

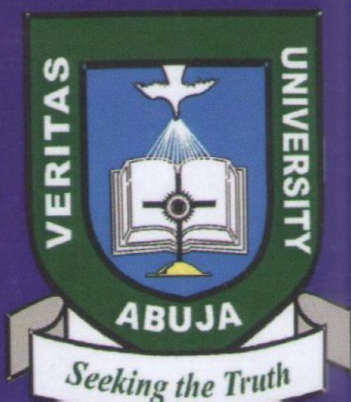
ISSN: 2408-6177

VUNA

Journal of History and International
Relations

Volume 9, Number 2, 2025

A Peer Review Journal



A Biannual Publication of the
Department of History and International
Relations, Veritas University
(The Catholic University of Nigeria),
Abuja - Nigeria

Struggle and Resort to Charcoal Energy for Livelihood Sustenance in the Cosmopolitan Ilorin Emirate: A Study on Bio-Inspired-Intelligence

Suleiman Abdulrahman Adebayo

Department of History and International Studies,
University of Ilorin, Ilorin, Nigeria

Sadiq Sidikat Ahmed

Department of Business Education
College of Education (Technical) Lafiagi, Kwara State, Nigeria

Abdulgaki Abdulwaheed Shola

&

Ajayi Olalekan Raymond

Department of History and International Studies,
University of Ilorin, Ilorin, Nigeria.

Abstract

The use of charcoal (wooden coal) and firewood intensified worldwide since the Stone Age and Neolithic period. Its usage in ancient times symbolised one of the features of the world's social order. The abundance of wooden materials interfaces with the culture and traditions of the respective regions of the world. Varied intellects, knowledge, politics, and challenges of individual regional people necessitated the applications of wooden coal/firewood to their respective Indigenous industrial, manufacturing, and household productions and consumptions vis-à-vis subsequent transitions. Since the second half of the Eighteenth Century, Western world nations have advanced fossil fuel use during the Industrial Revolution to drastically reduce the need for charcoal/firewood. Such advancement led to the spread of fossil fuel to Africa, but relatively reduced the use of charcoal/firewood in all facets of her production. However, since the beginning of the Twenty-first Century, the sub-regional Africans have been immensely relegated to the great usage of charcoal/firewood. This paper appraised the

compelling factors for gross charcoal usage and traditional usage of charcoal among Africans, using the cosmopolitan Ilorin Emirate as a case study. The work examines the fossil fuel cost concerning the Ilorin People's standard of living to measure why the people converted to charcoal mainly as a source of energy. The method used comprised oral interviews, participant observation, sampling, comparative and text content analysis. The work concluded that while the Ilorin Emirate had relatively sustained the traditional usages of charcoal, varied intellects, knowledge, policies, and costly fossil fuel products have compelled its people to fully embrace the usages of charcoal for production.

Introduction

The use of charcoal across the world interfaces with the origin and sustenance of Man. The ancient nations of the world such as Egypt, Greece, Rome and Ghana (in Western Sudan), Kebbi (in Central Sudan), Nupe (in the Basin of the Niger Area), Oyo (in the Savanah Coast), and Ilorin Emirate (a defunct of Nupe and Oyo Empire) used wood, firewood and charcoal for their several Indigenous industrial services, which included metalworking, art, medicinal purposes, cooking, water purification, grilling, filtration, chemical manufacturing, health-care medicine, livestock medication and domestic home purposes such as social and spiritual services among others. Wooden materials interface with the culture and traditions of the nation-states mentioned above based on the general and specific mode of application.

Wooden materials' mode of application depends on the natural endowment of the nation-states and their people's intellect. Knowledge and Politics can never be overemphasised in the specific mode of application of wooden materials of the nation-states, for governance controls the masses. A need for paradigm advancement from biomass resources (which include wood waste materials) to biofuel was strengthened by Prangon (2025) in his research findings.¹ The sub-regional people of Africa were greatly involved in the cultural/economic production and usage of wood, coal/firewood to consolidate their socio-political life. Their involvement was not without some challenges and environmental degradation. Wooden coal/firewood had been a formidable source of energy for the sub-regional people of

Africa. With the invention of fossil fuels by the people of the Western world, Africans adopted fossil fuels for domestic use and industrial production. The sub-regional Africans were inspired by the dimensional usage of fossil fuels after their adoption. Yet, some of them relied on charcoal energy because their net domestic income is less than the Marginal Propensity to Consume (MPC) and Marginal Propensity to Save (MPS). While Africa is battling with such, China has designed strategic technological applications to achieve carbon neutrality by decreasing her 96.4 Exajoule (EJ) coal, approximately consumed in the year 2020 to 9.2 EJ of coal in the year 2060, and will promote healthy Global human environment, which will invariably contribute to the Global Carbon De-carbonization in the phaseout of carbon usage.² From 2017 to 2024, the purchasing power of Nigerians has drastically fallen, and charcoal energy supplies have become imperative since the fossil fuel prices intensified. It is essential to mention that the Ilorin Emirate people have devised several techniques on charcoal production and usage to mitigate the mighty adverse effects of the scarcity of fossil fuel. The synopsis above is specifically captured in the assessment of the use of charcoal energy in the livelihood and sustenance of the Ilorin Emirate people.

A Historical Overview of Charcoal Production and Usages by the Ilorin Emirate People Before the Introduction of Fossil Fuel

In the pre-colonial, colonial and early post-colonial periods, trees were available in relative quantity in the backyards of every Ilorin Emirate household. Households in this region have historically relied on local natural resources, including trees for wooden and firewood materials to sustain their livelihoods. Traditional industries such as blacksmithing and pottery, as integral to the local economy, have relied on charcoal as biofuel in their manufacturing. The pre-colonial Oke-Suna, Awodi, Baruba and Adangba blacksmith industries³ were typical examples. It is important to mention that the pre-colonial Adangba, Awodi and Baruba blacksmith industries, the Dada pottery industry, exist in the Ilorin Emirate, with the instituted new ones to date.

Charcoal productions in the three epochs mentioned above were based on two methods, namely, bye-product/residual of domestic productions, which included but were not limited to foods, soap, shea butter, and *tada'* (traditional ink used by the Muslims in writing, teaching and

documentations), palm oil, palm kernel oil, and dying productions; and pyrolysis. The establishment of modern infrastructure, including schools, motor parks, hospitals, and recreational centres, and the need for more residential buildings as a result of population growth, necessitated trees fallings in the close areas of Ilorin Emirate people's residences. In the Ilorin Emirate, no deforestation occurred to establish manufacturing industries, either by the Ilorin Emirate people or the colonisers in the three epochs mentioned above.

The blacksmith's forging processes involved charcoal preparation, furnace setup, charcoal loading, ignition, heating, quenching, and tempering. The pot production processes included charcoal sourcing, charcoal crushing, kiln preparation, pot loading, and firing. It is important to mention that the traditional methods of production in the blacksmith and pottery industries among the indigenous people of the Ilorin Emirate have relatively improved but have yet to advance beyond the pre-Industrial Revolution heritage.

Introduction of Fossil Fuel Alongside Usages of Charcoal in Ilorin Emirate (Colonial Period)

Europeans began commercial exploitation of petroleum in the nineteenth century. This discovery was among the factors that propelled the efficiency of the Industrial Revolution and colonisation. In the colonial period, the British imported refined fossil fuel derivatives, such as kerosene, petrol, and diesel, to execute some administrative endeavours. The British administration introduced kerosene, petrol, and diesel to Nigerians, who later were involved in sales and domestic usage. The Shell-British Petroleum Company (BP) initiated the sale of petroleum products. BP filling stations were located in the strategic provincial districts of the colony. Indigenous men were involved as dealers of the petrol stations by the British. A BP filling station was located in Surulere, opposite Queen Elizabeth School, to serve some districts of the Ilorin Emirate. The significance of the BP filling station in the Emirate during the colonial period was twofold, namely, transportation and domestic usage.

Transportation

Indigenous individuals engaged in transportation commercials within and services across the Emirate borders. View individuals have private automobile engines. Prices of petrol, diesel, and kerosene were affordable

since the marginal propensity to save was considered appropriate. In the 1890s, the first British currency was introduced to Nigeria. The currency comprised a special West African silver in the denomination of two shilling florins (2s), one shilling (1s), and sixpence (6d).⁴ The indigenous Nigerian nickel bronze was circulating to ease the exchange denomination process of the British currency's higher denominations. Thus, three pence (3d), one penny (1d), half-penny (1/2d), and one-tenth of a penny (1/10d) (McPhee 1970) were in circulation. One-tenth of a penny (*Onini*) was widely used among the rural low earners for small commercial transactions (Anyanwu 2008).

The interview with Suleiman (2014) revealed that his father, Lawal, posited that transporters purchased [Consumption Expenditure (CE)] petrol worth 3d to convey passengers from Ilorin to Akure in present-day Ondo State. In the 1900s, the transporters' Disposable Income (DI) was 6d, and in 1959, the transporters purchased (CE) petrol worth 4d, and 7d was the DI.⁵ Between 1912 and 1959, the West African Currency Board (WACB) issued banknotes and coins in Nigeria. The highest banknote denomination was £1, while the highest coin denomination was one shilling. The new currency became more prominent in facilitating trade and services. The DI of the transporters in 1959 was 7d, while the CE was 4d.

Table 1: A Sample of Consumption and Saving Schedules and MPC and MPS of Stakeholders of Ilorin Emirate 1900-1959

Year	Disposable Income (DI)	Consumption Expenditure (CE) (Petrol)	Marginal Propensity to Consume (MPC)	Net Savings (NS)	Marginal Propensity to Save (MPS)
1900	6	3	1/1 = 1	3	3/1 = 3
1959	7	4	1/1 = 1	3	3/1 = 3

The information above illustrates an estimated case study of the net savings of the 1900s and 1959 among people⁶ of the Ilorin Emirate.

That is, in 1900 (DI) (6d) – (CE) (3d) = Net Savings (NS) (+3d). In 1959, the CE was 4d, while DI was 7d; thus, 7d – 4d = 3d, which is the NS. The Marginal Propensity to Save (MPS) for each year is 1d. Between 1900 and 1959, if the transporters incurred extra costs on kerosene, the MPC would be less than 1.

Until 1959, the indigenous Emirate people were mainly involved in charcoal usage for their production. The reasons were that the European currency had not yet penetrated the economic fabric as a generally accepted medium of exchange, and those who greatly had access to it were the colonial masters' workers; the people relied on the subsistence farming method, thus there was less need for fossil fuel; the rural dwellers were not yet socially oriented in respect of the efficiency of the fossil fuel. It should be noted that the Blacksmiths, Goldsmiths, and porters relied mainly on charcoal as a fuel source for their industrial productions.

Transportation is vital to the economic, political, and social life of the people of the Emirate. It facilitates trade and commerce through the movement of goods and services. Foodstuffs are imported from the farmland areas of the Ilorin South and Ilorin East Local Government Areas (LGAs) of the Emirate. Ilorin South and Ilorin East L.G.As share territories with the Emirate's Ilorin West Local Government Area (L.G.A.). It should be mentioned that the Ilorin West L.G.A. covers the largest square area of land in the metropolis, thus, most of its areas have been converted to residential, with two industrial locations. Asa and Moro L.G.As occupied the outskirts land areas of the Emirate, and those areas are used for subsistence farming purposes. From Asa and Moro, and the other twelve L.G.As of the Emirate, goods and services are transported to the metropolis. Between 1960 and 2015, the Emirate's cost and standard of living were examined with the fluctuating prices of petrol, diesel, kerosene, and foreign currency exchange rates to the Naira. Within the timeframe mentioned above, usage of the charcoal energy was reduced to the barest minimum, especially at the introduction and spread of the liquid gas energy. The years 1973, 1980, 1990, 2000, 2015, and 2024 were selected to appraise the estimated NI, MPC, and MPS on the fuel cost and charcoal energy for people of the Emirate.

Table 2: A Sample of Consumption and Saving Schedules and MPC and MPS of the Stakeholders of Ilorin Emirate 1973-2024

Year	DI	CE	MPC	NS	MPS
1973	N3	92.95k	75.35/0 = 0	N2, 7.05k	-3.88/0 = 0
1977	N3	N1, 68.3k	0/27 = 0	N2, 3.17k	0/27 = 0
1979	N30	N1, 6.83k	0/0 = 0	N29, 3.17k	0/0 = 0

1984	N30	N1,6.83	N65, 93.17/1170 = N5, 64k	N29, 3.17k	281.83/1170 = = 0.24k
1991	N1200	N66	3234/4800 = 0.67	N1,134	1566/4800 = 0.33
2000	N6000	N3300	4950/6000 = 0.83	N2700	1050/6000 = 0.8
2007	N12000	N8250	-	N3750	-
2009	N12000	N8250	0	N3750	6000/6000 = +1
2014	N18000	N8250	30250/0 = 0	N9750	10750/1 = +10750
2022	N18000	N38500	77000/54000 = 1.43	N-20500	2.122/54000 = 0.0039
2023/2024	N72000	N115500		N-43500	

In January 1973, the Federal Government of Nigeria changed from metric to decimal currency, thus, the new denominations of N10, N5, N1, and 50k were authorised. In addition, coins of 20k, 10k, 5k, 1k, and 1/2k were issued. The petrol pump price was 8.45k.⁷ An interview with Adebayo Faruq (2025) revealed that transporters consumed 110 litres of petrol to and from Lagos and Ilorin since 1973, and each passenger is charged 50k in a car of 6 passengers.⁸ Selected data on the CE of transporters plying Ilorin to Lagos in 1973 was 110 litres $\times$ 8.54 = 92.95k, while the DI was N3. NS is CE – DI = N2, 7.5k.

On the 11th of February 1977, a new note of N20 was added to the existing currency in circulation. The Federal Government asserted that the new note needed to be commensurate with the growth of the country's economy. The petrol pump price was 15.3k. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged 50k in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 1977 was 110 litres $\times$ 15.3k = 16.83 = N1, 68.3k, while the DI was N3. NS is CE – DI = N2, 3.17k.

In addition, on the 2nd of July, 1979, the Federal Government issued new notes in denominations of N1, N5, and N10. The notes bear the portraits of three eminent Nigerians who were declared on October 1st as national heroes. The petrol pump price was 15.3k. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged

N5 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 1979 was 110 litres $\times$ 15.3k = N1,6.83, while the DI was N30. NS is CE – DI = N29, 3.17k.

In April 1984, the colours of the banknotes in circulation were changed to counteract currency trafficking, which was prevalent then. The petrol pump price was 15.3k. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N5 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 1984 was 110 litres $\times$ 15.3k = N1,6.83, while the DI was N30. NS is CE – DI = N29, 3.17k. From 1977 to 1984, the petrol pump price was stable at 15.3k.

In 1991, the 50k and N1 notes were replaced by coins, and the petrol pump price changed to 60k per litre. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N200 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 1991 was 110 litres $\times$ 60k = N66, while the DI was N1200. NS is CE – DI = N1,134.

The Federal Government posited that there was a need for expansion in economic activities with the need to facilitate an efficient payment system in the country; for this reason, it issued banknotes of N100, N200, N500, and N1000 in December 1999, November 2000, April 2001 and October 2005, respectively. The petrol pump price was N30. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N1000 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 2000 was 110 litres $\times$ N30 = N3300, while the DI was N6000. NS is CE – DI = N2700.

On the 28th of February 2007, N20 was issued in a polymer substrate, while the N50, N10, and N5, as well as N1, and 50k coins, were reissued in new designs, and the N2 coin was introduced. The petrol pump price was N75. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N2000 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 2007 was 110 litres $\times$ N75 = N8250, while the DI was N12000. NS is CE – DI = N3750.

On the 30th of September 2009, the redesigned 50, 10, and 5 banknotes were converted to a polymer substrate, following the successful performance of N20 (polymer) banknotes. The petrol pump price was N75. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N2000 in a car of 6 passengers. Selected data

on the CE of transporters plying Ilorin to Lagos in 2009 was 110 litres $\times$ N75 = N8250, while the DI was N12000. NS is CE – DI = N3750. Between 2007 and 2009, the petrol and transportation prices were stable.

At the grand finale of Nigeria's 50th anniversary and 100 years of its existence as a nation, the Central Bank of Nigeria (CBN) contributed to the celebration by issuing N50 commemorative polymer substrate banknotes on the 29th of September 2010 and commemorative banknotes on the 19th of December 2014, respectively. The petrol pump price was N75. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N3000 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 2014 was 110 litres $\times$ N75 = N8250, while the DI was N18000. NS is CE – DI = N9750.

In November 2022, the colours of the highest denominations of N1000, N500, and N200 were changed to address hoarding storage of clean/fit banknotes and counterfeiting activities. The petrol pump price was N350. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N3000 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 2022 was 110 litres $\times$ N350 = N38500, while the DI was N18000. NS is CE – DI = N20500.

Between 2023 and 2024, the petrol pump prices fluctuated from N610 to N1050. The transporters consumed 110 litres of petrol to and from Lagos and Ilorin, and each passenger is charged N12000 in a car of 6 passengers. Selected data on the CE of transporters plying Ilorin to Lagos in 2022 was 110 litres $\times$ N1050 = N115500, while the DI was N72000. NS is CE – DI = N43500. In the context of this work, it should be noted that the NS is subject to some maintenance and other related charges for the vehicles. The MPC and MPS of Table two above revealed the estimated economic conditions of the Ilorin Emirate people, showing that the people's cost/standard of living is acute. This resulted in people reverting to charcoal energy among other survival strategies.

A Resort to Charcoal Energy and Its Technological Initiatives among the People of the Emirate (The year 2015-2024)

Sources of wooden coal/firewood

The firewood is sourced and imported to the Ilorin Emirate metropolis (Ilorin South, West and East L.G.As) from across the forest areas of the remaining thirteen L.G.As of Kwara State, since the 1980s. The researcher's

of the State. The associations' members attended meetings monthly. The associations regulate the movements of the loggers and some charcoal dealers/marketers toward the forestry. Some dealers and marketers are not allowed to enter the bush.

Through the associations, intra- and inter-state transactions of firewood and charcoal are granted to the dealers. Dealers that are issued with the intra and interstate certificates are eligible to transact business within and outside the Kwara State territory. It is noted that some dealers have only an intra-charcoal trade certificate.

A significant contributory role is recognised with the charcoal business dealers through the associations. They are involved in the road-mapped navigation within the bush territories, through the assistance of the Government agencies on road navigation and maintenance. It is estimated that the charcoal dealers earn about \$10 (N16,000) net income per month.⁹

Blacksmith. Blacksmithing is one of the oldest traditional industries of the Ilorin Emirate people. The smiths involved in the collection of hardwood/charcoal have been the major source of energy for the blacksmith industries. A field investigation was conducted, and it revealed that a major mechanism was adopted in the usage of charcoal for blacksmith production. The orthodox source of combustion involved the use of bellows, but in the late 1990s, a hand-driven motor was introduced. The motor was derived from scrap electric appliances such as fans and refrigerators. It is housed in a cupped iron with a protected roller to drive the motor, which is connected to a fan that supplies air to the assembled charcoal.

Pottery. The only advancement, recorded in pottery production, using charcoal is from the stationed orthodox tannur to the movable, invented metal heating stand.

Poultry Industries. Poultry industries exist in the domestic environment of the Emirate people. The poultry is operated heavily on the usage of charcoal heat for brooding. The producers use both iron and clay coal pots, which are made by the local smiths and welders.

Bakery. Both the bread and cake bakery industries relied on traditional mud ovens for their production. Bread bakeries often depend on firewood, which produces combustive charcoal. In the early year 2000, several breadbakers adopted imported electric and non-electric aluminium ovens. It is imperative to mention that the Emirate indigenous smiths and welders

The automobile scraped iron pot stand was also invented around the year 2015. With this invention, several automobile scrap components were diverted to charcoal pot stands. These charcoal pots vary in structure, for the breeze to reach the burning charcoal and outlets the flame to the pot. The significant economic contributions of these types are that a potential market for the scraps was created, and employment opportunities for the indigenous smiths and the conventional welders were also stimulated.

By the year 2017, the advanced portable charcoal stove, Jikokoa, was imported to Ilorin Emirate from Nairobi, Kenya. It pulled the interest of consumers from across the nooks and crannies of the Emirate. the stove saves 65% of charcoal, compared to the established ones. It is estimated that great increase in the use of the stove could save forests from rapid deforestation. It is important to mention that the majority of households in the Emirate could not afford the cost of Jikokoa despite its effectiveness and efficiency. View talented indigenous individuals of the Emirate disassembled the Jikokoa stove, studied the components to produce a copy of Jikokoa. The age-long European-made stove, which many people have abandoned because of the hike in the cost of kerosene, was converted to produce a copy of the Jikokoa stove for consumption and sales among the indigenous people. When the Jikokoa stove was disassembled, it was discovered that bricks are embedded within the frame of the stove. Within the imported European scraped frame stove, the indigenous technical expertise produced an in-built bricks charcoal stove. The production of the said charcoal stove initiated a partial employment opportunity. A deficit of the said stove is that it does not last long, compared to the imported Jikokoa stove, although it saves about 65% of charcoal, like the Jikokoa stove.

Charcoal Extractions, Challenges, Environmental Impact and Solutions

Mahmood H. (2025) asserts that accurate volume and biomass estimation of tree resources of forest ecosystems are essential for sustainable forest management, carbon stock assessments, and climate change mitigation.¹⁰ The Ilorin Emirate has no accurate volume and biomass estimations on the forest from which firewood and charcoal are sourced. Trees are cut indiscriminately. Logging, whether legal or illegal, directly reduces the number of trees and alters the forest structure, which can lead to a decline in woody species diversity as critical habitats are removed and ecological processes are disrupted by erosion (Iordăchescu and Vasile, 2023; Aboke et al. 2025).¹¹

The chance for exotic growth of abundant species of trees is altered, therefore, the ecological forest zones close to the Emirate are susceptible to degradation and loss of biodiversity. Loggers/woodcutters evade the government agency on forest surveillance. There are no effective accessible roads for forestry professionals, the woodcutters always take advantage of this. Some of the government agencies were also susceptible to bribe tips of the loggers. A likely solution to this challenge is fostering community engagement, diversion/shifting from one section of the forest to another and monitoring to regulate loggers' forest exploitation.

Conclusion

This work explored the introduction and the cost of fossil fuel to examine the impact of Ilorin Emirate people on using firewood and charcoal for their domestic productions and sustenance. It is observed that a hike in the prices of fossil fuel has engendered hardship, which has compelled several Nigerians, especially Ilorin Emirate people, to the usage of firewood and charcoal. The cost of living of the people has risen above their standard of living since the year 2015. The cutting of trees for firewood and charcoal has contributed to deforestation in the Emirate forest, with consequences ranging from loss of biodiversity, soil erosion, climate change, to water cycle disruption. With the production of several objects of Charcoal usage, Ilorin Emirate derive initiatives, which can be technically evaluated and

Endnotes

- 1 Prangon, C., et al, Biomass to Biofuel: Impact and Mitigation of Environmental, Health and Socioeconomic Challenges, Elsevier, Article 100889. <https://doi.org/10.1016/j.jecmx.2025.100889>.
- 2 Bin, Z., Niu, N., Hao, L., & Zhaohua, W., (2023) Assessing the Efforts of Coal Phaseout for Carbon Neutrality in China. *Applied Energy*, 352, Article 121924. <https://doi.org/10.1016/j.apenergy.2023.121924>
- 3 Suleiman, A.A. Ph.D. (2021). *A History of Nupe People in Ilorin Emirate 1823 to 1999*, Unpublished doctoral dissertation], University of Ilorin.
- 4 Dan O. Chukwu, (2010) Trends and Changes in the Nigerian Currency System, Colonial Period – 2008, *Tribes Tribals*, 8(2): 87-101.

- 5 Interview with Suleiman Lawal, Ile Kijan, Oke-Apomu, Ilorin, Occupation: Trading; Age: 80, 20/1/2015.
- 6 Central Bank of Nigeria, History of Nigerian Currency, <https://www.cbn.gov.ng/currency/historycur.html>
- 7 Central Bank of Nigeria, History of Nigerian Currency, <https://www.cbn.gov.ng/currency/historycur.html>
- 8 Interview with Adebayo Faruq, Ile Aribi, Oke-Apomu, Ilorin. Occupation: Driving; Age: 68, 30/1/25.
- 9 Interview with Sikiru Ariyo, Adangba area, Ilorin, Occupation: automobile repairer/charcoal business; Age: 69; 27/3/2025.
- 10 Mahmood H., Validated allometric models for volume, biomass, carbon, and nutrient estimation in forest ecosystems of Bangladesh: A step toward sustainable forest management and climate resilience, *Trees, Forest and People*, 19, Article 100772, 2025 <https://doi.org/10.1016/j.tfp.2024.100772>
- 11 Abebe A. H. et al, Human disturbances and their impact on woody species diversity in sacred church forests in West Gojjam Zone, Northwestern Ethiopia, *Trees, Forest and People*, 19,^c <https://doi.org/10.1016/j.tfp.2025.100776>