Solaja Mayowa Oludele[1], *Awobona Samuel*[2],
Osifo Kelly Omosat[3]

DOI: https://doi.org/10.15804/rop2023305

UNVEILING ENVIRONMENTAL GOVERNANCE AND POLITICAL ECONOMY DYNAMICS IN RURAL PLASTIC POLLUTION MANAGEMENT: A CASE STUDY OF OGUN STATE, NIGERIA

Keywords: Environment, Governance, Plastics, Stakeholder, Rural, Nigeria

ABSTRACT: Plastic pollution has emerged as a significant environmental and public health concern globally, with detrimental effects on ecosystems, human health, and socio-economic development. One way to a safer global environment is encouraging rural communities to manage solid waste and reduce plastic pollution. This study aims to explore the environmental governance and political economy of plastic pollution management in rural communities of Ogun State, Nigeria. By examining the interactions between governance structures, political actors, and socio-economic factors, the study seeks to provide insights into the challenges and opportunities associated with plastic waste management in rural areas. The study employs a mixed-methods approach, combining qualitative and quantitative data collection methods, to obtain comprehensive and detailed findings. The results of the study indicate divergent interests among stakeholders regarding the management of plastic pollution and environmental concerns in rural communities of the Ijebu region in Ogun State, Nigeria. The research emphasizes the importance of supporting community-led environmental initiatives that adhere to established environmental guidelines for effective solid waste management, with particular emphasis on plastic waste, in rural areas of Nigeria.

[1] Department of Sociology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
[2] Department of Sociology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
[3] Department of Political Science, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.

INTRODUCTION

The phenomenon of plastic pollution has emerged as a ubiquitous and far-reaching environmental predicament on a global scale, presenting formidable obstacles to the delicate balance of ecosystems, the well-being of the general populace, and the pursuit of sustainable progress (Zheng et al., 2022; Egun, Eybayiro, 2020; Han et al., 2018). Nigeria, akin to numerous nations, grapples with the pernicious ramifications of plastic pollution, wherein rural communities are especially susceptible owing to their constrained waste management infrastructure and limited resources (Egun, Eybayiro, 2020; Han et al., 2018; Ezeah et al., 2019; Fadare et al., 2018). Ogun State, situated in the southwestern region of Nigeria, encapsulates a myriad of rural communities that grapple with the ramifications stemming from the pervasive issue of plastic pollution.

The proper management of plastic waste necessitates the implementation of efficacious environmental governance mechanisms, as well as a comprehensive comprehension of the intricate political economy dynamics that underlie this issue. The concept of environmental governance pertains to the intricate framework of systems, institutions, and processes that oversee and regulate the multifaceted interplay between human society and the natural environment (Adams et al., 2016). It encompasses the intricate interplay of policy frameworks, meticulously designed institutional arrangements, and robust stakeholder engagement mechanisms, all meticulously orchestrated with the overarching objective of fostering and advancing sustainable environmental practices. Within the realm of plastic pollution management, the presence of environmental governance assumes a pivotal position in the establishment of regulatory frameworks, the facilitation of waste collection and disposal mechanisms, as well as the promotion of recycling initiatives and the adoption of sustainable practices (Onibokun et al., 2020).

The utilization of the political economy lens affords us with valuable insights into the intricate interplay that occurs among political actors, economic interests, and social dynamics. These factors collectively contribute to the formation and execution of environmental decision-making processes, as expounded upon by McCarthy et al. in 2017. The manage-

ment of plastic pollution transcends its mere environmental implications, as it is intricately intertwined with power dynamics, economic incentives, and societal behaviors. The scholarly investigation delves into the intricate realm of the political economy surrounding the management of plastic pollution. It meticulously scrutinizes the multifaceted interests of diverse stakeholders, encompassing esteemed politicians, influential industry participants, diligent waste collectors, and the invaluable local community. The study endeavors to comprehend the intricate dynamics of their interactions and discern how these interactions shape the prevailing practices in waste management. This scholarly pursuit draws upon the works of Biggeri et al. (2020) and Ezeah et al. (2019) to enrich its analysis.

Rural communities situated in Ogun State encounter distinctive obstacles when it comes to effectively addressing and mitigating the issue of plastic pollution. The constricted state of infrastructure, coupled with a dearth of consciousness among the populace, and an inadequate allocation of resources, serve to intensify the predicament at hand, thereby resulting in the proliferation of plastic waste within our surroundings (Ezeah et al., 2019). Furthermore, it is imperative to acknowledge the intricate interplay of political and economic forces within rural regions, as these dynamics have the potential to impede the efficacy of endeavors aimed at managing plastic waste. Factors such as asymmetrical power structures, financial limitations, and deeply ingrained cultural norms can exacerbate the challenges associated with this issue (Fadare et al., 2018; McCarthy et al., 2017).

Within the rural enclaves of Ijebu North Local Government Area, situated in the esteemed Ogun State of Nigeria, a disconcerting predicament has emerged. The omnipresence of plastic waste within the meandering rivers that traverse this region has assumed an alarming magnitude, thereby posing a formidable menace to the vast majority of its inhabitants (Adetola et al., 2020; Solaja et al., 2017). The persistent issue of water scarcity in this region can be attributed to the geological composition of the area, rendering subterranean water sources inaccessible. As a result, most of the rural communities in the region are dependent upon the natural flow of rivers and the occurrence of precipitation to fulfill their water requirements (Solaja et al., 2017). Nevertheless, it is imperative to

acknowledge the profound cultural and religious implications associated with the rivers, thereby necessitating the implementation of stringent fishing regulations, barring any fishing activities except during the revered and customary annual cultural fishing festival. The presence of plastic debris within river systems has engendered a plethora of social and economic quandaries for the denizens of rural areas, most notably the agrarian populace who heavily rely on water resources for the purposes of irrigation and sustenance of their livestock. The issue of river control has emerged as a subject of contention, encompassing the involvement of governmental entities, their respective agencies, esteemed traditional leaders, diligent farmers, landowners, and the vibrant community youth. The escalating dispute regarding the utilization of the river has engendered heightened power dynamics among various societal agents within the locality, thereby bearing significant ramifications for the prevailing social structure and the economic advancement of rural populations. It is intriguing to note that a collective of individuals who possess a deep understanding of the intricate interplay between socioeconomic factors and environmental repercussions has arisen as an innovative response to the pressing issue of plastic waste. These individuals, encompassing the unemployed youth, adolescents, and individuals with restricted opportunities for formal education, partake in the act of scavenging plastic waste with the noble intention of mitigating pollution and procuring recyclable plastic bottles for commercial purposes. They diligently amass plastic receptacles from refuse repositories, expansive tracts of land, conduits, and waterfronts, with the noble intention of safeguarding the ecosystem whilst simultaneously procuring sustenance. Nevertheless, the intricate nature of solid waste management and the mitigation of plastic pollution in the rural communities of Ijebu North Local Government Area is further compounded by the proliferation of divergent interests and the existence of power disparities among the principal stakeholders involved. The primary objective of this article is to delve into the intricate realm of environmental governance and political economy as it pertains to the reduction of plastic pollution in rural Nigeria. The focal point of this investigation lies in the active involvement of pivotal stakeholders and their discernment of the influence wielded by information and infrastruc-

ture systems on the mitigation of plastic pollution and the associated environmental predicaments. By means of this scholarly investigation, one can acquire a profound comprehension of the intricate mechanisms involved in the effective governance of plastic pollution within rural communities. Through a comprehensive analysis of the various actors involved, their respective perspectives, and the impact of information and infrastructure systems, it is possible to devise efficacious methodologies aimed at mitigating the issue of plastic pollution and fostering the adoption of sustainable environmental practices within the rural regions of Nigeria.

STATEMENT OF THE PROBLEM

The deleterious consequences of plastic pollution are especially conspicuous in the rural communities of Ogun State, Nigeria, where the scarcity of waste management infrastructure and resources further compounds the issue (Ezeah et al., 2019; Fadare et al., 2018). The rural communities situated within the Ijebu North Local Government Area in the esteemed Ogun State are confronted with distinct challenges pertaining to the pervasive predicament of plastic pollution. The existence of plastic waste within rivers, which function as a crucial water source for potable consumption, agricultural activities, and various other purposes, presents a significant peril to the physical and mental welfare of individuals residing in rural areas (Adetola et al., 2020; Solaja et al., 2017). Furthermore, the deleterious presence of plastic waste within rivers poses a significant impediment to the economic endeavors of agriculturists who heavily depend on water resources for the purposes of irrigation and the rearing of livestock. The consequential social and economic challenges serve to intensify pre-existing power dynamics among various societal agents, encompassing the government, its affiliated organizations, customary authorities, agriculturalists, land proprietors, and the younger members of the community, all of whom contend for dominion over the invaluable river resources (Adetola et al., 2020; Solaja et al., 2017).

Insufficient infrastructure and constrained availability of dependable information systems pose significant obstacles to the implementation of

efficacious plastic waste management strategies, thereby impeding endeavors aimed at achieving environmental sustainability and exacerbating the prevailing crisis of plastic pollution. The persistent socio-economic and environmental disparities in Nigeria are exacerbated by the uneven allocation of infrastructure and information resources across various regions and communities. The extant body of literature elucidates the salient concerns pertaining to the infrastructure and information systems in the realm of plastic waste management within the Nigerian context. For example, scholarly investigations have brought to light the pervasiveness of deficient waste management infrastructure, encompassing a dearth of recycling facilities and inadequate waste collection systems. This lamentable state of affairs has resulted in the unregulated disposal of plastic waste and the subsequent contamination of our environment (Ezeah et al., 2019; Fadare et al., 2018). Moreover, the absence of easily accessible and contemporaneous information systems poses a formidable obstacle to the facilitation of judicious decision-making, active public involvement, and the embracement of sustainable waste management practices (Bakker et al., 2020).

Moreover, the prevailing condition of infrastructure and information systems is intricately shaped by a multitude of political-economic determinants. The presence of corruption, deficiencies in governance structures, and the influence of vested interests collectively contribute to the inequitable allocation of resources and the perpetuation of unsustainable waste management practices, as highlighted by Adepoju et al. (2020) and Ezeah et al. (2019). The aforementioned factors serve to intensify the existing disparities in plastic waste management, thereby placing an undue burden on marginalized communities and rural regions. These communities not only endure the adverse effects of pollution but also face significant challenges in terms of inadequate infrastructure and limited access to crucial information. Hence, it can be posited that the predicament can likewise be ascribed to the insufficient condition of infrastructure and information systems within the realm of environmental governance. This impedes the efficacy of plastic waste management and further exacerbates the prevailing crisis of plastic pollution in Nigeria.

In a similar vein, the matter of plastic pollution management in rural communities is further compounded by the advent of a cohort of envi-

ronmental enthusiasts who actively partake in the retrieval of discarded plastic waste as a means to ameliorate pollution levels while concurrently generating financial resources. This assemblage, comprising of individuals in a state of unemployment, adolescents, and those with restricted opportunities for formal education, diligently amasses recyclable plastic bottles from various locations such as dumpsites, open areas, drains, and riverfronts (Adetola et al., 2020). Nevertheless, in the face of these formidable obstacles, it is evident that there exists a dearth of comprehensive comprehension pertaining to the environmental governance and political economy surrounding the management of plastic pollution in the rural communities of Ogun State. The comprehension of power dynamics, stakeholder engagement, and the influence of information and infrastructure systems on the mitigation of plastic pollution remains inadequately elucidated within this particular framework. Moreover, the ramifications of these matters on the implementation of sustainable environmental methodologies and the holistic welfare of rural communities have regrettably not been sufficiently investigated.

Therefore, this study aims to address the following research questions:

1. How do power struggles and conflicting interests among social actors impact the management of plastic pollution in rural communities of Ogun State, Nigeria?
2. What are the perceptions and roles of different stakeholders, including the government, traditional leaders, farmers, landowners, community youth, and environmentalists, in plastic pollution management?
3. What is the impact of information and infrastructure systems on plastic pollution reduction and environmental challenges in rural communities of Ogun State?

LITERATURE REVIEW

PLASTIC POLLUTION IN NIGERIA

Plastic pollution has emerged as a significant environmental issue in Nigeria, with far-reaching impacts on ecosystems, public health, and sustainable development. Nigeria, with a population of over 200 million people, produces a significant amount of plastic garbage, estimated to be more than 200,000 tons per day (Jambeck et al., 2015). This high level of plastic trash generation can be linked to an increase in plastic use over the years, with Nigeria having over 3,000 registered plastic production firms by the beginning of the twenty-first century (Egun & Eybayiro, 2020). The increased use of plastic in Nigeria is primarily owing to the widespread use of plastic packaging, particularly for single-use applications such as food packing (Wagner-Lawlor, 2018). As a result, single-use plastics account for a significant amount of Nigeria's plastic trash, contributing to the country's growing plastic pollution problem (Aluko et al., 2022; Alabi et al., 2019).

Due to a lack of trustworthy and quantitative waste management data, estimating the actual amount of plastic garbage produced annually in Nigeria is difficult (Egun & Eybayiro, 2020). Unlawful dumping activities impede data collection and correct quantification of plastic trash (Nwosu et al., 2018; Solaja et al., 2017). However, a thorough literature search demonstrated the volume of plastic rubbish collected in 28 Nigerian states between 2007 and 2017 (Table 1).

The tabular data presented elucidates the fact that Nigeria, within the African continent, engenders a considerable quantum of plastic waste (Hanafi, 2018). However, it is disconcerting to note that the rate of recycling has persistently languished at a markedly low level over the course of several years, as expounded upon by Solaja, Awobona, Omodehin (2020) and Alabi et al. (2019). Annually, a meager fraction of plastic waste, specifically less than 10 percent, is subjected to recycling procedures within the borders of Nigeria. Regrettably, the predominant fate of the remaining majority is either incineration or haphazard disposal, as evidenced by the scholarly works of Alabi et al. (2019) and Solaja et al. (2017).

Table 1. Advent of Plastics in Nigeria

State	Volume (tons)											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total (tons)
Abia	80.02	82.16	84.37	86.80	89.20	10.40	94.10	96.70	99.31	102.03	104.72	929.81
Abuja	42.25	45.99	50.29	55.84	61.29	67.26	73.81	81.01	88.90	97.57	100.25	764.46
Adamawa	89.58	92.14	94.82	97.73	100.60	103.56	106.61	109.75	112.98	116.30	118.98	1143.05
Akwa Ibom	110.51	114.21	118.09	122.38	126.61	130.99	135.52	140.21	145.06	150.08	152.76	1446.42
Anambra	117.62	120.86	124.25	127.92	131.55	135.30	139.13	143.08	147.15	151.32	154.01	1492.19
Bauchi	131.78	136.19	140.82	145.93	150.98	156.20	161.61	167.19	172.98	178.96	181.64	1724.28
Bayelsa	48.03	49.41	50.83	52.40	53.94	55.53	57.16	58.85	60.58	62.36	65.04	614.13
Benue	119.99	123.53	127.24	131.29	135.29	139.41	143.65	148.03	152.54	157.18	159.86	1538.01
Borno	118.13	122.08	126.23	130.82	135.34	140.02	144.87	149.88	155.06	160.42	163.10	1545.95
Cross river	81.53	83.86	86.29	88.94	99.55	94.25	97.02	99.88	102.81	105.84	105.52	1045.49
Delta	116.24	119.90	123.74	127.95	132.11	136.41	140.84	145.42	150.15	155.04	157.72	1505.52
Katsina	163.66	168.49	173.55	179.07	184.52	190.14	195.93	201.90	208.05	214.38	217.06	2096.75
Kebbi	91.95	94.76	97.70	100.92	104.09	107.37	110.75	114.24	117.84	121.54	124.23	1185.39
Kogi	93.48	96.25	99.13	179.07	105.40	108.61	111.92	115.33	118.84	112.46	125.14	1265.63
Kwara	66.72	68.69	70.76	73.01	75.23	77.52	79.88	82.32	84.82	87.41	90.09	856.45
Lagos	257.60	265.71	274.21	283.55	292.77	302.29	312.12	322.27	332.75	343.57	346.25	3333.09
Nasarawa	52.73	54.29	55.92	57.70	59.46	61.27	63.13	65.05	67.04	69.07	71.76	677.42
Niger	112.01	115.75	119.68	124.03	128.32	132.76	137.35	142.10	147.02	152.10	154.78	1465.9
Ogun	106.13	109.58	113.19	117.18	121.11	125.17	129.37	133.71	138.20	142.83	145.51	1381.98
Ondo	97.62	100.51	103.52	106.82	110.07	113.42	116.88	120.44	124.11	127.89	130.57	1251.85
Osun	96.58	99.62	102.81	106.31	109.77	113.42	116.88	120.44	124.11	127.89	130.57	1248.4
Oyo	158.06	163.34	168.90	175.03	109.77	187.35	193.83	200.53	207.47	214.64	217.32	1996.24
Plateau	90.18	92.58	95.08	97.79	100.47	103.22	106.04	108.94	111.92	199.44	202.63	1308.29
Rivers	147.24	152.16	157.33	163.05	166.67	103.22	180.56	186.80	193.26	199.44	202.63	1852.36
Sokoto	104.45	107.53	110.76	114.28	117.77	121.35	125.05	128.85	132.78	136.82	139.50	1339.14
Taraba	64.81	66.51	68.45	70.55	72.62	74.75	76.95	79.22	81.55	136.82	139.50	931.73
Yobe	65.81	68.07	70.46	73.09	75.47	78.40	81.18	84.08	87.07	90.17	92.86	866.66
Zamfara	42.25	95.60	98.65	102.02	105.33	108.76	112.30	115.95	119.72	123.61	126.29	1150.48
Grand Total	**2866.96**	**3009.77**	**3107.07**	**3291.47**	**3255.3**	**3278.35**	**3544.44**	**3662.17**	**3784.07**	**4037.18**	**4120.29**	**37957.07**

Source: Federal Ministry of Environment, 2019.

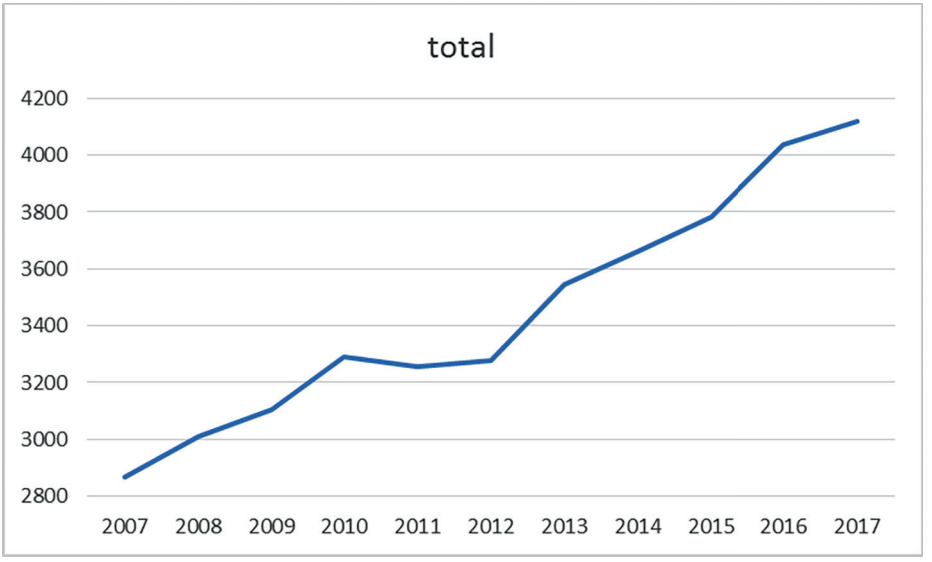

Figure 1. Showing the trend of plastic waste generation in Nigeria

The utilization of inadequate methods for waste disposal, such as incineration and indiscriminate dumping, serves as a significant catalyst for the exacerbation of air pollution, environmental degradation, and the emergence of public health risks (Aluko et al., 2022; Egun, Eybayiro, 2020; Alabi et al., 2019; Solaja et al., 2017). The endeavors undertaken by governmental entities at the federal, state, and local levels to establish proficient environmental governance have regrettably failed to yield substantial ecological advancements or augment the overall standard of living (Egun & Eybayiro, 2020; Matemilola, Elegbede, 2017; Solaja et al., 2020).

The presence of various factors serves as a catalyst for the dysfunctionality observed in the realm of environmental governance in Nigeria. These factors encompass policy discontinuity, inadequate policy implementation, the pervasive influence of corruption, a dearth of political determination, inequitable policies and laws, feeble enforcement mechanisms, and policy inconsistencies. These assertions are supported by the scholarly works of Egun and Evbayiro (2020), Matemilola and Elegbede (2017), as well as Solaja et al. (2020). These observations underscore the disconcerting pace at which plastic waste is being generated in Nigeria, coupled with

the insufficient measures in place to effectively manage it. The suboptimal rate of recycling, in conjunction with inadequate methods of disposal, gives rise to profound ramifications for both the environment and the well-being of the general populace. Moreover, the inherent inefficiencies and formidable obstacles embedded within the environmental governance framework in Nigeria serve as significant impediments to the successful implementation of robust plastic waste management strategies.

ENVIRONMENTAL GOVERNANCE AND PLASTIC WASTE MANAGEMENT IN NIGERIA

Environmental governance and plastic waste management have become major issues in Nigeria as a result of rising levels of plastic pollution and its negative consequences on the environment, human health, and socio-economic well-being. Several studies have been conducted to shed light on the issues and potential solutions in this area. In Nigeria, inadequate infrastructure, limited recycling facilities, and inefficient garbage collecting systems characterize plastic waste management (Ezeah et al., 2019; Fadare et al., 2018). Plastic trash accumulates in numerous ecosystems such as water bodies, landfills, and open areas due to inappropriate disposal and management, causing serious environmental deterioration.

The situation is exacerbated by a lack of effective environmental governance. Inadequate regulation enforcement and low institutional capacity impede proper waste management practices and contribute to the persistence of plastic pollution (Nnaji et al., 2020; Otitoju et al., 2019). The lack of comprehensive policies, combined with the fragmented nature of governance systems, stymies progress in plastic waste management. Public education and awareness are critical in addressing plastic waste management challenges. Many studies have underlined the importance of public participation and behavior change in order to promote responsible trash disposal and minimize plastic consumption (Ezeah et al., 2019; Otitoju et al., 2019). Raising awareness through campaigns, workshops, and educational programs can aid in the development of a culture of environmental stewardship and sustainable waste management practices.

Furthermore, successful plastic waste governance requires stakeholder participation and collaboration. Engaging a variety of actors, such as government agencies, business sector entities, civil society organizations, and local communities, can promote collective action and improve the implementation of sustainable waste management plans (Fadare et al., 2018; Otitoju et al., 2019). Multi-stakeholder collaboration can help enhance waste collection, recycling infrastructure, and sustainable plastic alternatives by leveraging resources, expertise, and innovation. As a potential answer to plastic waste management, the circular economy approach has gained support. Adopting this method requires encouraging plastic recycling and reuse, reducing single-use plastics, and including sustainable waste management techniques throughout the product lifespan (Nnaji et al., 2020; Otitoju et al., 2019). Implementing extended producer responsibility (EPR) systems, in which makers accept responsibility for their products' whole lifecycle, can encourage sustainable production and waste management methods. Plastic waste management efforts in Nigeria necessitate a comprehensive and integrated approach that includes policy reforms, infrastructure development, public awareness initiatives, and stakeholder engagement. Improving environmental governance frameworks, enforcing rules, and investing in waste management infrastructure are essential steps toward reducing plastic pollution and promoting long-term growth. To summarize, environmental governance and plastic waste management in Nigeria are complicated issues that require collaborative efforts from a variety of stakeholders. Adequate infrastructure, legislative reforms, public awareness, and stakeholder participation are required for effective waste management and plastic pollution mitigation. Addressing these challenges can help to ensure environmental sustainability, preserve human health, and promote Nigeria's socioeconomic development.

THE POLITICAL ECONOMY OF PLASTIC POLLUTION IN NIGERIA

The intricate interplay between political processes, economic factors, and the management of plastic waste in Nigeria gives rise to the complex political economy of plastic pollution in the country. A plethora of scholarly investigations have shed light upon the fundamental dynamics and

ramifications inherent in this matter. The issue of plastic pollution in Nigeria is intricately intertwined with a myriad of political and economic determinants. The intricate interplay of political dynamics, encompassing the intricate tapestry of governance structures, policy frameworks, and the vigilant enforcement of regulations, exerts a profound influence on the intricate web of plastic waste management and control (Ezeah et al., 2019; Oloyede, Agunbiade, 2020). The enduring presence of plastic pollution and the hinderance of efficient waste management practices can be attributed to the presence of feeble governance, corruption, and insufficient policy implementation (Nwankwo, Osumah, 2020; Oloyede, Agunbiade, 2020).

Moreover, the intricate nexus between plastic pollution and the political economy is inextricably linked to various economic endeavors, encompassing the realms of plastic manufacturing, utilization, and the management of waste. The plastic industry in Nigeria holds considerable sway over the nation's economy, thereby giving rise to consequential outcomes pertaining to the generation of waste and the exacerbation of pollution levels (Nwankwo & Osumah, 2020; Ugochukwu, 2019). The insufficiency of sustainable production and consumption methodologies, in conjunction with the prevalence of disposable plastics, amplifies the predicament of plastic pollution (Ezeah et al., 2019; Oloyede, Agunbiade, 2020). The informal sector assumes a pivotal role within the political economy of plastic pollution in Nigeria. The involvement of informal waste pickers and recyclers, who are frequently subjected to marginalization and economic disadvantage, is instrumental in the facilitation of plastic waste management, as evidenced by the studies conducted by Ezeah et al. (2019) and Nnaji et al. (2020). Nevertheless, their endeavors are impeded by the constraints of inadequate backing, acknowledgement, and assimilation within established waste management frameworks.

The intricate interplay between the political economy of plastic pollution and various social dynamics, such as power dynamics and the pursuit of environmental justice, is a subject of profound intellectual inquiry. The management of plastic waste exhibits a tendency to disproportionately impact marginalized communities, thereby exacerbating pre-existing social inequalities (Nwankwo, Osumah, 2020; Oloyede, Agunbiade, 2020).

The existence of power differentials among various societal entities, including governmental bodies, multinational enterprises, local communities, and informal waste laborers, fundamentally influences the allocation of both burdens and advantages pertaining to the management of plastic pollution (Nnaji et al., 2020; Ugochukwu, 2019). In order to effectively tackle the intricate issue of plastic pollution in Nigeria, it is imperative to adopt a comprehensive and multifaceted strategy that encompasses various aspects of the political economy. This encompasses the fortification of environmental governance structures, the augmentation of policy frameworks, the advocacy for sustainable production and consumption practices, and the cultivation of inclusive waste management systems (Ezeah et al., 2019; Nwankwo, Osumah, 2020). The imperative of involving a diverse array of stakeholders, encompassing governmental bodies, actors from the private sector, organizations within civil society, and the inhabitants of local communities, cannot be overstated when it comes to the efficacious mitigation of plastic pollution (Nnaji et al., 2020; Ugochukwu, 2019). In summation, the intricate nexus of political economy pertaining to plastic pollution in Nigeria entails the intricate interplay between political mechanisms, economic determinants, and waste management methodologies. The perpetuation of plastic pollution can be attributed to the presence of feeble governance structures, the adoption of unsustainable production and consumption practices, and the existence of social disparities. In order to effectively tackle these challenges, it is imperative to implement comprehensive policy reforms, foster collaboration among stakeholders, and adopt sustainable methodologies for the management of plastic waste.

PLASTIC POLLUTION MANAGEMENT IN RURAL COMMUNITIES

The management of plastic pollution in rural communities, particularly in developing nations, is an intricate and urgent matter that necessitates meticulous scrutiny. Numerous scholarly investigations have illuminated the intricacies surrounding the formidable predicaments and prospective remedies pertaining to the efficacious management of plastic pollution within rural regions. Within the context of developing nations, encom-

passing rural areas, the handling of plastic pollution is frequently marked by a dearth of comprehensive waste management systems, insufficient allocation of resources, and a general lack of awareness regarding the detrimental ecological consequences associated with plastic waste (Eriksson et al., 2013; Jambeck et al., 2015). This phenomenon engenders the accrual of plastic refuse in rural regions, thereby exacerbating environmental deterioration and posing health hazards to indigenous communities. A prominent quandary encountered in the realm of plastic pollution management within rural communities of Nigeria pertains to the dearth of sufficient waste management infrastructure and systems. The aforementioned phenomenon gives rise to the accrual of plastic refuse in rural regions, thereby engendering a decline in environmental quality and posing potential health hazards for indigenous communities (Ezeah et al., 2019; Fadare et al., 2018). These studies underscore the imperative for enhanced waste management methodologies and infrastructure in rural communities. The active engagement and cognizance of the community are of paramount significance in effectively tackling the pervasive issue of plastic pollution within the rural regions of Nigeria. Numerous scholarly investigations have underscored the significance of community involvement and enlightenment in advancing the cause of waste mitigation, recycling, and the adoption of appropriate disposal methodologies (Umoetok et al., 2017; Ojeka et al., 2020). Community-driven initiatives that encompass the active participation of local residents and organizations possess the potential to significantly enhance the efficacy of plastic pollution management within rural communities. Moreover, it is imperative to acknowledge the substantial importance attributed to the involvement of informal waste management systems and recycling networks within the rural regions of Nigeria. The involvement of informal waste pickers and recyclers is of considerable importance in the collection and recycling of plastic waste, thereby making a significant contribution to the reduction of waste and the promotion of environmental sustainability (Olaniyi et al., 2020; Lawal et al., 2021). By implementing suitable policies and making necessary infrastructure advancements, the integration and bolstering of the informal sector can effectively augment the management of plastic pollution in rural communities. Furthermore, it is imperative to

delve into the realm of sustainable alternatives for single-use plastics in the rural regions of Nigeria. Advocating for the utilization of biodegradable materials, fostering a shift in behavioral patterns, and providing assistance to indigenous businesses engaged in the production of environmentally conscious goods can effectively contribute to the mitigation of plastic pollution (Afolabi et al., 2020; Akinbode et al., 2021). These scholarly investigations underscore the significance of embracing sustainable methodologies and advocating for ecologically conscious alternatives within rural communities.

THEORETICAL FRAMEWORK

COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT (CBNRM) THEORY

This theory emphasizes the role of local communities in managing and conserving natural resources. It can help analyze community-driven initiatives and collective action in plastic pollution management in rural areas, including the role of social capital, cooperation, and local knowledge (Berkes, 2009). The application of the Community-based natural resource management (CBNRM) theory to the study of plastic pollution management in rural communities in Nigeria provides insights into the role of local communities in addressing environmental challenges. CBNRM emphasizes the participation of local communities in natural resource management, decision-making, and the stewardship of their own resources. Here, CBNRM can shed light on community-driven initiatives and collective action in plastic pollution management in rural areas.

In the context of plastic pollution management, CBNRM theory highlights the potential for local communities to play an active role in addressing the issue. It recognizes that rural communities often have intimate knowledge of their local environment, including the sources of plastic pollution, its impacts on ecosystems and livelihoods, and the potential solutions. By engaging local communities in plastic waste management, there is an opportunity to tap into their knowledge, experience, and tradi-

tional practices for sustainable waste management (Berkes, 2009). CBNRM theory also emphasizes the importance of social capital and cooperation within communities. It recognizes that effective resource management requires collective action, collaboration, and strong social networks. In the context of plastic pollution, this theory can help analyze how community members can come together to develop waste management strategies, establish recycling programs, and create awareness campaigns about the detrimental effects of plastic pollution (Berkes, 2009). Furthermore, CBNRM theory underscores the importance of local empowerment and ownership over resources and decision-making processes. In the context of plastic pollution management, this theory can be applied to examine the involvement of local communities in designing and implementing waste management policies and practices. By empowering local communities and recognizing their rights and responsibilities, there is a greater likelihood of sustainable and locally acceptable solutions to plastic pollution (Berkes, 2009). By applying the CBNRM theory, the study can explore the potential for community-driven approaches to plastic pollution management in rural communities of Nigeria. It can investigate how local communities can be engaged, empowered, and supported in developing and implementing effective waste management strategies. Additionally, it can analyze the role of social capital, cooperation, and local knowledge in shaping community-led initiatives and their contributions to reducing plastic pollution and promoting environmental sustainability.

POLITICAL ECOLOGY THEORY

This theoretical framework delves into the intricate interplay between power dynamics, political systems, and the transformative forces shaping our natural environment. This scholarly discourse delves into the intricate examination of the intricate interplay between political and economic mechanisms that influence the management practices pertaining to the pervasive predicament of plastic pollution in rural communities. This comprehensive analysis encompasses a wide array of critical aspects, such as the profound implications of inequality, the intricate dynamics of power, and the pressing matter of environmental justice (Bryant and

Bailey, 1997). The utilization of political ecology theory in the analysis of environmental governance and the political economy of plastic waste management in Nigeria presents an intellectual framework through which one can scrutinize the multifaceted social, economic, and political determinants that shape the creation, dissemination, and administration of plastic waste. Political ecology theory places significant emphasis on the intricate interdependencies between social and environmental systems, thereby shedding light on the intricate dynamics of power, the disparities in resource allocation, and the profound influence exerted by political and economic frameworks in shaping the ultimate trajectory of environmental outcomes.

Within the realm of plastic waste management, the application of political ecology theory serves as a valuable tool in elucidating the fundamental power dynamics and socio-economic disparities that underpin the rampant proliferation of plastic pollution. It acknowledges the multifaceted nature of plastic waste, understanding that it transcends mere environmental concerns and serves as a tangible reflection of larger socio-political and economic dynamics.

This theoretical framework has the potential to illuminate the intricate interplay between political elites, industrial interests, and global economic systems in shaping the dynamics of plastic production, consumption, and waste management practices (Bakker et al., 2020).

The field of political ecology theory also delves into the nuanced ramifications of plastic waste on various social collectives and communities. It acknowledges the inherent disparity faced by marginalized communities, particularly those residing in rural regions, who frequently endure the adverse consequences of environmental deterioration while grappling with restricted resource availability and limited participation in decision-making mechanisms. Regarding the matter of plastic waste management, this particular theory possesses the capacity to explicate the manner in which power imbalances and socio-economic inequalities influence the allocation of waste burdens and the accessibility of waste management infrastructure within rural communities (Bakker et al., 2020; Onibokun & Kumuyi, 1996). Moreover, the tenets of political ecology theory place significant emphasis on the paramountcy of social move-

ments, grassroots activism, and community mobilization as potent means to confront and contest unsustainable practices, while simultaneously advocating for a more comprehensive and sustainable framework of environmental governance that encompasses a broader spectrum of societal stakeholders. Within the realm of plastic waste management, this theoretical framework has the capacity to delve into the intricate dynamics involving civil society organizations, community-based initiatives, and social movements. These entities play a pivotal role in heightening consciousness, advocating for recycling practices, and exerting pressure for policy reforms and enhanced waste management infrastructure (Bakker et al., 2020; Onibokun & Kumuyi, 1996).

METHODOLOGY

The study was conducted in Ijebu-North Local Government Area. Ijebu-North is one out of the twenty (20) Local Government Areas in Ogun State, Nigeria. It has a space of 967 km² and a population of 284,336 at the 2006 National Population Census (NPC, 2006). Ijebu-North Local Government Area has eleven (11) political wards to be specific; Atikori, Oke-Agbo, Ojowo/Japara, Oke-Sopen, Ome, Oru-Awa-Ilaporu, Osun, Ago-Iwoye 1, Ago-Iwoye 2, Ako-Onigbagbo Gelete, as well as Mamu/Ehin-Etiri.

The Local Government settlement is arranged in Ijebu-Igbo, while other area offices are situated at Ago- Iwoye, Oru-Awa-IIaporu, and Mamu. These area offices are being utilized to spread government policies to individuals at the grassroots and generate income. This study adopts a descriptive survey design in which a self-administered questionnaire and in-depth interviews were used. The consideration for combining both research instruments is to critically examine the phenomenon under study. The degree to which environmental governance and socio-political aspects of settling on the participatory choice among government agencies, plastic waste pickers or collectors and traders of plastic waste over the utilization and the reduction of plastic waste was the main measure of the study. This was expanded with the consideration of plastic waste management system, environmental policies, and drivers of plastic pollu-

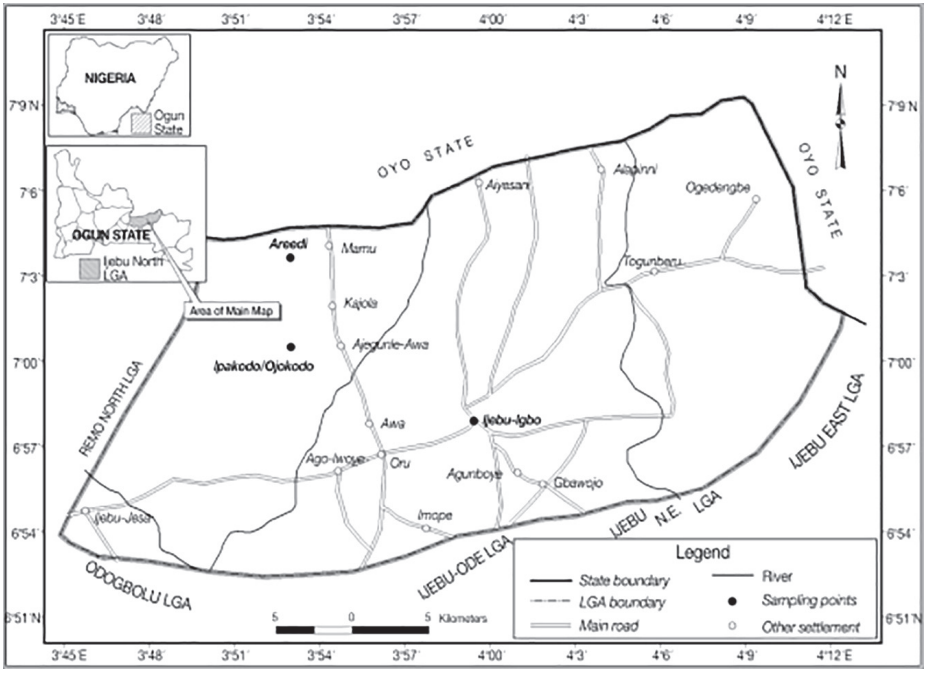

Figure 2.

tion, information and infrastructural inequality, power imbalances among stakeholders intending to the plastics pollution issue in the research area. Environmental officers, community residents, pickers, collectors and traders of plastic waste constituted the population of the study. These participants reside in the eleven (11) political wards that are under the Ijebu-North Local Government Area of Ogun State Nigeria. They were considered because they participate in curbing the menace of plastic waste in the area that does experience plastic pollution.

Table 2. Number of registered residents in each political ward as at 2015

List of Political Wards in Ijebu North LGA	Population Size
Atikori	13,432
Oke-Agbo	11,529
Ojowo/Japara	1,149

List of Political Wards in Ijebu North LGA	Population Size
Oke-Sopen	6,524
Ome	16,626
Oru-Awa-Iiaporu	23,538
Osun	11,445
Ago-IwoyeUrban 1	18,795
Ago-Iwoye Urban 2	10,833
Ako-Onigbagbo Gelete	2,132
Mamu/Ehin-Etiri	2,712
Total	**118,715**

Source: Ijebu-North Local Area, 2015.

The sample size of the study was determined using the formula of (Cochran 1963); Thus,

n = N/1+N(e)2

N = Total Population

n = Sample size

e = the desired level of precision (margin of error) (The margin of error is taken to be 10% for economical expediency purposes).

Given, N = 118715, e = 0.10, n =?

$n= 118715/1+118715(0.1)^2= 100$.

Therefore, the sample size to be used for this study is 100. A total of 100 participants were selected across the eleven political wards using the probability proportional to size method to ensure objective representation and adequacy of respondents.

Table 3. Sampling Frame

Political Wards	Population	Proportion	Sample size
Atikori	13,432	100 (13432) 118715	12
Oke-Agbo	11,529	100 (11529) 118715	9
Ojowo/Japara	1,149	100 (1149) 118715	1
Oke-Sopen	6,524	100 (6524) 118715	6

Political Wards	Population	Proportion	Sample size
Ome	16,626	100 (16626) 118715	14
Oru-Awa-Iiaporu	23,538	100 (23538) 118715	20
Osun	11,445	100 (11445) 118715	9
Ago-IwoyeUrban 1	18,795	100 (18795) 118715	16
Ago-Iwoye Urban 2	10,833	100 (10833) 118715	9
Ako-Onigbagbo Gelete	2,132	100 (2132) 118715	2
Mamu/Ehin-Etiri	2,712	100 (2712) 118715	2
Total	**118,715**		**100**

Source: Field Survey, 2021.

Both quantitative and qualitative approaches were embraced as exploration techniques for the clarification of the required information from the participants. Out of the total sample, 87 partook in the questionnaire administration while 6 took part in the in-depth interview part of the strategies. This methodology was taken because the individuals who partook in the overview technique can peruse and compose utilizing the English Language while those in the in-depth interview (IDI) strategy can't; they are waste pickers and brokers of waste plastics and participating in the business for over a year. Neighbourhood language (Yoruba) was utilized for the planning of a top to bottom interview control which was the principal research instrument for the collection of information for the IDI session of the examination. Moreover, the one-sample t-test, independent t-test and chi-square were used for the analysis of the data generated from the survey aspect, while thematic analysis with the specific reference to emerging theme usage was employed for the analysis of IDI data. The responses were read several times before developing initial and final codes. These codes led to the theme generation. Each theme was discussed and expatiated with relevant quotes from the responses.

RESULTS

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Results of socio-economic and demographic characteristics of the respondents showed that 67 participants representing 77.0% were male participants; while 19 participants representing 21.8% were female. It shows that there are more male than female respondents in the study. This reflects the assumption that males dominate the public sphere of society while females are often preoccupied with childbearing and family responsibilities. Also, the majority of the respondents (50.6%) age bracket fell between 39 years and above of age, while the least (4.6%) fell within 21-26 years. Meaning that the bulk of the respondents is within the economically active population of Nigeria.

The marital status of respondents showed that 5.7% were single, 72.94% were married, 10.3 % were separated and 5.7% divorced and 5.7% widowed. This shows that most of the people that participated in this study were married males with family responsibilities. Furthermore, the educational status of the respondents showed that most respondents were very literate having one form of tertiary educational qualification or the other (66.6%), while only 33.4% had primary/secondary educational qualifications.

Moreover, the religious affiliation of the respondents showed that those that professed to be Christian constituted 72.4%, and Muslims constituted 27.6%. This shows that the majority of the respondents are Christians. Also, the ethnic identities of the respondents showed that most respondents who participated in the study were *Yoruba* (60.9%), *Igbo* (21.8%), *Hausa* (11.5%) and others (5.7%). As expected, a large majority of the respondents are of Yoruba extraction, considering that the Ijebu region of Ogun state is predominantly inhabited by the Yoruba. Also, the presence of other ethnic groups indicates the cosmopolitan nature of Ogun state. Furthermore, the income distribution of respondents shows that relatively few of them (11.5%) were earning less than NGN30,000 per month, while 44.8% were earning between NGN30,000-NGN60,000 while 11.5%

claimed they earn NGN100,000 and above. It could be inferred from the income distribution above that majority of the respondents earns above the minimum wage level.

MAJOR FINDINGS

The response of respondents to the stated research objectives was presented below using both qualitative and quantitative data analysis methods to ascertain the opinion of respondents on each research question asked.

How do power conflicts and competing interests among social actors affect the management of plastic pollution in Nigeria's rural communities?

To provide answers to the above question, in-depth interview sections were conducted among selected stakeholder. Their responses demonstrate the diverse perspectives and insights on the research question. The information from in-depth interviews with six participants who were five key stakeholders namely community leader, waste management practitioner, environmental activist, government official, and community member revealed that the effective management of plastic pollution necessitates the harmonious collaboration and coordination of diverse social entities, encompassing community constituents, municipal administrations, commercial enterprises, and environmental advocacy groups. Nevertheless, as elucidated by the esteemed community leader hailing from the illustrious locale of Ijebu-Igbo, the efficacious implementation of management strategies is impeded by the perpetual conundrum of power dynamics and divergent interests that pervade the very fabric of the community. For instance, a community leader affirmed that:

> Power struggles among social actors have hindered effective plastic pollution management in our rural community. There is often disagreement on the allocation of resources for waste management initiatives. Some community members prioritize economic development over environmental concerns, while others advocate for sustainable practices. This conflicting interest and power dynamics make it challenging to implement cohesive waste management strategies (IDI/Community leader/Ijebu-Igbo).

In addition to the power struggles and conflicting interests among stakeholders in plastic pollution management and environmental governance, there is a notable disagreement on resource allocation for waste management initiatives. This disagreement arises due to the competing priorities and varying perspectives on the allocation of limited resources within the community. One key factor contributing to the resource allocation disagreement is the limited funding and inadequate infrastructure for waste management initiatives in rural communities. The scarcity of financial resources makes it challenging to implement comprehensive and effective waste management strategies. Studies have highlighted the need for increased investment in waste management infrastructure to address this issue (Adegboyega et al., 2019). The governance structure and decision-making processes can also contribute to the resource allocation disagreement. If there is a lack of transparency, inclusivity, and accountability in decision-making, certain stakeholders may feel marginalized or excluded from resource allocation discussions. Ensuring participatory decision-making processes that involve all relevant stakeholders can help foster a sense of ownership and collaboration, leading to more equitable resource allocation outcomes. The disagreement on resource allocation also stems from the contrasting priorities between economic development and environmental concerns. Some stakeholders may prioritize allocating resources towards initiatives that drive economic growth and development, such as infrastructure projects or industrial expansion. These may have been implied in the views of the waste management practitioner:

> As a waste management practitioner, I often face resistance from influential individuals who have vested interests in the current waste disposal practices. They resist any changes that may disrupt their businesses or require additional investments. This power struggle hampers efforts to introduce more sustainable waste management methods, such as recycling or establishing proper waste collection systems in rural areas (IDI/Waste Management Practitioner/Ijebu North LGA).

The views of the government official also noted that:

> Power struggles and conflicting interests among different government agencies and departments often impede effective plastic pollution management. Fragmentation and lack of coordination lead to overlapping responsibilities and a lack of clarity in decision-making. Additionally, political considerations and corruption can influence waste management policies, making it difficult to implement comprehensive and sustainable solutions (*IDI*/Government Official /Ago-Iwoye).

Views similarly expressed by another interviewee affirmed that different stakeholders have varying perspectives and interests regarding resource allocation for waste management initiatives. Local businesses, for instance, may prioritize funding for projects that directly benefit their operations, potentially overlooking investments in sustainable waste management practices. Environmental organizations and community advocates, on the other hand, may emphasize the allocation of resources towards initiatives promoting recycling, waste reduction, and awareness campaigns. Understanding and addressing the diverse perspectives and interests of stakeholders is essential for finding common ground in resource allocation decisions.

Furthermore, the community member interviewed mentions that power struggles and conflicting interests have prevented the formalization of waste management systems in their rural community. The interviewee stated that:

> Power struggles and conflicting interests have left our rural community struggling to address plastic pollution. Some individuals benefit financially from the informal waste sector and resist any attempts to formalize waste management systems. There is a lack of awareness and education about the environmental impact of plastic waste, and conflicting interests make it challenging to mobilize collective action for better waste management practices (*IDI*/ Community Member/Ago-Iwoye).

Based on the aforementioned assertions, it can be deduced that the presence of power dynamics and divergent interests significantly impede the successful implementation of comprehensive strategies for addressing

plastic pollution within rural communities. The waste management practitioner elucidates the formidable challenge of encountering opposition from influential entities who possess vested interests in the prevailing waste disposal methodologies. These individuals exhibit a propensity for prioritising their commercial enterprises and fiscal concerns above embracing and implementing more ecologically sound waste management methodologies. The presence of this resistance poses a significant impediment to the implementation of recycling initiatives or the establishment of efficient waste management systems in rural regions. The environmental advocate underscores the notion that certain local enterprises place a higher premium on financial gain at the expense of their ecological obligations. This phenomenon precipitates the wanton disposal of plastic refuse, thereby exacerbating the issue of environmental contamination. When espousing the merits of more stringent regulations and the diligent implementation thereof, one frequently encounters opposition and resistance. The intricate task of harmonising economic progress with the implementation of sustainable waste management practises presents a formidable quandary, primarily stemming from the inherent clash of divergent interests. The government official astutely emphasises that the efficacy of plastic pollution management is impeded by power struggles and conflicting interests that arise among disparate government agencies and departments. The phenomenon of fragmentation, coupled with a dearth of coordination, engenders a confluence of overlapping responsibilities and a dearth of lucidity in the realm of decision-making. The intricate interplay of political factors and the insidious presence of corruption exert a profound influence on waste management policies, thereby impeding the successful implementation of holistic and enduring solutions. The astute observer highlights the pervasive presence of power dynamics and divergent interests that have engendered a formidable challenge for the rural community in effectively grappling with the pressing issue of plastic pollution. Certain individuals derive financial advantages from engaging in the informal waste sector and exhibit a propensity to oppose any endeavours aimed at formalising waste management systems. Furthermore, it is evident that there exists a dearth of cognizance and erudition pertaining to the ecological ramifications associated with

the accumulation of plastic refuse. The inherent existence of divergent interests poses a formidable obstacle in the endeavour to galvanise collective efforts towards the improvement of waste management practises. Based upon the aforementioned assertions, it becomes apparent that the presence of power dynamics and divergent interests poses formidable obstacles to the successful implementation of plastic pollution mitigation strategies within rural communities. The prevailing emphasis on individualistic pursuits, driven by profit-oriented incentives, aversion to change, and inadequate collaboration, serves as a barrier to the widespread acceptance and implementation of sustainable waste management methodologies. Furthermore, it obstructs the development and execution of all-encompassing policies and regulations in this domain.

STAKEHOLDERS PARTICIPATION IN PLASTIC POLLUTION MANAGEMENT IN RURAL AREAS

The response of respondents to the stated research objectives was presented below using inferential statistics to ascertain the opinion of respondents on each research question asked.

Table 4. Perception and Roles of Stakeholders in Plastics Pollution Management

S/N	Perception and roles of participation among key actors in plastics pollution reduction	Response		
		Yes F (%)	No F (%)	Undecided F (%)
1	Do you perceive the government's role and responsibilities in managing plastic pollution	11 (12.6)	19 (21.8)	57 (65.5)
2	do you think the government should undertake to address plastic pollution effectively	15 (17.2)	09 (10.3)	63 (72.4)
3	Do community residents participate in do you perceive the role of traditional leaders in managing plastic pollution	54 (62.1)	18 (20.7)	15 (17.2)
4	Have traditional leaders taken any initiatives or actions to address plastic pollution in your community	57 (65.5)	15 (17.2)	15 (17.2)

S/N	Perception and roles of participation among key actors in plastics pollution reduction	Response		
		Yes F (%)	No F (%)	Undecided F (%)
5	Do you perceive the role of farmers in managing plastic pollution	8 (9.2)	11 (12.6)	68 (78.2)
6	Do farmers in your community implement any practices to reduce plastic pollution	49 (56.3)	23 (26.4)	15 (17.2)
7	Do farmers need support to improve their plastic pollution management practices	18 (20.7)	8 (9.2)	61 (70.1)
8	Do you perceive the role of landowners in managing plastic pollution	8 (9.2)	63 (72.4)	16 (18.3)
9	Are landowners involved in any initiatives or activities related to plastic pollution management	8 (9.2)	63 (72.4)	16 (18.3)
10	Do you perceive the role of community youth in managing plastic pollution	63 (72.4)	15 (17.2)	09 (10.3
11	Are there any youth-led initiatives or campaigns addressing plastic pollution in your community	49 (56.3)	19 (21.8)	19 (21.8)
12	Are there any environmental organizations or activists working on plastic pollution issues in your community	11 (12.6)	61 (70.1)	15 (17.2)

Source: Field Survey, 2021.

The data presented in the table provides quantitative information about the perceptions and roles of key actors involved in reducing plastic pollution. The results indicate that there is a lack of consensus among respondents regarding the government's role and responsibilities in managing plastic pollution. Specifically, 12.6% of respondents perceive the government's role positively, while 65.5% responded negatively, and 21.8% were undecided. This highlights the need for further examination of the factors influencing these perceptions and the effectiveness of government actions in addressing plastic pollution.

Furthermore, the data shows that 17.2% of respondents believe the government should take effective actions to address plastic pollution, while 72.4% responded negatively, and 10.3% were undecided. The high percentage of undecided responses suggests a lack of clarity or awareness about specific actions the government should undertake. This emphasizes the importance of effective communication and engagement between the government and the community to address plastic pollution effectively.

Similarly, 62.1% of respondents perceive a role for traditional leaders in managing plastic pollution, while 20.7% responded negatively, and 17.2% were undecided. Moreover, 65.5% of respondents reported that community leaders have already taken initiatives or actions to address plastic pollution in their community. These findings indicate that traditional leaders are generally seen as having a role in plastic pollution management, and many have already taken action. Further research could explore the specific nature and effectiveness of these initiatives.

Additionally, only 9.2% of respondents perceive a role for farmers in managing plastic pollution, while 12.6% responded negatively, and 78.2% were undecided. However, 56.3% of respondents reported that farmers in their community implement practices to reduce plastic pollution. This suggests that while there is a lack of awareness about the role of farmers, many are already implementing practices to address plastic pollution. Further investigation is needed to understand the types of practices being adopted and their impact on pollution reduction.

Regarding the involvement of landowners, only 9.2% of respondents perceive a role for them in managing plastic pollution, while 72.4% responded negatively, and 18.3% were undecided. Similarly, only 9.2% reported that landowners are involved in initiatives or activities related to plastic pollution management. These findings indicate a general perception that landowners have limited involvement in plastic pollution management. Exploring the reasons behind this perception and potential strategies to engage landowners would be valuable for effective waste management.

Lastly, 72.4% of respondents perceive a role for community youth in managing plastic pollution, while 17.2% responded negatively, and 10.3% were undecided. Additionally, 56.3% reported the existence of youth-led initiatives or campaigns addressing plastic pollution in their community. However, only 12.6% mentioned the presence of environmental organizations or activists working on plastic pollution issues.

THE IMPACT OF INFORMATION AND INFRASTRUCTURE SYSTEMS ON PLASTIC POLLUTION REDUCTION IN RURAL COMMUNITIES OF OGUN STATE, NIGERIA

A meticulously planned and thoughtfully executed infrastructure possesses the capacity to yield favourable outcomes for the environment, thereby playing a pivotal role in fostering sustainable development. Nevertheless, numerous scholarly sources have extensively documented that rural areas are characterised as underdeveloped regions with inadequate information and infrastructure systems, which can impede the progress of development in these areas (Mihai, 2018; Nxumalo et al., 2020; Osawe & Magnus, 2016; Aluko, et. al., 2022). In light of the existing circumstances, this research endeavour sought to examine the influence of information and infrastructural systems on the management of plastic pollution in rural regions of Nigeria. In order to accomplish this objective, a comprehensive analysis of variance was performed on the collected data, and the resulting outcomes are presented in Table 5.

Table 5. Summary of ANOVA

R= .571[a] R Square= .326 Adjusted R square=.310 Standard Error=.						
ANOVA						
	Sum of Squares	**Degree of freedom**	**Mean Square**	**F**	**P**	**Remarks**
Regression	45.742	6	22.871	20.293	0.000	*
Residual	94.672	80	1.127			
Total	140.414	86				

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.793	.790		2.269	.026
	Information	.349	.063	.501	5.542	.000
	Infrastructure	.321	.137	.212	2.339	.022

Source: Field Survey, 2021.

The table 5 presents the coefficients pertaining to the influence of information and infrastructure systems on the management of plastic pollution. The presented table demonstrates the statistical significance of the regression model in elucidating the association between the variables of interest, namely information and infrastructure systems, and the management of plastic pollution. The F-statistic exhibits a value of 20.293, with a corresponding p-value of 0.000, suggesting a highly significant relationship. The coefficients illustrate the effects of the independent variables, namely information and infrastructure systems, on the dependent variable of plastic pollution management.

The constant term in the equation has a coefficient of 1.793, which signifies the anticipated value of the dependent variable when all independent variables are set to zero. The obtained statistical significance ($p = 0.026$) indicates that there exists a certain degree of plastic pollution management, even in the absence of information and infrastructure systems. The coefficient estimate for the information variable is 0.349, and it is associated with a standard error of 0.063. The presence of a positive coefficient indicates a positive correlation between the implementation of information systems and the effective management of plastic pollution. The obtained p-value of 0.000 indicates statistical significance, suggesting a robust relationship.

The coefficient estimate for the infrastructure variable is 0.321, and its associated standard error is 0.137. The presence of a positive coefficient implies a positive relationship between the expansion of infrastructure systems and the effectiveness of plastic pollution management. The statistical significance of the variable is demonstrated by a p-value of 0.022, albeit with a slightly higher significance level compared to the information variable. In general, the information and infrastructure systems exert a substantial and beneficial influence on the management of plastic pollution. The results of the analysis reveal that the standardised coefficient (beta) values for information systems (0.501) are slightly larger than those for infrastructure systems (0.212), suggesting that information systems have a somewhat stronger influence.

CONCLUSION

The aforementioned study highlights the profound social, economic, environmental, and political ramifications, thereby facilitating the establishment of partnerships between governmental and non-governmental entities to tackle the pressing issue of plastic pollution and environmental deterioration in rural regions. The study's results indicate the existence of divergent interests among stakeholders regarding the management of plastic pollution and environmental concerns within the rural communities of the Ijebu region in Ogun State, Nigeria. These challenges pose significant obstacles in mobilising collective action towards the improvement of waste management practises. Based on the aforementioned observations, it becomes apparent that the presence of power dynamics and divergent interests poses substantial obstacles to the successful implementation of plastic pollution mitigation strategies within rural communities. The inherent challenge of addressing plastic pollution lies in the intricate web of power dynamics and divergent interests that hinder the coordination efforts among various governmental agencies and departments. The presence of overlapping responsibilities, ambiguity in decision-making processes, restricted communication channels, and compromised policy implementation pose significant obstacles to the establishment of holistic and environmentally sound waste management strategies. The implications, as elucidated in the abstract of the study, facilitate the discernment of common concerns and the establishment of collaborations to enhance endeavours aimed at mitigating plastic pollution. One significant implication lies in acknowledging the socioeconomic potentials and opportunities linked to the recycling of plastic waste and the management of rubbish in rural residential areas. By recognising these possibilities, stakeholders have the opportunity to investigate economic pathways and leverage them, establishing sustainable revenue-generating endeavours while concurrently tackling the issue of plastic pollution. Nevertheless, a significant obstacle in rural regions pertains to the insufficiency of comprehensive information and infrastructure systems. Insufficient provision of vital resources, such as comprehensive public education programmes addressing plastic waste recycling and reduction, adequately

maintained transportation infrastructure, waste collection vehicles, recycling facilities, and strategically placed municipal waste receptacles, is a common occurrence. It is of utmost importance to guarantee the sufficient provision of these facilities in rural regions in order to facilitate the efficient management of plastic pollution.

Furthermore, it is disheartening to observe that the presence of political obstacles impedes the essential focus and diligence needed to effectively tackle the issue of plastic pollution in rural areas. The imperative lies in surmounting these political obstacles, as it is imperative to address the disparities in power dynamics and disputes surrounding environmental governance among pivotal actors. Effective management of plastic pollution necessitates the imperative of fostering collaboration and facilitating dialogue among various stakeholders, including government agencies, farmers, plastic waste pickers, waste dealers, and community residents. Furthermore, it is crucial to acknowledge and tackle the intricate and interrelated issues surrounding plastic pollution, socioeconomic disadvantage, diminished agricultural output, soil and water pollution, atmospheric contamination, and the depletion of natural resources in rural regions. This necessitates the adoption of a holistic methodology wherein all relevant stakeholders collaborate harmoniously to formulate comprehensive solutions that effectively tackle these environmental concerns as a unified whole. The implementation of community-based environmental initiatives that adhere to recognised environmental protocols for effective management of solid waste, specifically plastic waste, holds paramount importance for rural regions significantly affected by the accumulation of solid refuse. These initiatives ought to incorporate robust community involvement and engagement to guarantee the proper handling and disposal of plastic waste.

BIBLIOGRAPHY:

Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., & Vira, B. (2016). Biodiversity conservation and the eradication of poverty. *Science, 354*(6319), pp. 1–10.

Adegboyega, A., Adejumo, O., & Ogunyinka, D. (2019). Municipal solid waste management: Assessing the challenges of inadequate funding and governance in developing countries. *Journal of Environmental Management, 232*, pp. 1032–1040.

Adelekan, I. O., Aladejana, O. A., & Eruola, A. O. (2018). Solid waste management and environmental justice in Nigerian urban centres. *International Journal of Environmental Research and Public Health, 15*(6).

Adetola, O. B., Odunlami, D., Fasanmi, S. A., Yinusa, G. O., Adedeji, I. A., Solaja, M. O., Popoola, D., Ogede, S., Ogunbote, O., & Sunmola, B. (2018). Waste to Wealth Perspective: IdentifyingWaste Potentials for Small Scale Business Development in Ogun State, Nigeria Agogo: *Journal of Humanities, 5*, pp. 69–75.

Afolabi, O. R. et al. (2020). Eco-friendly bioplastics and their application: Current state, costs, and environmental impacts. *Journal of Environmental Management, 262*.

Agberemi, A. (2020). Plastic Pollution and Nigeria's Waste Management Regime: An Environmental Security Analysis Abdul-Lateef Agberemi. *IOSR Journal of Environmental Science*, *14*(6), pp. 12–17. DOI: 10.9790/2402-1406031217.

Akinbode, F. O. et al. (2021). Plastics waste management in Nigeria: A review of current practices, environmental issues, and sustainable strategies. *Journal of Environmental Chemical Engineering, 9*(1).

Alabi, O. A., Ologbonjaye, K. I., Awosolu, O., Alalade, O. E. (2019). Public and Environmental Health Effects of Plastic Wastes Disposal. *A Review. J Toxicol Risk Assess, 5*(21). DOI: 10.23937/2572-4061.1510021.

Aluko, O., Obiajunwa, O., Obisanya, O., & Odeleye (2022). Solid waste management and health hazards associated with residence around open dumpsites in heterogenous urban settlements in Southwest Nigeria. *International Journal of Environmental Health Research, 32*(6), pp. 1313–1328.

Altkinson, A. A. J., Waterhouse, A, Wells, R. (1997). A stakeholders approach strategic performance measurement. *Sloan Manag. Rev., 38*(3), pp. 25–36.

Baalouch, F., Ayadi, S. D., & Hussainey, K. (2019). A study of the determinants of environmental disclosure quality: evidence from French listed companies. *Journal of Management and Governance*. DOI: 10.1007/s10997-019-09474-0

Bakker, K., Bridge, G., Meisch, S., & Vandersypen, K. (2020). *Plastics: Power, profits, and pollution*. Routledge.

Barrowclough, D., & Birkbeck, C. D. (2020). Transforming the Global Plastics Economy: The Political Economy and Governance of Plastics Production and Pollution. *GEG Working Paper, 142*.

Benson, D., & Jordan, A. (2017). Environmental Governance. *The International Encyclopedia of Geography*. DOI: 10.1002/9781118786352.wbieg0631.

Berkes, F. (2009). Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management, 90*(5), pp. 1692–1702.

Berman, S. L., Wicks, A. C., Kotha, S., Jones, T. M. (1999). Does stakeholders orientation matter? The relationship between stakeholders' management models and firm financial performance. *Acad. of Manag. J., 42*(5), pp. 488–506.

Biggeri, M., Ferrannini, A., & Grasseni, M. (2020). Plastics in a changing political economy. In: *Plastics and the Politics of Waste* (pp. 1–18). Springer.

Chowdhury, Z. Z. et al. (2018). Community-based waste management for environmental sustainability in rural areas of developing countries. *A review. Environmental Science and Pollution Research, 25*(6), pp. 5085–5099.

Cointreau, S. (2006). *Waste management in developing countries: Opportunities for the informal sector*. World Bank Publications.

Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: concepts, evidence and implications. *Acad. Manag. Rev. 20*(01), pp. 65–91.

Dqg, H., & Dqg, F. (n.d.). *Impacts of Information and Communication Technologies on Environmental Sustainability : speculations and evidence*.

Egun, N. K., & Evbayiro, O. J. (2020). Beat the plastic: an approach to polyethene terephthalate (PET) bottle waste Beat the plastic: an approach to polyethene terephthalate (PET) bottle waste management in Nigeria. *Waste Disposal & Sustainable Energy*, *2*(4), pp. 313–320. DOI: 10.1007/s42768-020-00052-x.

Eriksson, C. et al. (2013). Microplastics in the marine environment: A review of the methods used for identification and quantification. *Environmental Science and Technology, 47*(6), pp. 3060–3075.

Ezeah, C. et al. (2019). Plastic waste in the marine environment: A review of sources, occurrence and effects. *Science of the Total Environment, 658*, pp. 1006–1025.

Fadare, O. A. et al. (2018). Socio-economic and environmental impacts of plastic waste on Nigerian cities: Knowledge, attitudes, and practices of residents. *Environmental Science and Pollution Research, 25*(26), pp. 26094–26105.

Freeman RE (1984). Strategic management: a stakeholder approach. Boston: Pitman / Ballinger. States, Jan 20, pp. 404–437.

Golechha, M. (2020). Strategies to reduce plastic waste: A review of current research on plastic pollution and mitigation strategies. *Environmental Science and Pollution Research, 27*(12), pp. 12315–12325.

Gray, R. (2010). Is accounting for sustainability actually accounting for sustainability… and how would we know? An exploration of narratives of organisations and the planet. *Accounting, Organizations and Society, 35*(1), pp. 47–62. DOI: 10.1016/j.aos.2009.04.006.

Giovannoni, E., & Fabietti, G. (2014). What is sustainability? A review of concepts and its applicability. Department of Business and Law, University of Siena, Siena, Italy Integrated Reporting. DOI 10.1007/978-3-319-02168-3_2.

Guo, J., & Bai, J. (2019). The role of public participation in environmental governance: Empirical evidence from China. *Sustainability (Switzerland)*, *11*(17). DOI: 10.3390/su11174696.

Hassan, A. et al. (2020). Challenges and opportunities for managing plastic waste in low-resource communities: Evidence from Pakistan. *Waste Management, 105*, pp. 140–151.

Han, Z., Liu, Y., Zhong, M., Shi, G., Li, Q., Zeng, D., Zhang, Y., Fei, Y., Xie, Y. (2018). Influencing factors of domestic waste characteristics in rural areas of developing countries. *Waste Manag., 72*, pp. 45–54.

Henderson, L., & Dumbili, E. W. (n.d.). 'Drinking and Dropping': On Interacting with Plastic Pollution and Waste in South-Eastern Nigeria. *Research Square Preprints*.

Hissa, H. R., Filho, N. T. A., Costa, M., Strauch, G., Bassi, L., & de Assis, R. L. (2019). Sustainable Rural Development in Rio de Janeiro State: The Rio Rural Program. In: U. Nehren, S. Schlüter, C. Reading, D. Sattler, H. Hissa (eds.). *Strategies and Tools for a Sustainable Rural Rio de Janeiro*. Cham: Springer Series on Environmental Management.

Holder-Webb, L., Cohen, J. R., Nath, L., & Wood, D. (2009). The supply of corporate social responsibility disclosures among U.S. firms. *Journal of Business Ethics*. DOI: 10.1007/s10551-008-9721-4.

Jambeck, J. R. et al. (2015). Plastic waste inputs from land into the ocean. *Science, 347*(6223), pp. 768–771.

Kaza, S., Yao, L.C., Bhada-Tata, P., Van Woerden, F. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development*. Washington, DC: World Bank.

Lawal, F. A. et al. (2021). Informal waste collection and management in Nigeria: A review of the literature and practical examples. J*ournal of Material Cycles and Waste Management, 23*, pp. 1017–1031.

Liboiron, M. (2016). Redefining Pollution and Action: The Matter of Plastics. *Journal of Material Culture, 21*, pp. 87–110.

Lindblom, A., & Ohlsson, J. (2011). Stakeholders' influence on the environmental strategy of the firm: a study of the Swedish energy-intensive industry. *Technical Project and Business Management*, *May*, 50. Retrieved from: https://www.diva-portal.org/smash/get/diva2:435189/FULLTEXT01.pdf.

Marszałek-Kawa, J., Plecka, D., Hołub, A. (eds.). (2018). *Social Security. Selected Aspects*. Toruń: Wydawnictwo Adam Marszałek.

Matemilola, S., & Elegbede, I. (2017). Transparency: A Tool for Effective Environmental Governance in Nigeria. *OALib*, *04*(12), pp. 1–18. DOI: 10.4236/oalib.1104186.

McCarthy, J., Prudham, W., & Kruse, J. (2017). Discard studies: Theory and practice. In *The Routledge Handbook of Political Ecology* (pp. 86–99). Routledge.

Medina, M. (2018). Recycling as an economic instrument: The case of informal recyclers in Brazil. *World Development, 107*, pp. 219–227.

Mihai, F. C. (2017). One Global Map but Different Worlds: Worldwide Survey of Human Access to Basic Utilities. *Hum. Ecol., 45*, pp. 425–429.

Moore, G. (1999). Tinged shareholders theory: or what´s so special about stakeholders? *Business Ethics: A Euro. Rev., 8*.

Nnaji, C. C. et al. (2020). Assessing the effectiveness of environmental governance on plastic waste management in Nigeria. *Resources, Conservation and Recycling, 152*.

Nwankwo, C., & Osumah, O. (2020). The political economy of plastic waste in Nigeria. *GeoJournal, 85*(3), pp. 617–634.

Nwilo, P. C., & Badejo, O. T. (2017). Plastic waste and environmental governance in Nigeria. *Journal of Environmental Management, 192*, pp. 209–216.

Nwosu, O. E., Orji, A., & Yuni, D. (2018). Environmental hazards and waste management in

Nsukka urban metropolis in Enugu State of Nigeria: how much are people willing to pay. *Environmental Hazards, 17*(1), pp. 21–39.

Nxumalo, S. M., Mabaso, S. D., Mamba, S. F., & Singwane, S. S. (2020). Plastic waste management practices in the rural areas of Eswatini Social Sciences & Humanities Open Plastic waste management practices in the rural areas of Eswatini. *Social Sciences & Humanities Open*, *2*(1). DOI: 10.1016/j.ssaho.2020.100066.

Odera, O., James, K., Scott, A., & Gow, J. (2020). Corporate social responsibility reporting of international oil companies in Nigeria: An historical materialism analysis. *International Journal of Ethics and Systems*. DOI: 10.1108/IJOES-04-2019-0071.

Odoemelam, N., & Okafor, R. (2018). The Influence of Corporate Governance on Environmental Disclosure of Listed Non-Financial Firms in Nigeria. *Indonesian Journal of Sustainability Accounting and Management*, *2*(1). DOI: 10.28992/ijsam.v2i1.47.

Ojeka, S. O. et al. (2020). Knowledge, attitude, and practice of household plastic waste management among residents in rural communities of Owerri, Nigeria. *Environmental Monitoring and Assessment, 192*(1).

Olaniyi, O. A. et al. (2020). Waste pickers and micro-enterprises in solid waste management in Lagos, Nigeria. *Environment, Development and Sustainability, 22*(8), pp. 7935–7957.

Oloyede, A. O., & Agunbiade, M. E. (2020). Environmental governance and plastic pollution in Nigeria: Insights from waste pickers in Lagos metropolis. *Environmental Science and Pollution Research, 27*(19), pp. 23507–23519.

Onibokun, A. G., & Kumuyi, A. J. (1996). *Environmental management in Africa: A framework for sustainable development*. University Press Limited.

Onibokun, A. G., Amadi, C., Jimoh, O. D., Adenuga, T. T., Sridhar, M. K. C., & Azuh, D. E. (2020). Exploring the governance of solid waste management in Lagos and Ogun States, Nigeria. *Journal of Environmental Management, 258*.

Otitoju, T. A. et al. (2019). Public perception and attitude towards plastic waste pollution in Nigeria: A case study of Ado-Ekiti, Ekiti State. *Journal of Environmental Planning and Management, 62*(6), pp. 1061–1082.

Osawe, A. I., & Magnus, O. O. (2016). Environmental Governance in Nigeria: The Community Perspective. *Public Policy and Administration Research*, *6*(2), pp. 24–30.

Oyedotun, T. D., Gwangwava, N. N., & Babatunde, A. O. (2020). Solid waste management in developing countries: Status, perspectives and socio-economic implications. *Journal of Environmental Management, 254*.

Pacheco-Vega, R. (2020). Environmental regulation, governance, and policy instruments, 20 years after the stick, carrot, and sermon typology. *Journal of Environmental Policy and Planning*, *0*(0), pp. 1–16. DOI: 10.1080/1523908X.2020.1792862.

Reed, M. S. (2008). Stakeholder participation for environmental management: A literature review. *BIOLOGICAL CONSERVATION*, *141*, pp. 2417–2431. DOI: 10.1016/j.biocon.2008.07.014.

Shankman, N. A. (1999). Reframing the debate between agency and stakeholders theories of the firm. *J. Bus. Ethics. 21*(4).

Solaja, O. M., Awobona, S., & Omodehin, A. O. (2020). Knowledge and practice of recycled plastic bottles (RPB) built homes for sustainable community-based housing projects in Nigeria Knowledge and practice of recycled plastic bottles (RPB) built homes for sustainable community-based housing projects in. *Cogent Social Sciences*, *6*(1), pp. 0–20. DOI: 10.1080/23311886.2020.1778914.

Solaja, M. O, Omodehin, O. A., & Badejo, B. A. (2017). Socio-ecologies of solid waste in Ijebu-Ode, Ogun State, Nigeria. *Recycling and Sustainable Development, 10*, pp. 1–8.

Stubenrauch, J., & Ekardt, F. (2020). Plastic pollution in soils: Governance approaches to foster soil health and closed nutrient cycles. *Environments – MDPI*, *7*(5), pp. 1–18. DOI: 10.3390/environments7050038.

Umoetok, S. B. et al. (2017). Recycling and sustainable waste management in the Niger Delta, Nigeria. *Environmental Science and Pollution Research, 24*(2), pp. 1224–1236.

United Nations Environment Programme. (2009). Environmental governance. *UNFCCC Conference in Copenhagen*.

UNICEF. WHO. (2020). *State of the World's Sanitation: An Urgent Call to Transform Sanitation for Better Health, Envi-Ronments, Economies and Societies*. United Nations Children's Fund (UNICEF). New York, NY: The World Health Organization.

Van der Velden, N. et al. (2019). Reducing plastic waste in rural areas: Evidence from a field experiment in Cambodia. *World Development, 122*, pp. 572–586.

Wagner-Lawlor, J. (2018). Poor theory and the art of plastic pollution in Nigeria: Relational aesthetics, human ecology, and "good housekeeping". *Social Dynamics, 44*(2), pp. 198–220. DOI: 10.1080/02533952.2018.1481685.

Zheng, D., Shen, J., Li, R. et al. (2022). Understanding the key factors determining rural domestic waste treatment behavior in China: a meta-analysis. *Environ Sci Pollut Res, 29*, pp. 11076–11090. DOI: 10.1007/s11356-021-17999-x.