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Assessment of the Status of Plastic Waste Management and Circular Economy in Nigeria

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Abstract

The world is faced with challenges resulting from the management of huge amount solid waste generation, out of which plastic wastes contribute about 60%. Ineffective management of plastic wastes in developing countries like Nigeria makes it more affected by the menace of waste pollution. As a tool towards sustainable waste management, circular economy approach utilizes the "never-ending" property of plastics, making it recyclable it and creating sustainable wealth from the waste. However, despite series of government and individual efforts towards conversion of plastic wastes into useable products, the waste generation and its effects continue to be on alarming rate in Nigeria. This paper did extensive review of existing waste management frameworks in Nigeria and their applicability towards the achievement of circular economy. Key concepts of circular economy such as elimination of waste and pollution, circulation of products and materials, and restoration of nature were used in the assessment. In addition to poor implementation of existing solid waste management policies market acceptability of recycled plastic products is still low in Nigeria, hence the need for holistic approaches towards coordination of formal and informal plastic waste recyclers, and establishment of strong linkage between end-user industries and enabling environment to support the recycling process.

Introduction

The desirable properties of plastic materials such as resistance to chemicals and corrosion, lightweight, low cost, and ease of use have led to significant increase in its use for household, commercial, and industrial packaging,

storage, and fluid transfer (transport) in preference to other materials. Plastic is suitable for other applications and can come in various forms and shapes, depending on the need, hence increase in its general demand. Like any other developing country, this has resulted in high tonnage of plastic wastes generation in Nigeria and its indiscriminate disposal, especially the **'single-used'** plastic materials. Considering the ever-increasing population in the country, effective management of the emerging waste is a challenge (Solomon, 2009). Landfilling, land-spread, open dumping, burning incineration, and illegal dumping into water bodies are commonly practiced in managing the waste in Nigeria. Meanwhile, plastic materials are mainly non-biodegradable, thus their improper disposal is of serious environmental concern. A number of cases of flooding in major cities in Nigeria are as a result of improperly disposed plastic wastes blocking the water drainages (Duru *et al.*, 2019). In many cases, these wastes eventually find their ways through water bodies, into the ocean thereby constituting marine debris. Marine debris from plastic wastes has been estimated to be about 8 million metric tons per year (Jambeck *et al.*, 2017) with consequent ecological aesthetic and economic damage to the ocean resources (Yang *et al.*, 2018).

Waste management is a tool towards global achievement of "net-zero emission" as studies have shown that non-renewable energy and improper treatment of plastic waste contribute significantly to global warming (Chavalparit, 2018; Kehinde *et al.*, 2020). Furthermore, effective plastic wastes management is key to the achievement of circular economy. While circular economy is based on the principle of eliminating waste and pollution by circulating products and materials towards regeneration of nature, proper plastic waste management, based on its "never-ending" life cycle property ensures its continuous use, leading to economic and environmental improvement by significantly reducing the negative impacts on the natural environment (Lewandowski, 2016) in addition to its wealth creation potentials.

To deal with the menace of plastic wastes, countries all over the world have deployed different approaches ranging from plastic related policies to citizen's engagement and enlightenment on environmental sensitization (Kingsley *et al.*, 2020; Patrício *et al.*, 2020) and promotion of circular economy at every sectors of the economy (Rahla and Mateus, 2021) . The need to step-up the design and production of eco-friendly and sustainable use of plastics has also been given special attentions in the recent years. In their study on the plastic waste for circular economy, Hahladakis et al 2020 (Hahladakis *et al.*, 2020) enumerated that better value recovery could be achieved by development of better quality plastics with focus on the whole-plastic life cycle system from the design, manufacturing, and distribution through to the end-users with consideration for material circularity.

Organization for Economic Co-operation and Development (OECD 2018) advocated international co-operation and support for member countries to strengthen their policy approaches on plastic recycling (OECD, 2018; Patrício *et al.*, 2020). They equally stressed the need to improve the environment for fast growing plastic market (Rogetzer *et al.*, 2019). In dealing with plastic wastes, Brazilian government restructured its National Policy on Solid Waste Management to fully support the achievement of circular economy (Mancini and Medeiros, 2021; Fuss *et al.*, 2020; Pin *et al.*, 2018). This includes citizens sensitization on the reusability and recyclability of plastic waste and its potential social value in creating jobs and income to the citizens (Mancini and Medeiros, 2021).

In most of the Asian countries, policies have been formulated and implemented to address plastic waste via recycling towards circular economy. Korean government implemented "Resource Circulation Act' in the year 2016 to efficiently manage their plastic wastes (Jang *et al.*, 2022; Lee and Cha, 2021; Lee and Cha, 2018; Shin *et al.*, 2020). Similarly, Malaysian government formulated and implemented Environmental and Solid Waste Management Policy with the inclusion of Environmental Policy integration that enables strong harmonization of environmental and sectorial policy objectives with environmental objectives (Victor and Agamuthu, 2020). Meanwhile, the country had earlier introduced a number of levies on plastic bags per week (Safitri *et al.*, 2013). According to Victor and Agamuthu, (2020), despite the weak legal framework for its enforcement, there is nationwide initiative taken to promote circular economy which includes integration of sustainability into consumption and production, recycling of municipal solid wastes, and reduction of greenhouse gas emission in the 11th Malaysia Plan (Agamuthu and Mehran, 2020). Thailand on the other hand established and implemented '3R (reduce, reuse and recycle) Strategy' and 'Plastic Debris Management Plan 2017 – 2021' (Chavalparit, 2018), in which it aimed at promoting other eco-friendly packaging substitutions to plastics and to clear their ocean of plastic debris via recycling of the claimed debris. In doing so, Thailand was determined to simultaneously address huge amount of waste being generated and fast depletion of its virgin resources via circular economy approach (Otwong *et al.*, 2021)

In their study of South African plastic waste management, Khangale *et al.*, (2020) suggested improvement of waste infrastructure, increasing availability of waste services and importantly, **educating South Africans** on the social and economic importance of plastic waste management. This concept of circular economy aimed at increasing proportion of recycled plastic from its 43% to a higher percentage and in sustaining South African economic growth via what is referred to as remanufacturing process (Sukdeo, 2022). In response to ever-increasing waste management issues in Nigeria, National Policy on Plastic Waste Management (2020) was developed. The policy focused on responsible consumption of plastic through the plastic **life cycle**

management to achieve **circular economy**. This is premised on design and production in full compliance with the 5Rs (Reduce, Reuse, Repair, Recycle and Recovery) which is also believed to aid the achievement of Sustainable Development Goals (SDGs) 3, 6, 9, 11, 12, 14, and 17. Furthermore, a number of studies have been carried out on plastic recycling (Duru *et al.*, 2019; Lewandowski, 2016; Orasutthikul *et al.*, 2017) and application of recycled plastic waste as binding materials for asphalt (El-naga and Ragab, 2019) and other colored plastic products (Orasutthikul *et al.*, 2017; Odusote, 2015).There are other non-formal works across Nigeria on the use of recycled plastic wastes as additive materials in building construction and other applications. For instance, a Lagos based private entrepreneur (*Salubata*) is well known for championing circular plastic solution via innovative production of shoes from recycled plastic wastes (Bauer, 2021)

Despite these efforts, the global current recycling rate is put at an average of 14 - 18%, while the rest of the plastic waste goes to incineration, landfill, or illegally dumped (OECD, 2018). This is due to a number of challenges, a major one of which is the dysfunctional characteristics of markets for recycled products. In Nigeria, plastic wastes generation keeps increasing in major cities of the country (Fig. 1) due to poor implementation of existing frameworks on effective plastic waste management (Bokani, 2019) to take care of disposal, sorting, and environmental friendly recycling system by formal and informal sectors. Additionally, there is a poor linkage between the recyclers and end-users (industries) of the recycled plastics. The linkage could give room for **pull-push** effects on the demand and supply sides of the recycled plastic waste, leading to sustainable environment, and eventual wealth creation though circular economy.

This paper therefore seeks to conduct review of plastic waste in major cities of Lagos, Katsina, Bauchi, Minna, Onitsha, and Port Harcourt, representing, Southwest, North-west, North-east, North-central, South-east and South-south respectively. The study equally covers the available plastic recycling facilities with a view to evaluating the suitability of existing waste management frameworks for effective recycling system. This will help to establish the link between the plastic waste recycling and circular economy in Nigeria and to make appropriate recommendation for effective plastic waste management towards smooth transition to circular economy.

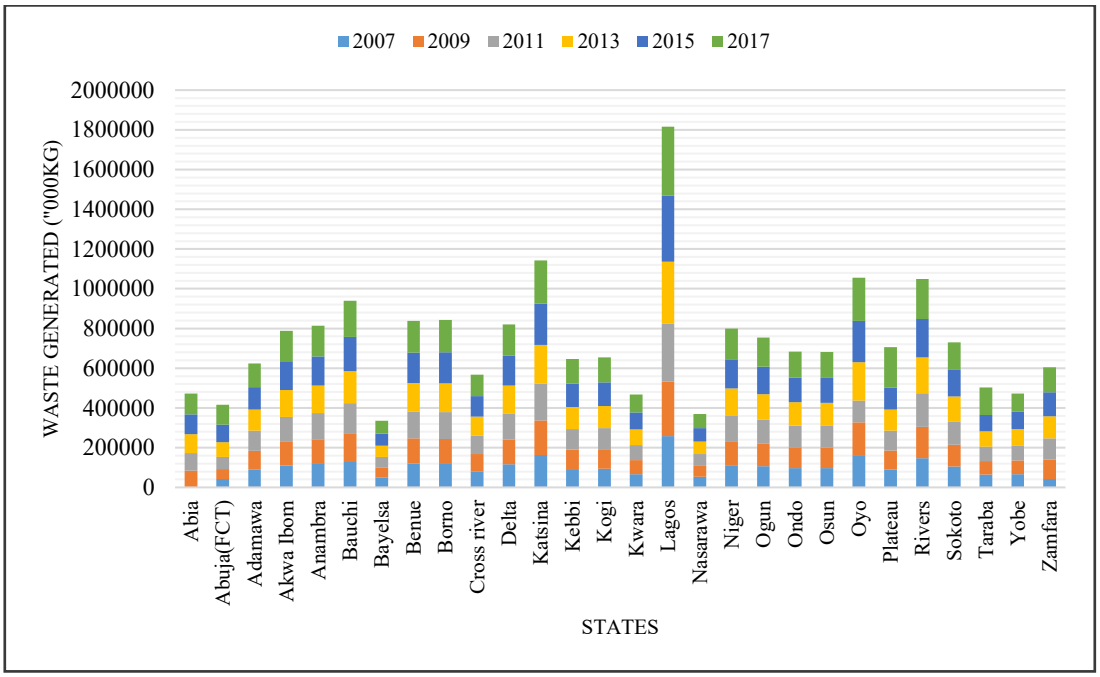


Figure 1: Plastic waste generation across states in Nigeria, (Bokani, 2019)

The study is a desk review and mainly made use of secondary data sourced from published journals, archives, databases, and reports of relevant governmental and non-governmental agencies at National and sub-national levels which include Ministry of Environment, and environmental protection agencies among others.

Conceptual Clarification

Plastic Waste

Plastics are synthetic or naturally occurring materials made from fossil-based sources, with good plasticity properties, hence it can be extruded into different shapes and forms, including the thin films. Its lightweight, durability, flexibility, inexpensive, and suitability as packaging and transport medium has led to its widespread usage all over the world. This has however led to significant increase in global plastic production, leading to high plastic waste generation from the early 20th century and its resultant environmental problems especially in the third world countries (Odusote, 2015). Its environmental sustainability issues have brought about series policy initiative on sustainable plastic waste management right from the design through production to end-user (Shin *et al.*, 2020; Chavalparit, 2018; OECD, 2018): that is, plastic life cycle management.

Waste Management

Waste management involves a series of activities (from generation to final disposal) required reduce the adverse effects of waste on human health and environment. These activities include collection, transport, sorting, treatment (recycling), and final

disposal, with some regulations in place to guide the management. Urbanization and population growth, and change in leaving pattern aid increase in waste generation (Shin *et al.*, 2020). Proper waste management remains a challenge for many of the developing countries (Patrício *et al.*, 2020; Oluborode *et al.*, 2017). Meanwhile, despite the challenges, South Africa has been able to make some progress in managing its plastic waste and reducing the associated pollution (Mazhandu *et al.*, 2021)

Circular Economy

Circular economy refers to a new innovative system that allows integration of natural ecosystems, businesses, human daily lives and waste management. As opposed to the traditional linear economy that allow resources to be converted to product, used and discarded, circular economy gives no room for waste. The World Economy Forum defines Circular Economy as *"an industrial system that is restorative or regenerative by intention and design. It replaces the* ***end-of-life*** *concept with r****estoration****, shifts towards the use of renewable energy, eliminates the use of toxic chemicals that impair reuse and return to the biosphere, and aims for the elimination of waste through the superior design of materials, products, systems, and business models."*

In relation to plastic waste, Akenji *et al.*, (2020) viewed Circular Economy as "an approach that requires coordinated policy intervention at every stage of plastic life cycle. This must be done through a framework that includes resource extraction and use, product design and manufacture, trade and retails, use, reuse and recycle, before final disposal, if necessary". This is represented in Fig. 2. Circular economy is based on three main principles which are; eliminating waste and pollution, circulating products and materials, and regeneration of nature. Its benefits also include; reduction of greenhouse gas emission, healthy and resilient soil, reduction of negative externalities, mitigation of climate change, increased potential for economic growth, and employment opportunities (El-naga and Ragab, 2019; Lewandowski, 2016).

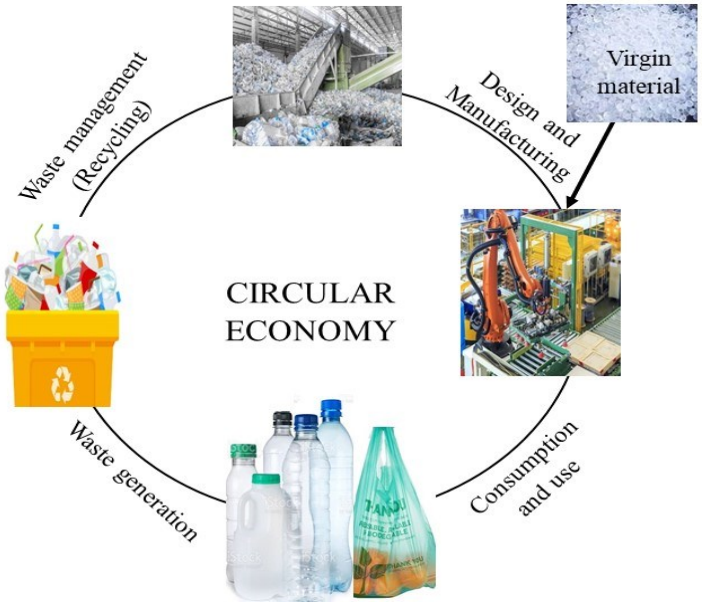


Fig 2: Plastic waste management and circular economy

Plastic Ecosystem (in Nigeria)

Sources of Plastic and their Classifications

Excellent properties of plastic material make it an important packaging material for domestic, industrial and commercial sectors of the global community, hence the increasing waste generation resulting from its **'after-use'** disposal. Globally, plastic wastes account for over 60% of municipal solid waste (Kingsley *et al.*, 2020)**,** hence the increasing global concerns on the environmental effects of plastic wastes. Plastic wastes come from all aspects of the daily activities and present different environmental concerns (as shown in Table 1). Of particular interest are the post-consumer plastic waste which are mostly being improperly disposed.

Table 1: Plastic Waste Classifications

Source	Pre-consumer plastic wastes		Post-consumer plastic waste		
Type	Plastic resin	Plastic product	Industrial and agricultural field wastes	Commercial field wastes	Wastes from everyday life of the residents

Generation	Generated in the production process of synthetic resin, by-products, and residual resin when sieving	From products such as some edge, gate, and defective products generated in the plastic production and re-processing process	i. Industrial plastic wastes: (packaging materials, pipe fittings, pipeline, etc) i. Agricultural plastic wastes: (agricultural ground film, plastic woven bags, pipelines, etc)	i. Sales link (grocery stores, private stores, wholesales shops etc) ii. Consumer links (hotels, tourist attractions, restaurants, trains stations, etc)	i. Disposable supplies: (ropes, boxes, bags one-time mess tin, Styrofoam shock absorbing material, etc) ii. Non-disposable supplies: (plastic utensils, lamps, stationery, cosmetics, kits, and other plastic products)
Disposal	By directly recycling in the plastic factories	By directly disposal in the plastic factories	Land filling, land spread, open dumping, burning incineration, recycling and reuse	Land filling, land spread, open dumping, burning incineration, recycling and reuse	Land filling, land spread, open dumping, burning incineration
Environmental effects	N/A	N/A	GHG emission, air, land, water pollutions	GHG emission, air, land, water pollutions	Constitutes greatest amount of plastic wastes. GHG emission, air, land, water pollutions

Adapted from (Yang *et al.*, 2018)

Status of Plastic Waste in Nigeria

With a population of about 210 million people (Schneider, 2022), a major problems in most Nigerian cities is the waste management due to increasing population as well as change in lifestyle and household economy. Plastic waste alone constitutes about 275 million tons of about 2.5 billion metric tons of the global solid waste generated in 2016 by 192 countries (UNEP 2016). The increase in the plastic waste generation is associated with lack of efficient waste management system (Fig. 3). Solid waste consists of biodegradable and non-biodegradable materials. Plastic wastes constitute more than 60% out of about 42 million tons of annual solid waste generated in Nigeria (Dumbili and Henderson, 2020), and it is classified as non-biodegradable, causing serious environmental problems when improperly disposed. It was also reported by Kingsley *et al.*, (2020) that Nigeria ranked ninth in global waterways and ocean pollutions resulting from plastic debris due to lack of framework for efficient waste management system. Meanwhile, as a party to a number of international treaties and

multilateral agreement on environment such as Climate Change Convention, Base Convention, and Montreal Protocol (Ahmed-hameed, 2016), it is imperative on Nigerian government to design a deliberate and wholistic approach to its waste management system.



Figure 3: Solid Waste Sites in a Typical Nigerian City

Technical Capability of plastic waste recycling in Nigeria

The survey of major cities across the geopolitical zones of Nigeria (as shown in Table 3), indicated par capital wastes generation of 18.50 kg, 15.94 kg, 15.17 kg, 14.70 kg, 14.01 kg, and 12.09 kg by Lagos, Katsina, Bauchi, Minna, Onitsha, and Port Harcourt, respectively. The per capita waste generation is apparently more than the population growth rate of the respective states. This is partly due the use of more virgin plastic material than the recycled plastic, whereas, more than 80% of the waste is inadequately managed (Sowunmi, 2019). This is coupled with the very few recycling facilities in the country (Earth-to-Down, 2021), hence their negative environmental impacts.

Table 3: Plastic waste generation in six cities across Nigeria's geopolitical zones

City	State (Zone)	State Population	Population growth rate (%)	Annual waste generation (kt)	85% unrecycled (kt)
Lagos	Lagos (Southwest)	15,388,000	3.65	284.69	241.99
Katsina	Katsina (Northwest)	505,000	3.53	8.05	6.84

Bauchi	Bauchi (Northeast)	645,000	3.82	9.48	8.06
Minna	Niger (North-central)	479,000	3.06	5.79	4.92
Onitsha	Anambra (Southeast)	1,553,000	4.96	21.75	18.49
Port Harcourt	Rivers (South-south)	3,325,000	5.17	50.43	42.87

Source: www.macrotrends.net

The selected cities represented typical Nigerian city, hence the analysis of their plastic waste management system shows the status of the plastic waste contribution to the achievement of circular economy in Nigeria. The plastic waste per capital is also observed to be relatively commensurate with the population, industrial and industrial activities in each of the selected state. This underscores the need for concentration of government efforts on creation of enabling environment for establishment of more recycling facilities towards the promotion of circular economy in Nigeria.

Circularity of Plastic Recycling

The current framework stressed the need for prompt and effective management of plastic waste right from production and consumption through circular economy initiative. The applicability of the current framework on waste management to plastic recycling and circular economy in Nigeria is however premised on three major components of the circular economy, namely; elimination of waste and pollution, circulation of products and materials, and regeneration of nature.

i. Elimination of waste and pollution

For sustainable and eco-friendly environment, waste and pollution should be kept at the barest minimum. Two of the three objectives of the Nigerian National Policy on Plastic Waste Management are focused on creating and sustaining clean and eco-friendly environment, and elimination of pollution via management of carbon emission with target on benefitting from Carbon Credit Financing Scheme. Supported by appropriate guiding principles, it invariably shows that the National policy is applicable to achievement of circular economy in Nigeria.

ii. Circulation of product and material

Product and material circulation is considered the main tenet of circular economy where it departs from the traditional "make-take-waste" approach to "zero-waste" approach (Fogarassy, 2019). In relation to plastic waste management, circular economy does not only seek to promote circulation system round the whole life cycle of the plastics from design to recycling, but also to the demand for the recycled

products. This aspect of the circular economy is not given enough prominence in the current policy framework, as such appropriate applicability is comprehensively low.

iii. Regeneration of nature

Circular economy is by definition a system that incorporates regeneration and restoration process in its intention and design. That is, from the product design, there must be consideration for re-use and recycling. Hence, according to Fogarassy, (2019), for plastic waste management to be geared towards the circular economy, it must be in line with the following principles:

a. Design out waste/Design for reuse
b. Build resilience through diversity
c. Rely on energy from renewable sources
d. Think in systems
e. Think in cascades/Share values (symbiosis)

While the current framework is focused on sustainable and responsible production and consumption of plastics towards the circular plastic economy in the country, the guiding principles give little consideration to design for recyclability. However, the guiding principles provide for "Extended Producer Responsibility" and elements of non-formal sectors that majorly drive the concept of circular economy in Nigeria through various recycling activities.

Market Acceptability of Recycled Plastics

A major motivating factor for recycled material is the demand for it in place of the primary ones and this is usually a function of cost and suitability of the material for the intended application. However, despite the significance of the recycling process in decarburization and sustenance of clean and green environment, the demand for the recycled material (post-consumer recyclate) is generally low (Hogg *et al.*, 2018). However, the situation is different in countries such as India with plastic recycling rate of 50 – 80% and Germany with the rate of about 100% due to market availability for the recycled plastic through appropriate public policy implementation and sensitization (Duru *et al.*, 2019; Nielsen *et al.*, 2019). In Nigeria, there are very few organized recycling infrastructure but mostly by individuals who are using improvised methods with little training, hence the low quality of the recycled products with consequent low demand (Duru *et al.*, 2019; Dumbili and Henderson, 2020). It is however noted that the challenge with market acceptability of recycled material affect the recycling rate hence hindrance on the promotion of circular economy through plastic recycling process (Mancini and Medeiros, 2021).

Frameworks for Plastic Waste (Recycling) in Nigeria

Policy Framework

Over the years, Nigerian government has demonstrated its willingness to have a robust waste management system through formulation and implementation of waste management policies (shown in Table 2).

Table 2: Policies and frameworks related to plastic waste management in Nigeria (Bokani, 2019; Mailafia, 2013; Oladipo *et al.*, 2015)

Policy	Year	Policy objectives/purpose
National Policy on Environment	1999	i. To secure environmental sustainability for good health and well-being; ii. For conservation and beneficial use of environment and natural resources. iii. To restore, maintain and enhance the ecosystems and ecological processes.
National policy on environmental sanitation	2005	To serve a tool for securing quality environment for good health and social wellbeing of present and future generations
National Policy on Solid Waste Management	2020	i. Develop an integrated, coordinated, environmentally sound, efficient, safe, and economically sustainable Solid Waste Management system. ii. Provide a national direction on Solid Waste Management for the Federal, States, Local governments, private sector and all stakeholders. iii. Promote a healthy and aesthetically satisfactory environment by ensuring effective, sustainable, safe and sanitary Solid Waste Management. iv. Provide necessary guidance to policy and decision makers regarding effective waste management options, technologies and practices best suited for the nation in line with best global practices and in tune with the "waste management hierarchy. v. Establish an institutional framework capable of ensuring an efficient national waste management system. vi. Provide a basis for integrated solid waste management legal framework to regulate solid waste generation and waste management service delivery. vii. Create an enabling environment for waste reduction, sorting at source, reuse, recycling and conversion to energy through incentives.
National Policy on Plastic Waste Management	2020	ii. Make Nigerian cities, ecosystems and human settlements clean, plastic litter-free and sustainable. iii. Ensure sustainable consumption and production patterns that recognize the environmental guiding principles, waste management hierarchy and support the setting of circular plastic economy in Nigeria. iv. Managing Carbon Offsetting, carbon emissions, reducing carbon footprint and benefiting from carbon credit financing

The overarching policy framework is the National Policy on Plastic Waste Management that provides national direction for public and private sectors, and all

other stakeholders, on sustainable plastic waste management. It also provides for safe disposal of domestic, commercial, and industrial solid wastes towards protection of public health along the waste management process while ensuring cost effective and socially beneficial system. The policy equally places importance on gender equality and responsibilities in plastic waste management system including plastic recycling and its socioeconomic benefits.

Institutional Framework

The overarching policy framework on plastic waste management (National Policy on Plastic Waste Management 2020) was developed by the Federal Ministry of Environment (FME). This policy is equally being implemented by the ministry and through other relevant agencies at the national and sub-national levels and in collaboration with other relevant stakeholders.

SWOT Analysis of the Ministry of Environment

The analysis of FME with respect to the strengths, weaknesses, opportunities, and threats in relation to the plastic waste management towards the achievement of circular economy in Nigeria is presented in Table 3.

Table 3: SWOT Matrix Table for Federal Ministry of Environment

STRENGTHS	WEAKNESSES
a. Political will b. Institutional structure at the national and sub-national levels c. Presence of international cooperation d. Socioeconomic benefits of plastic recycling	a. Poor waste management culture b. Low suitability of the policy with the concept of circular economy c. Policy implementation challenges at the grassroots d. Inadequate awareness and training on circular economy. e. High cost of recycling technologies
OPPORTUNITIES	**THREATS**
a. Private sector and non-governmental organization' interests b. Improve technology availability c. Needs for environmental conservation d. Employment generation	a. Complexity of climate change issues b. Policy inconsistency c. Population growth and urbanization d. Market acceptability of recycled plastics

The existence of political will and institutional structure at the national and subnational levels together with the presence of international cooperation could be leveraged by the Federal Ministry of Environment to offset the threats of climate change complexities affecting the effective waste management. The threat of acceptability of recycled products could also be overcome by the potential socioeconomic benefits offered by plastic recycling. Overcoming these would promote sustainable waste management policy and programme implementations.

Opportunities such as the interest of non-governmental organizations, need for environmental sustainability, and employment generation prospects could be used to offset the weaknesses of grassroots implementation challenges, low awareness of circular economy, and poor waste management culture respectively. Furthermore, opportunity of emerging improved technology could motivate interests in investment in recycling technology, with consequent improvement in the achievement of circular economy in Nigeria. The weakness of suitability of the policy for achieving circular economy could be overcome using Brazilian government model of restructuring the policy to fully support transitioning to circular economy (Mancini and Medeiros, 2021; Fuss *et al.*, 2020; Pin *et al.*, 2018)

The analysis above shows that the available policy and institutional frameworks are adequate for significant contribution of plastic waste management to Nigeria's achievement of circular economy if optimally utilized.

Conclusion and Recommendations

Globally, plastic wastes account for about 60% of municipal solid waste, and this has continued to be a great concern due to its negative impacts on the environment and human well-being. Out of about 42 million tons of annual solid waste generated in Nigeria (Dumbili and Henderson, 2020), plastic waste constitutes more than 60%, and it is classified as non-biodegradable The concept of circular economy presents dual opportunities of environmental sustainability and wealth creation through proper management of the plastic waste. There are series of policy formulations and implementation on plastic waste management and towards achievement of circular economy. There are also a number of innovative approaches to plastic recycling by government and private individuals in the country but this is far lower than the waste generation, hence the need for more efforts along this direction.

Current efforts of government towards the achievement of circular economy through policy development towards addressing plastic wastes is considered adequate. However, no significant results have been achieved due a number of challenges and inability of the policy on plastic waste management to appropriately capture the three basic elements of circular economy. The policy has equally not appropriately addressed the needed market for the recycled products which could spur the demand

for the recycled products hence stimulation of the circular economy. Other challenges identified include poor linkage between the plastic industries and individual recycler thereby limiting their capacity.

The SWOT analysis of the policy and institutional framework however shows that achievement circular economy is possible if the strengths and opportunities present are optimally explored to mitigate the observed challenges. Monitoring and evaluation of the implementation of the policy should be enhanced to access the achievement of the milestone set in for the policy.

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