establish cotton and groundnut projects in Talabakwa, Mokwa, and Baiduara in Northern Nigeria. The schemes involved settling farmers in villages with government financial and technical support. But by 1954, the early settlements had ceased operation. The settlers found some modern agricultural techniques, which required some level of education, cumbersome and frustrating. The program also deprived local farmers of autonomy and control of their land (Floyd and Adinde 1967, 189–230; Udo 1965).

However, between 1958 and 1964, significant effort was made to improve food production through direct and indirect support. The cultivation of rice, for example, expanded from the late 1950s through the mid-1960s. The regional government also aggressively pursued cassava improvement. The MOA developed a new strain of cassava (manioc) which doubled previous yields. Yet, the food program's success was affected by the lack of good conditions for rice production and the farmer preference for the cultivation of other lucrative cash crops. The government also continued to provide extension services to local farmers. In 1956, the Eastern Region's agricultural department started a scheme of "non-residential" practical farm schools in two villages. The farmers, including some women, received training in the use of fertilizers, cultivating citrus, soil conservation, and other subjects. The scheme, according to the report of the agricultural department, "fitted into the normal social and economic life of the village to entail the minimum of disturbance and intellectual effort." In 1957, the Eastern Region, for example, reorganized the five existing provincial farms into what were known as "circle farms" to provide extension services to rural farmers. The "circles" were headed by the Chief Inspector of Agriculture, who had several subject-matter specialists to advise him. This bureaucratic arrangement extended to the local government level, where agricultural assistants carried out the actual extension work with the assistance of agricultural field specialists who worked directly with farmers. In 1966, about 1,200 people were employed by the Ministry of Agriculture to provide services to local farmers (Eastern Region: *Annual Statistical Digest* 1965, 79).

By the 1960s, Nigerian agriculture was facing significant challenges. Although the agricultural system remained relatively stable in parts of Nigeria, the Eastern Region faced major challenges, including continuous cropping, food security needs, and sustainable agricultural practices. The Nigerian population rose sharply in the twentieth century, but that rise disproportionately affected the Eastern Region because of the high population density. This had a direct effect on agricultural intensification and land use. Most parts of the country witnessed land-use changes, especially the large-scale expropriation of land for plantation agriculture in the Eastern and Western Regions. In particular, the Eastern Region experienced the expansion of plantation schemes into marginal areas of high population concentration and extensive land use (Korteh 2003). The alienation of land and the development of mono-cropping practices increased the environmental risks and soil erosion and exacerbated food insecurity. Rattan Lal (1987) has also noted that deforestation and conversion to arable land use have drastic impacts on soil properties, water, energy balance, and soil erosion. However, many rural farmers, especially in the land-hungry parts of Eastern Nigeria, cannot afford the luxury of the best management practices because of land scarcity. These environmental conditions have had devastating effects on most parts of the Eastern Region.

## War, Petroleum, and Agriculture

The civil war coincided with the period of the First National Development Plan, 1962–1968 (later extended to 1970), which was the platform for the articulation of Nigeria's development. Very high priority was given to agriculture at the national and regional levels of government. However, the Nigeria–Biafra War affected both the national and regional economies. The war disrupted cash crop production, especially palm produce export, which had historically been the main source of income for farmers in the region. In general, trade and commerce also diminished due to the general insecurity and the mobilization of large numbers of men into the army.

The Biafra government made efforts to address the agricultural crisis. The government stressed food crop production to address food shortages in Biafra. Throughout the war, the Biafran government tenaciously pursued a policy that sought to provide the population and the army with food. The Biafra government pursued an agricultural program that it inherited from the pre-war government. The Biafra Development Corporation (BDC) continued with the Eastern Nigeria Development Corporation's functions, including the co-ordination of the plantation scheme and cash crop production. However, the main task of the BDC was to

solve the problems that emerged because of the civil war. It coordinated the food production program and the overall agricultural industry by converting several acres of acquired virgin forest land into cultivatable lands to produce food crops and raise cash revenue. The emphasis on food production in Biafra represented a major departure from the previous emphasis on export production. Beginning in 1967, the Corporation began to use some of the lands in the region acquired for plantations for maize, rice, onion, tomato, and groundnut production. To meet the region's protein needs, which had formerly depended on the North, the Corporation embarked on pig and poultry production. The Food Production Directorate was charged with producing maize, rice, onions, tomatoes, and groundnuts in addition to pigs and poultry. The BDC members and the Food Directorate carried out information campaigns as part of the sustained effort to increase the food supply in Biafra. The Directorate hoped to "coordinate the activities of government ministries, public boards, and corporations with interest in land development for food production purpose" (NAE ESIALA 63/1/70-SEC/217).

The agricultural program in Biafra benefited from the plantation schemes of the former Eastern Region. The BDC inherited about 154,000 acres in the twenty-seven tree crop plantation schemes established by the ENDC. While food production was the focal point of state agricultural enterprise, the existing cash crop projects provided the impetus for maintaining these plantations and farm settlements. About 82,000 acres were already under oil palm, rubber, cocoa, cashew, and coconut plants (ibid.). The government sought to consolidate what was already planted for three important but related reasons. First, it was recognized that the capital required for the development of the remaining parts of the estates was not readily available. Second, the Biafran government could not afford the new investment in plantations because the priority was to feed the army and the population. Third, food crops provided quick cash revenue. However, the export of palm produce, the main cash crop of the Eastern Region, declined substantially from 143,000 tons in 1966 to 16,000 in 1967, and by 1968, it had declined to 3,000 tons due to the civil war (Iyegha 1988). Thus, the Eastern Region faced a crisis because of its inability to carry out normal farming activities.

From 1970, the Nigerian economy was significantly transformed by the expansion of the petroleum industry. The growth in oil revenue after 1973 provided the funds for the reconstruction of a war-devastated economy. The emergence of oil permitted a measure of autonomy from foreign aid and the emergence of a powerful centralized bureaucracy (Watts and Lubeck 1983). The rapid expansion of the oil industry in the 1970s increased the country's revenue base outside the agricultural sector. The export boom led to an increase of nearly ten percent GDP annual growth during the 1970s and early 1980s. Revenue went from a low \$411 million in 1970 to \$26.62 billion in 1980 (*International Financial Statistics* 1980, 288).

p. 552 The dramatic rise in global oil prices coincided with the Second National Development Plan, 1970–1974. Agriculture, mining, and manufacturing were projected to contribute 44.2 percent, 13.4 percent, and 12.4 percent respectively. However, the actual contribution to GDP was only 24.7 percent for agriculture, 45.1 percent for mining, and 4.8 percent for manufacturing. The importance of crude oil to the economy from this period is reflected in the significant increases in export quantity and its contribution to national revenue. Indicative of this was allocating a major part of the revenue to the federal government while the allocation to the states grew from 323.8 million naira in 1974 to 2,534 million in 1979–1980 (Watts and Lubeck 1983). The Nigerian economy's growth was rapid, with an annual GNP growth of 7.4 percent between 1970 and 1979. This period, however, was qualitatively different from the pre-1970s. The growth in the oil sector was accompanied by a significant sectoral transformation exemplified by a stagnant agrarian economy (ibid.; Gesiye 1986). The general outlook decreased agricultural productivity and an increased reliance on imported foodstuffs (Federal Office of Statistics 1980; Forrest 1981).

The post-oil boom political economy of Nigeria also reflects the sluggish performance of agriculture, especially export production. Investment in agriculture fell from seven percent of the budget in 1971 to four percent in 1981. Given the agricultural sector crisis, the federal government intervened at different historical times through programs that had national and regional consequences for agriculture. With about

fifty-seven percent of the allocation to agriculture unspent, the Gowon administration (1966–1975) interpreted this as indicative of a fundamental defect in the design and implementation of agricultural programs. A substantial part of the remaining money was allocated to government projects such as farm settlements, irrigation schemes, and plantation projects for cash crop production. However, there was no direct support for peasant farmers, who contributed over ninety-five percent of both the export and domestic productions. The government's support for farmers in credits went to a few commercial farmers and bureaucrats disguised as farmers. Under these conditions, many peasants abandoned their farms to seek other forms of employment.

Given the declining contribution of agriculture to the national economy at the end of the Second National Development Plan period, the Gowon regime recognized that oil dependence was a vulnerable economic strategy. For this reason, agriculture received high priority during the Third National Development Plan period, 1975–1980. The plan also recognized the need to check rural–urban migration through a balanced development agenda for both the rural and the urban sectors, but the continued expansion of the oil sector and the opportunities it provided for employment and trade undermined the agricultural sector.

Another major intervention to deal with the country's agricultural crisis came in 1976 when the Obasanjo government launched the Operation Feed the Nation (OFN) program. The OFN program's objectives included the mobilization of the nation toward self-sufficiency and self-reliance in food production. But these objectives were not achieved. The program collapsed for various administrative and logistic reasons.

↳ Political expediency inhibited its successful implementation. As a program designed to make fertilizers, in particular, available to farmers through the various ministries of agriculture, the scheme faced many logistic problems. Fertilizer often arrived so late in some areas that it could not be applied to crops. Storage facilities provided under the program were grossly inadequate. Unfortunately, the OFN did not target rural farmers who had been the backbone of Nigeria's agriculture. The political elite usurped the gains that would have been made. The government also restructured the customary land tenure systems by implementing the Land Use Decree in 1978. The decree sought to eliminate the problems associated with traditional land tenure systems and to eliminate any tenure arrangements that inhibited large-scale agricultural development. At the state level, it vested authority over land in the governor of each state. However, the decree created opportunities for the military elite and bureaucrat elite to take land from peasants. Although most rural areas remained relatively unaffected by the decree, communities located on the periphery of the urban centers lost their land to urban development.

During the Fourth National Development Plan, 1981–1985, the government began to accord very high priority to agriculture. The goal was to expand local food production and basic raw materials for industries. Under President Shehu Shagari's "Green Revolution" program, launched in May 1980, the federal government embarked on developing irrigated farms in the northern parts of the country to develop a system of multiple cropping in the northern arid zones of minimal annual rainfall. The Green Revolution program called for an accelerated increase in agricultural production by removing the provision of agricultural input and extension services to farmers. To achieve these objectives, the government established the River Basin Development Authorities and Integrated Agricultural Development Projects. The projects were attempts to increase rice, sugarcane, millet, sorghum, maize, wheat, cassava, and yams. While the government allocated a substantial amount of 8.828 billion naira to agriculture in this plan period, the legacy of incompetent management, corruption, nepotism, and lack of adequate feasibility studies hampered the chances of success.

Like the OFN, the Green Revolution program ignored the peasant producer. The Green Revolution program achieved very little due to weak and corrupt leadership. Irrigation projects did not revolutionize agriculture in the country. Rather, they created the problems of peasant relocation and land alienation on a massive scale. About 31,000 people were relocated because of the construction of the Bakolori and Sokoto River Dams. These projects did not increase food production. Government incentives also benefited only

commercial farmers, who often diverted agricultural credits to other uses (Palmer and Parsons 1977, 412–413). The location of some of the agricultural projects was politically motivated. For example, the establishment of irrigation projects in parts of northern Nigeria was motivated by the need to distribute some of the benefits of the oil boom of the 1970s. The government's "quick fix" attitude toward agriculture did not reflect its overall development ideology of rural development. The policies of the government reveal the inherent contradiction in the state–peasant relationship (Berry 1993). Failure to provide farmers with adequate incentives and support to permit widespread adaptation of improved techniques led to government agricultural projects' failure.

The creation of new states in 1976 was accompanied by more reforms at the state level. Like its predecessors, the new states continued to attach a lot of importance to agriculture. At the top of the policy-making apparatus at the state level was the Ministry of Agriculture and Natural Resources. One of the most important agricultural development projects in Nigeria was the Agricultural Development Programmes (ADP). The ADPs, which started in 1974, were federal programs implemented at the state level. These corporations were charged with producing and processing agricultural products (Imo State 1984, 13). For example, in Imo State, the ADP produced maize, and horticultural crops, including budded citrus and pineapple, all of which had become highly commercialized (Government White Paper, 1980, 17). The ADP also engaged in export crop production. However, G. Williams has noted that the benefits "accrued to the rich rather than the poor," and that "some projects have excluded the poor from access to productive resources and redistributed the assets and incomes to the rich." (Williams 1981, 25).

## Contemporary Environmental Crisis and Struggle for Resources

Sadly, Nigeria's agricultural crisis has been exacerbated by the ineptitude of Nigeria's leadership. Perhaps more critical is the environmental crisis in Nigeria's Sahel region, which has further pushed pastoralists further south. Thus, Nigeria is currently embroiled in a crisis between farmers and herders partly rooted in environmental degradation in the Sahel region (see Chapter 31). According to the International Crisis Group, more than 1,300 Nigerians died in violence involving herders and farmers in the first half of 2018. About 1 million people have been displaced, mostly in the Middle Belt, Northeast, and Southeastern regions. The conflicts between farmers and herders have arguably become the greatest threat to Nigeria's peace, security, and social cohesion. Focusing on herders' operations' evolving nature and structure, the militarization of herder's operations has been described as the "new face of terrorism in Nigeria" (Johnson and Taofik 2017). This linear explanation of events that traces herders' evolution and establishes links to terrorism often ignores the important challenges faced by pastoralists in Nigeria (Chukwuma 2020). The root of the crisis is linked to the struggle over natural resources especially access to grazing land. The agrarian–pastoralist conflict in Nigeria today "is grounded in environmental and political transformations long in the making" (International Crisis Group 2018). It has been noted that herders face an existential threat to their livelihood and, therefore, resort to self-help that may involve violence to ensure their survival.

In a study of conflicts/crises in Nigeria between 1991 and 2005, Fasona and Omojola (2005) found that farmer–herder conflicts accounted for thirty-five percent of the major clashes reported by selected Nigerian newspapers. Since then, these conflicts have escalated in numbers and in intensity. More recent studies have confirmed the frequency of these violent conflicts (Shola 2016; Odeigah and Mawere 2018). Attention has also been drawn to the impact of environmental and climate change on traditional pastoral life's suitability. As Okoli (2016) also observed, "herders face an existential threat and, therefore, resort to self-help, even if it means adopting violent means." Ifatimehin and Tenuche (2009) suggested that these conflicts are responsible for the unsustainable use of land and water resources as the trampling of herds of



cattle compact the soil and destroy farm crops. In a study on farmer–herder clashes in Burkina Faso, Breusers et al. (1998) suggest that it had been a long-time phenomenon for herders to search for pasture southwards during the dry season. In the course of the search, they often get entangled with farmers when the herds trample their crops. Scholars have also drawn attention to the difference in the political economy of pastoralists and agrarians. According to the International Crisis Group (2014), pastoralists migrated and sometimes reached agricultural areas in southern Nigeria before harvest time, and this has created tensions that easily have degenerated into open clashes. And Tonah associates the downward movement of herds with the Sahelian drought, which has accounted for the numerous conflictual cases. This view was also advanced in an earlier study by R. Blench (1994) on the Fulani herdsman in Nigeria. Ofuoku and Isife (2009) believe that the introduction of irrigated farming in the savannah belt of Nigeria, and the increased withering of pasture during the dry season, made less pasture available to cattle herders. The crisis has disrupted life and economic activities for these displaced populations. Yet, the conflict's roots lie in climate-induced degradation and changes that have significantly reduced the pasture available to herders. These changes have dynamically altered herding patterns in the past few decades, provoking various reactions, including forcing herders to seek alternative pastures in the south. Additionally, the overflow of the crises in the Maghreb and a desire to be closer to the market have driven herders down south. Thus, climatic changes have influenced the agricultural terrain, setting the rural poor (herders and farmers) against each other.

Overall, Nigerian agriculture has undergone significant change from a period of growth and expansion at the beginning of the twentieth century to decline and crisis toward the end of the century. This change has been influenced by several factors, including the nature of state intervention and policy and farmers' responses to market incentives or forces. Also, agricultural change has been affected by structural changes in the economy, particularly the emergence of petroleum as the main source of government revenue. This, in addition to environmental factors, has affected the nature of agriculture in Nigeria.



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