

Waste Recycling and the Nigerian Economy: Utilising Social Media for Environmental Waste Management Education

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Abstract

This study examines waste recycling and its economic benefits to Nigerian society and how social media can be utilized to achieve it. The study uses a review approach to examine this subject matter. The review relied on existing literature to discuss waste management. The study reveals that social media such as Facebook, WhatsApp, Twitter, Telegram, Instagram, LinkedIn, Snapchat, Skyrock, Wechat, Google, Skype, Nextdoor, Wayn, Cellufun, Vine, Renre, Tagged, Badoo, Y.Y.Com, Reddit, Taringa, Foursquare, Reverbnation, Flixster, Cafemona, Ravelry, Quora, Pinterest Classmate and Flickr can provide avenues for environmental education that borders on recycling of waste. The study findings from the review of the existing literature also showed that social media are useful platforms for waste management education because of their ability to engage and reach a wide audience, facilitate knowledge-sharing and behaviour change, provide real-time updates, and promote community involvement. The data in this study also showed that plastic waste is the most ignored in the Nigerian environment. The study also found that recycling can greatly improve the Nigerian economy, particularly in the area of energy. Other benefits of recycling waste revealed in the study include: conserving natural resources, reducing landfilling, improving soil health, reducing greenhouse gas emissions, mitigating the impact of drought and job creation opportunities. The study concluded that, if social media platforms are adequately utilized, we may achieve a behaviour change toward understanding the concepts of the 3Rs (Reduce, Reuse and Recycle).

Keywords: *Waste Recycling, Economy, Social Media, Environmental Management.*

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Introduction

Nigeria is a big nation with a teeming population of about 226,280,557 as of Tuesday, December 19, 2023, based on Worldometer amplification of the current United Nations data. This large population has affected the Nigerian environment and economy in several ways, through human activities from rural, semi-urban and urban areas of Nigeria. These numerous human activities have produced waste of all kinds such as bio-degradable to non- bio-degradable wastes. Waste can be defined as any item that the owner discards. These items are mostly littered in our environment; around our houses, offices, stores, gutters, bush, streams, and rivers.

Bio-degradable wastes are those substances or materials that can be decomposed by natural agents such as weather, bacteria, oxygen, ultraviolet rays, microbes and acid rain. These materials that constitute bio-degradable waste do not remain on earth or beneath the earth's soil for a longer period without being decayed. On the other hand, non-biodegradable materials are substances that are discarded into the environment and that cannot be broken down by natural organisms. They cannot be decomposed or dissolved by natural agents, this then makes it possible for these wastes to pose a threat to society. Notable among them is plastic. Other types of non-biodegradable waste are cans and metals. The method of recycling non-biodegradable wastes in Nigeria has been an issue of concern to many environmentalists. A few recycling companies hire can and metal scavengers otherwise known in the Nigerian phraseology as *Iron condemn Aboki* who go about with locally made hand-pushed trucks scavenging from dust bin to dust bin these discarded items for recycling. The recycling effort in Nigeria has greatly ignored the recycling of waste such as plastic, paper, wood and organic waste. This category of waste has significantly contributed to the overall waste and sources of environmental pollution in Nigeria. In a study conducted by Wardrop *et.al* (2027) on packaged water consumption and associated plastic waste production from household budget surveys in Ghana, Nigeria and Liberia it was found that 28,000 tonnes yr¹ of plastic waste were generated of which 20%, 63% and 57% was among households lacking formal waste disposal facilities in Ghana, Nigeria and Liberia. This implies that Nigeria consumed more sachet water than Ghana and Liberia and by implication 17, 640 tonnes per year.

Figure 1 below shows the picture of a young Nigerian looking for discarded cans and metals for recycling.



Picture: Courtesy of author field work, December 2023

One of the major human activities in Nigeria that has impacted greatly on the Nigerian environment in terms of waste production is commercial activities. Nigeria is one of the biggest world commercial places. In Nigeria, almost all the state capitals are known for commercial activities due to the large population and their daily needs that depend on commercial activities. For instance, Lagos, Onitsha, Aba, Kano, Kaduna, Port Harcourt, Newi, and Ibadan are cities in Nigeria with massive commercial activities and massive waste disposal. The huge burden of waste management in Nigerian cities is better captured by Amogunla (2021,p.1) thus, "If you peer into the gutters of any big Nigerian city, a filthy sight awaits you: Floating cans, nylon water sachets, empty bottles and other waste materials discarded by humans, swept there by rain, gathering and clogging up the drain" Commercial activities are those activities that are promoted by individuals or corporate organization to make profit, it centers basically on buying and selling of products. In Nigeria, commercial activities are often carried out in stores in small or large buildings. Restaurants, markets and offices are among the places where commercial activities take place, Okoro, *et.al* (2018). The common waste often associated with commercial activities includes, food waste, papers, plastics, glass, electrical material waste, wood, and hazardous waste, empty water bottles and sachets, and empty soft drinks cans.

Industrial activities are another potential source of waste generation in Nigeria. Though Nigeria's industrial activities have declined over the years, the leftover industrial businesses have also impacted the Nigerian environment. According to Onipede and Bolaji (2004), the production of waste is part and parcel of industrial activities, with its attendant growth leading to an increase in the production of industrial wastes such as solids, liquids, gases and air-borne particulate matter, which are emitted into the environment.

Manufacturing industries, construction industries, fabrication, energy and chemical plants constituted industrial activities in Nigeria. Industrial activities produce a large quantity of waste. Constructions of roads and buildings alone contribute largely to municipal waste. In Nigeria, road and building construction leaves a large quantity of waste in the environment. The government do not pay attention to waste generated

through the construction and demolition of buildings. Umar *et.al* (2020) attributed the failure of government attention to construction and demolition waste to a lack of data in developing countries. Other sources of industrial waste in Nigeria include refinery, petrochemical, liquefied natural gas (LNG), cement, paper *factory*, chemical fertilizer, aluminium smelter, battery, flour, wood, and textile industries (Abonyi & Eleje, 2020). In Nigeria, petrochemical waste has been one of the major wastes that cause environmental hazards, particularly in the Niger Delta region of the country. This is often the case with oil spills which affect the marine eco-system and farmlands. "Petroleum spills in the Niger Delta Region of Nigeria (NDR) have had far-reaching consequences on the entire ecosystem, impacting the aquatic, atmospheric, and terrestrial environments, and significantly affecting the livelihoods of the indigenous population" (Ukhurebor, *et.al*, 2023, p. 101331).

In Nigeria, the teeming population makes up the Nigerian households, and their daily food consumption and other activities have contributed greatly to the waste management problem. Nigerian households generate enormous waste ranging from empty cans, bottles, wood, ashes, nylons, papers, metals, and biogas waste.

Agriculture has been the mainstay of the Nigerian economy. The waste from agricultural activities is enormous. In Nigeria, agricultural waste includes rotten crops, (crop waste) chemicals and pesticides, fruits, vegetables, meat, poultry, dairy products, livestock waste (manure, animal carcasses), and food processing. "Waste arising from agricultural activities contributes significantly to the degradation of the environment" (Maliki *et.al*, 2023, p.117). Shinde *et.al* (2020) writing on the impact of agriculture on the environment assert that environmental degradation is a major confronting the world due to chemical fertilizers that deteriorate the environment through deletion of fossil fuel generated by carbon dioxide (CO₂) and contamination of water resources.

Educational establishments are not exempted from the human activities that are also intense in the educational sector, interestingly, the educational institutions in Nigeria do not offer any decent environment in the management of their environment. Waste of all kinds is littered in the passage of lecturers in the Department of Environmental or Health Sciences. Waste such as plastic waste, papers, glass/bottles, nylon/ polythene, metals/ cans, textile materials, food waste, animal dung, and Leaves. The drainage systems on Nigerian campuses are also blocked with waste the same way the rural, semi-urban and urban areas drainage systems are blocked with unmanaged waste.

Ignorantly, all these wastes from commercial to educational have been turned to wealth in other climes but not so much attention has been paid to the waste-to-wealth philosophy otherwise known as the re-cycling of waste. For instance, statistics have shown that 32 million tons of solid waste are generated in Nigeria yearly and could be potentially recycled to sustain renewable energy development in Nigeria (Okonkwo, 2023). Anyaogu (2022) asserts that Nigeria has lost the opportunity to recycle an estimated 32 million tonnes of annually generated waste and 200,000 tonnes of plastic waste being washed into the Atlantic Ocean thereby increasing environmental pollution. Amuge (2022) quoting Rhoda Dai of the United Nations Development Programme (UNDP), noted that Nigeria's palm oil production industry generates over 90 million tonnes of effluent (liquid waste) annually, while an estimated 19.5 million cows also generate a huge quantity of waste. This naturally, should call for a national policy on recycling agro-waste which if well implemented would generate jobs for the teeming Nigerian population. It is in this light that, Amuge further averred, "recycling agro-

wastes into useful products would not only increase the economic development in the agro-sector but would also open up job creation opportunities and generate revenues for Nigeria. While Maliki *et al* (2023,p.117) assert that, there is a need for agro-waste "utilization technologies that convert waste into useful products, treat waste in a manner that prevents them from degenerating the environment or brand waste into suitable resources for processing desired end-products". However, the Nigerian environment seems to be more littered with plastic waste. A good recycling policy on plastic waste promises to create jobs for the teeming population. Plastic waste recycling is also a global problem. Ronkay *et.al* (2021, p.101) opined that "plastic waste poses challenges not only of the collection but also of its recyclability".

Atagamen *et al* (2023) believe in the economic value of recycling waste, they state that the development of bioenergy can help salvage the problem of global warming as renewable energy. Global warming is partly caused by energy needs (Ukhurebor, *et.al*, 2022). According to Szyba and Mikulik (2022), energy is mostly obtained from fossil energy resources such as coal, natural gas, and crude oil. These sources are usually burned and the resultant effect on the environment is global warming and air pollution with greenhouse gases (CO₂, CH₄, NH₃ and N₂O) and dust (PM_{2.5} and PM₁₀). But, biodegradable waste provides an alternative clean energy for a nation like Nigeria if attention is given to this sector. Biodegradable waste can be obtained from farming, animal husbandry, the agrifood industry and households. These wastes are transformed into biogas in biogas plants. This will certainly eliminate environmentally harmful waste and turn a raw material for energy production, which is an example of a circular economy.

The economy of every nation rests on energy production. Virtually all that we produce and consume are powered by energy. The aviation industry, textile industry, agro-based industry, the health sector, military, manufacturing, transportation, education, commerce, tourism /entertainment sector banking sector, and building and construction all depend on energy for economic prosperity. Therefore, Nigeria needs to go in this direction of recycling waste, with particular attention to energy production since the economy of every nation rests on energy production and consumption.

Recycling of waste will take Nigeria away from the present linear economy into a circular economy for sustainable development in the coming decades if proper environmental education is embraced by all stakeholders. Therefore, there is a need for media owners such as television owners, and social media influencers/bloggers to capitalize on the audio-visual characteristics of these media forms and also champion the recycling of waste to the point of attracting environmental policymakers and government attention.

Figure 2: below illustrates the circular economy model



Source: <https://images.app.goo.gl/Y8hKb4u5G41ke6Ly5> with permission to share

Table 1 below further illustrates the economic value of recycled waste:

S/N	Classification	Waste	Recycled Product/Economic Value	Environmental Benefits
1	Bio-degradable	Wood/Paper	Energy Production/Tissue papers	Conserving Natural Resources
2	Non-biodegradable	Plastic	New plastics	Conserving natural resources. Reduction of landfilling
3	Non-biodegradable	Cans and foil	Aluminum	95% less energy than making new ones(saving energy)
4.	Biodegradable	Food/green waste	Valuable compost can create more food	Clean environment
5	Biodegradable	All organics	Treated into fertilizer by composting or biogas by anaerobic digestion	Improving soil health Reducing greenhouse gas emissions. Mitigating the impact of drought

Source: Authors' field work, December 2023

Nigeria is among the 30 African nations that have signed the agreement reached at the Bamako Convention, which was a regional instrument that flowed from the Basel,

Rotterdam and Stockholm Conventions. These conventions were held to strengthen the management of hazardous waste including plastic waste and electronic waste as well (Okoro, 2023; Abonyi & Eleje, 2020)

As a result of the inability of Nigeria to properly manage her environment by recycling her waste, the Nigerian physical environment has been rated as one of the poorest in the world, falling among the 30 countries with the worst waste management system (Babatunde, 2023).



Photo: Courtesy of Isaac Anyaogu with open permission to share (<https://businessday.ng/big-read/article/nigerias-32m-ton-annual-solid-waste-ripe-for-investments/>)

Figure 3: Shows Nigerian poorly kept environment-waste

Social Media and Recycling Education

Social media platforms have created avenues for people to learn from others without any stress. Social media platforms are Internet-based platforms, digital technology that allows users to interact with others in real-time. Social media can also be seen as an Internet web which hosts applications that focus on communication, and sensitization content capable of starring interaction among members of society. Social media is also known as web 2.0 technology. Facebook, WhatsApp, Twitter, Telegram, Instagram, LinkedIn, Snapchat, Skyrock, Wechat, Google, Skype, Nextdoor, Wayn, Cellufun, Vine, Renre, Tagged, Badoo, Y.Y.Com, Reddit, Taringa, Foursquare, Reverbnation, Flixster, Cafemona, Ravelry, Quora, Pinterest Classmate and Flickr. (Chie & Magrege, 2023; Guanah *et.al*, 2023; Nzekwe *et.al*, 2017; Ngonso & Egielewa, 2018; Ngonso *et.al*, 2018). Social media allows its users to share information in real-time and in all forms (text, audio, pictures and videos). These features of social media open up opportunities for Nigerians to share their test, audio, pictures as well as videos about their environment.

Furthermore, social media as a visual medium can useful platform for management education because of its ability to engage and reach a wide audience, facilitate knowledge-sharing and behaviour change, provide real-time updates, and promote community involvement. Social media platforms such as Instagram, Facebook, and

Twitter can allow waste management institutions to engage with an enormous and different audience (Martin & Zhang, 2019). Visual content can quickly catch the attention of users, increasing the chances of message reception and creating a positive impact (Zhao *et al.*, 2018).

In terms of knowledge-sharing and behaviour change, social media can effectively facilitate knowledge-sharing and behaviour change by providing engaging and educational visual content (Liu & Huang, 2020). Infographics, images, and videos can present information about waste management methods, recycling techniques, and environmental impact in an easily digestible format (Martins *et al.*, 2018). This format supports cognitive processing and enhances the retention of information (Liu & Huang, 2020).

Real-time updates and the immediacy of social media allow waste management organizations to provide real-time updates on events, campaigns, or crucial waste-related information (Zhao *et al.*, 2018). Visual content can illustrate and communicate urgency, fostering a sense of timeliness and encouraging prompt action among users (Martin & Zhang, 2019).

Community involvement, social media platforms foster a sense of community and encourage user participation, enabling waste management organizations to promote community involvement (Martins *et al.*, 2018). Visual content can encourage users to share their own experiences, ideas, and practices related to waste management (Liu & Huang, 2020). This interaction can generate a sense of collective responsibility and motivate individuals to contribute to waste reduction efforts (Zhao *et al.*, 2018).

However, social media may not be utilized for this purpose until the citizens understand the importance of collective protection and preservation of their environment. They also need to know different human activities and their impacts on the entire ecosystem such as land, river/ocean, and air. They also need to understand what constitutes waste, waste disposal and management and possible means of recycling waste. It would not be out of place to know the laws, policies, programmes and even sanctions that await defaulters of environmental laws.

A better understanding of population growth and its attendant impacts on the environment would also be appreciated. For instance, the Nigerian population stood at 17 million in 1921, 21 million in 1931, 31 million in 1953, 55.67 in 1963, 79.5 million in 2001 and estimated 140 million in the 2006 controversial census and today it is projected at about 226,280,557 (Uwadiogwu & Iyi, 2015). A comprehensive knowledge of the factors that affect the environment needs to be abreast by social media users, especially social media influencers could then use their social media handles to educate others on the economic importance of waste management and recycling. Such factors also include technology such as machines, utensils, weapons, and instruments. Government attitude is another factor that should be considered.

Conclusion

Waste recycling is a key component in today's modern economy that should make part and parcel of the Nigerian economy if we must get out of this mono cum leaner economy that has thrown Nigeria into deep poverty. The review of the literature for this study has shown several benefits of recycling in Nigeria. Some of these profits include but are not limited to saving natural resources, protecting the Nigerian ecosystem and wildlife, decreasing demands for raw materials, saving and production of clean energy, cutting

climate change carbon emissions and creating jobs for the teeming population. Proper understanding of waste, management/recycling and the benefits is sine qua non to utilizing social media for environmental waste management education. Social media users, government agencies and all interested parties should utilize social media for waste management education because of its ability to engage and reach a wide audience, facilitate knowledge-sharing and behaviour change, provide real-time updates, and promote community involvement. Reduce, reuse and recycle should be the campaign message on social media.

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