

**PRODUCTION OF INTERIOR DECORATIVE ITEMS
FROM RECYCLED TEXTILE MATERIALS FOR
SUSTAINABLE WASTE MANAGEMENT IN
NIGERIA**

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Abstract

Waste generation in Nigeria is on the increase due to the rise in population and consumption of materials. Households store their waste primarily in plastic bags, sacks, and buckets. Contracted waste collectors collect mixed waste and transport it directly to dump site/landfills. Waste scavengers recover valuable materials while the remaining waste is burnt at these sites. Waste is seen as valuable resource to increase the economic benefits from recycling and diversion. Materials and products are kept in use as long as possible by extending

the life span, recycled back into the economy through recycling, refurbishing or re-purposing and by moving away from ownership of product to services. Waste management includes the processes and actions required to manage waste from its inception to its final disposal. This paper would look into different types of waste, waste management and how waste is turned into useful decorative materials in the household. It will also discuss skills used on the available textile waste for producing different decorative items. The paper was summarized, concluded and recommendations were made. One of the recommendations is that, Nigerian government should have political will to implement strategies on waste management; households should be committed to minimize the use of materials that generate much waste and be able to reuse some of their waste materials like plastic containers and textile materials.

Keywords: Waste management, recycling, decorative items, Textile materials and Landfills

Introduction

The upsurge in global population and increased urbanization has resulted in the increased production of municipal solid waste, thus becoming a critical issue as a result of its poor management and inappropriate disposal. In the past 30 years, Nigerian's major cities have been rapidly urbanizing, attracting hordes of people in search of a better life. Due to population growth in the major cities, there has been a significant increase in the volume of waste generated, which has put the city authorities under immense pressure to develop more efficient solid waste management systems especially in the low-income neighborhoods. The frequently practiced waste disposal methods in these neighborhoods are open dumping, open air burning and waste burial which are not only satisfactory but also unfavourable to public health. These

methods of waste management are found to be ineffective and detrimental to public health and the environment, Waste could be any material which has been used and is no longer wanted as the variable or useful part of it has been taken out. Solid waste can be defined as non-liquid and non-gaseous products of human activities, regarded as useless. It could take the form of garbage and sludge. Waste generated by human activities since time immemorial has continued to be a threatening problem and a growing one that is of major concern to every nation around the world. The rapid increase in the volume and types of solid and hazardous waste was due to the continuous economic development, urbanization and industrialization becoming a burgeoning problem for most governments in ensuring an effective and sustainable management of wastes. Waste management is the measures utilized to manage waste in its entire life cycle from waste generation to disposal or recovery. There are multiple waste management strategies that can be combined or rearranged to form a waste management system that fits the community, modern waste management strategies are geared towards sustainability. There is a streamlined process that organizations use to dispose of, reduce, reuse and prevent waste. Possible waste disposal methods are recycling, composting, incineration, landfills, and bio remediation. Waste to energy and waste minimization. Recycling as defined by Wikipedia (2022) is the process of converting waste materials into new materials and objects. It is an alternative to conventional waste disposal that save material and help lower greenhouse gas emission. Individuals should sort out items that can be reused before disposing them as waste thereby reducing the volume of solid waste in the environment; these items that cannot be used should be sorted and taken to industries for recycling. Some of the used items in the households like plastics, bottles, unfinished wools, old clothes, old ropes, old curtains and bed sheets can be recycled

to make decorative items in our homes. Decorative items are items that make place or household look more beautiful, happy, lovely and aesthetic (quora.com, 2023). Items that can be made from waste are curtains, wall hangings, throw pillows, vases, and homemade flowers, decorative boxes, baskets, trays, platters. The purpose of recycling waste is to make a house look pleasant and visually appealing, while on the other hand the community is protected from health hazards; prevent underground water pollution in order to have a good and aesthetic qualities. To reduce waste in our community, the people should be enlightened on the danger of poor waste disposal and the need for effective waste management. Households should try to minimize purchase of household items that will give heavy waste, and should sort out their wastes in order to keep those that can be reused or recycled, thus minimizing the waste to be disposed of.

Waste Management

Waste is any substance or material which requires to be disposed-off because of being broken, worn out, contaminated or otherwise spoilt, and as such, lost its usefulness. It could be in liquid or solid form and could be hazardous. It is also defined by state of Vermont Agency of National Resources Department of Environmental Conservation (2012) as “any tangible and non-free flowing unwanted materials or substances that result from human activities.” It is also referred to municipal solid waste where its sources are generated from commercial agricultural and industrial operations. According to the World Bank (2023), “Nigeria currently generates at least 32 million tons of solid waste annually, and this number is projected to rise to 107 million tons by 2050.” Babade (2020) added that “Nigeria with a population exceeding 180 million (National Bureau of Statistics, 2018) is one of the largest producers of solid waste

in Africa”; despite a host of policies and regulations, solid waste management in the country remains a huge challenge to the authorities, stakeholders and the entire public. Solid wastes are abandoned materials and could be garbage or sludge from a waste-treatment plant, empty aerosol cans, discarded materials resulting from community activities such as waste types, scrap metal, latex paint tins, furniture, toys, appliances and vehicles, compressed gas cylinders, construction and demolition debris. However, most of the waste commonly known as garbage, which consists of everyday items discarded by the public, is generally regarded as municipal solid waste. It covers all thrown-away materials including products of packaging, grass chippings, furniture, clothing, batteries, bottles, food scraps, newspapers and electrical appliances. Waste management has been a major challenge in Nigeria especially since post-independence. Waste generation has consistently expanded both in volume and complexity. This is due to the rapid increase in population over the years, increase in socioeconomic development, industrialization, technology advancements, changing lifestyles and consumption patterns. Consequently, it has led to a poor state of our environment as all manner of wastes clog drainages, litter streets, high ways, market places, public places and most open places. The increase in community waste generation leads to health hazards, underground water pollution, and affected air and aesthetic qualities. According to Babade (2020) “... it has been recorded that Nigeria generates over 32 million tons of solid waste yearly, and only a fraction is collected.” Most of these wastes are generated by households, and in some cases, by local industries, artisans and traders who litter the immediate surroundings. Improper collection and disposal of municipal wastes have led to different levels of environmental challenge. The challenges as stated are blockades of sewers, drain networks and the

choking of water bodies. Given the rate of population growth, industrialization and urbanization, forward-looking and effective waste management plans need to be set in motion for the protection of public health by the stakeholders including the waste generators, the private sector, the informal sector and regulatory agencies because Nigerian government cannot single handily manage solid waste. The collection of solid waste is characterized by inefficient coverage of the collection system and improper disposal. Disposal in most Nigerian cities include co-disposal of hazardous and municipal waste in open, unlined dumps, open burning of municipal solid wastes dumping on water bodies and in other unauthorized places. The situation is that presently Nigeria cannot boast of even a single properly engineered sanitary landfill for its municipal solid wastes. These practices have led to adverse health and environmental consequences including destruction of aesthetics and negative impact on tourism in Nigeria. Waste management is an important element of environmental protection. Its purpose is to provide hygienic, efficient and economic solid waste storage, collection, transportation and treatment or disposal of waste without polluting the atmosphere, soil or water system. It is the measure utilized to manage waste in its entire life cycle from waste generation to disposal or recovery. There are multiple waste management strategies that can be combined or rearranged to form a waste management system that fits the community or organization. Other alternatives for waste disposal are to reduce, reuse, refuse, repurpose and recycle. They serve as waste management in our households, community and organization (roadrunner.com, 2023). As a nation, people are generating more garbage and don't know what to do with it. Ineffective or irresponsible disposal of this waste can pollute the environment and pose a public health risk. People are running out of space in existing landfills and dumping sites. There is

no easy way to get rid of the garbage they once assumed could be buried or burnt. Current disposal methods threaten our health, safety and environment, and pose additional indirect costs to society. Most industrial, commercial and household waste is now being placed in landfills or surface impediments. Waste treated in this manner may contaminate groundwater, rivers, and streams. When waste is burnt, it releases hazardous gases into the air and leaves toxic residues in the form of ash. These hazardous waste by-products find their way into humans and animals in one form or another. The New Mexico legislature passed the Solid Waste Act of 1990, which set a goal of diverting 5% of New Mexico's municipal solid waste from landfills by 1995 and 50% by July 2000. In order to manage waste, the Environmental Protection Agency (EPA) and the Solid Waste Act favour an integrated solid waste management strategy that includes:

1. Reducing the amount of solid waste generated.
2. Recycling as much refuse as possible.
3. Transforming waste in environmentally safe manner and,
4. Continuously safe landfilling.

Reduce – Reducing the number of items to buy is the most significant of all the options to manage waste. The key is to only purchase goods that is needed and in the right amount. Reduce the use of harmful, wasteful, and non-recyclable products. Reducing dependency on these kinds of products, results in less waste materials ending up in landfill and the associated negative environmental impacts. Always use the minimum amount required to avoid unnecessary waste. Look through the different equipment, tools and materials the

household uses on a constant basis, and opt for using as many compostable or reusable options that are available.

Refuse - Refuse to buy wasteful or non-recyclable products. Do not take unnecessary product packaging and request for reusable or returnable containers. People should minimize the waste production by refusing to use materials that produce waste. There are better and far less wasteful materials that can be switched over. The key word is avoiding the use of items which are not needed

Repurpose - For every item that cannot be refused, reduced or reused, try re-purposing it. This method is referred to as up-cycling which means a product serving more than one purpose. The idea of re-purposing involves taking items that were not meant for one purpose but can be used for other ones. Check items in the household before making new supplies.

Reuse - It means to utilize same product item for same or different purpose. Single use plastics have created a throw-away culture by normalizing consumer behaviour of using materials once and then throwing them away. The rate at which people consume plastics is unimaginable and the plastic crisis has become one of the world's greatest environmental challenges. In an effort to reduce waste, try and reuse items instead of buying new ones. Some examples of reuse are: containers that can be reused for school projects, give outgrown clothing to friends and charity. buy beverages in returnable containers; offer furniture and household items that are no longer needed to people in need, friends and charity; old towels and sheets can be cut in small pieces and used for dust cloth; books, magazines and newspapers can be donated to schools, public library or pet stores; old tires can be used in the garden and in the play yard.

Recycling - It is also known as physical processing. It is ideal for the disposal of inorganic waste such as plastic, glass and metals through organic waste such as paper and food can be recycled. Recycling means to transform waste into resources or energy. The main benefits of recycling are that, it generates industry which will produce and supply materials at less affordable price. Recycling creates jobs for the unemployed and the disabled in the community; it is a cost - effective disposal option, it saves natural resources and helps protect the environment- lower taxes, energy savings, and a cleaner environment.

Challenges Facing Waste Management in Nigeria

Poor legislation and implementation of policy: The constitutional strength of solid waste management policy is weak and ineffective. The implementation of this policy is not monitored adequately. The efforts by state and local environmental protection agencies in Nigeria to completely rid streets of and neighborhoods of indiscriminate wastes have not yet achieved the much-desired success.

Cultural belief: Wastes are viewed as an invaluable and unwanted materials rather than wealth. Wastes are not seen as valuable materials that can be recycled for actual use, material recovery and energy recovery. The value of waste to people enhances the actualization of the process involved in the management of waste.

Poor management strategies: Waste management is hindered by exhausted waste collection services and by inadequately managed and uncontrolled dumpster and the problems are worsening day by day. The effectiveness of waste collection initiated by both the public and private sectors is largely controlled by location, the ability and willingness of the owner of the waste to pay the amount

charged. Most of the time people are not willing to pay. Most wastes in Africa is not collected by municipal collection systems because of poor management, fiscal irresponsibility, equipment failure, or inadequate waste management budgets.

Population growth: The ever-increasing challenges of rapid population growth rate and poor planning, has not only affected solidwaste management strategies incapable of keeping pace with the rate of generation. Education, income and socioeconomic status are other important factors influencing per capital solid waste generation and urbanization.

Generation and urbanization: As a result of urbanization and the rapid population growth in the country, wastes are generated faster than they are collected, transported and disposed. This problem has also complicated the problem of waste management as land becomes scarce, human settlements encroach new development directly on top of operating on recently closed landfills.

Home Decorative Materials

Decoration is important as it just give attractive look to the ordinary room. It is not only limited to wall accents and show pieces one can experiment with attractive cushion cover and some table ware or like with scented candles. Furniture and other items can be recovered, painted, distressed, stenciled, decoy paged or completely re purposed (quora.com, 2023). The most common decor items can vary based on personal taste and cultural trends, but there are several items that are widely popular and frequently found in many homes. Some common home decor items are:

Wall art: Paintings, prints, posters and photographs, they add visual interest to walls. They can reflect personal style, hobbies, or favorite themes.

Vases and flowers: Decorative vases with fresh or artificial flowers can add colour and vibrancy to a room. They are often placed on tables, mantels or shelves.

Throw pillows and cushions: Throw pillows come in a variety of colours, patterns and textures, adding comfort and style to sofas, chairs and beds.

Rugs and carpets: Rugs define space, add warmth and can anchor the overall design of a room. They come in different sizes, patterns and materials.

Lamps and lighting: Table lamps, floor lamps and pendant lights contribute both formality and ambiance to a room's lighting.

Clocks: They are functional and decorative. Wall clocks or tabletop clocks can become focal points in a room.

Decorative bowls and trays: These items can be used to display decorative objects, keys, or serve as catch-all for small items.

Curtains and window treatment: Curtains, blinds, and drapes not only provide privacy and control over natural light but also contribute to a room's aesthetics.

Sculptures and figurines: Small sculptures and figurines can be placed on shelves, tables, or mantels for added visual interest.

Picture frames: They display cherished memories and can be arranged on walls, shelves or tables.

Decorative cushions and throws: These textiles add comfort and warmth to furniture and their colours and patterns can complement the overall decor.

Decorative wall hangings: Macramè, tapestries, and other wall hangings can add texture and character to a room.

Decorative plates and platters: Plates with intricate designs or patterns can be hung on walls or displayed on stands as decorative pieces.

Decorative boxes and baskets: They provide storage solutions while also contributing to the decor, especially in organizing clutter.

Skills in Making Home Decoration and Recycling

Fabric Colouration

Tie dye: This is a term describing number of resists dyeing techniques and the result to dyed products. The process of tie-dye consists of folding, twisting, pleating or crumpling fabric or a garment before binding with string or rubber bands followed by the application of dye or dyes.

Batik dyeing: This is a technique of wax resist dyeing applied to whole cloth, or cloth made using this technique. It is made either by drawing dots and lines of the resist with a spouted tool called a casting, or by printing the resist with a copper stamp called a cap. It is defined as a type of resist printing process in which wax is applied to the fabric in specific areas. When the wax hardens, the fabric is submerged in dye. The wax prevents the dye from reaching the fibers.

Quilting it's an art piece and a process of joining a minimum of layers of fabric together either through stitching manually using a needle and thread, or mechanically with a sewing

machine or specialized long arm quilting system. It is described as the sewing of small regular stitches that hold together 2 or 3 layers of fabric. The stitching keeps the layers from stretching or shifting out of shape. There are four basic types of quilting, they are pieced, applique, paper pieced and English paper pieced. Quilting was primarily a practical technique to provide physical protection and insulation. Quilted work can be done on old sheets to make decorative bed cover, table mats, covers for bread basket and cover for couch, boxes for keeping throw-all, door mat, wall hangings, sofa throw, throw pillows, bolsters. Left over fabric and scrap fabrics can be used for scrap tape quilt.

Patch work: Also known as piecing, is the process of joining strips, squares, triangles, hexagons and other shaped pieces of fabric (patches) by either hand or machine stitching into square blocks or other units. In constructing the quilt top, the pieced blocks may be stitched together, alternated with blocks out from a single fabric or separated by long strips of fabric known as saching. The blocks may be arranged in a wide variety of settings, including rotated 90 degrees 'on point'. Pieced or plain boarder strips are often added to complete the quilt top. The patches can be irregular in sizes and shapes to create crazy quilt (this is where fabric scraps of different colours and designs can be used). for sustainable

Crochet: It is a craft that is developed in the 19th Century out of a form of chain stitch embroidery, done with a hook. The hook is used without a foundation material to make a texture of loop and into linked chains of thread (Tikken, 2020).

Embroidery Work: It is the art of decorating material, primarily textile fabric, by means of a needle and thread, or fine wire. The basic techniques include crewelwork, needlepoint, cross stitch embroidery and quilting, as well as

quill-work and feather work. Historically, embroidery work was seen on clothes worn by Ancient Egyptian, couch covers, hangings and tents were so decorated, even the armor worn by Greeks were embroidered (Kuiper, 2020). Decorative items that can be made from old jute or linen fabric are wall hangings, kitchen curtains, table runners and place-mats.

Bead-work: It is the art or craft of attaching beads to one another by stringing them onto a thread or thin wire with a sewing or beading needle, or sewing them to cloth (Merriam Webster, 2014). Beads are produced in a diverse range of materials, shapes and sizes, and vary by the kind of art produced. Types of bead-work are loom, off-loom weaving, stringing, bead embroidery, bead crochet, bead knitting and bead tatting. According to heritage Craft association “beads are used to create jewelry or other articles of personal adornment. They are also used in wall hangings and many other artworks. Old clothing can be recycled to make tent hanging, wall hanging, jewelry box, table runners and place-mats.

Macramé: It is a form of textile produced using knotting techniques. The primary knots of macramé are the square, and forms of hitching. Macramé is used to create plant hangers, clothing, wall hangings, dream catchers, curtains, tablecloth, coasters and curtains, tablecloth, tassels, key chains, and bookmarks. With an infinite way of combining various types of knots, one can create both aesthetic and functional pieces. Macramé is done without any tool, just using hand. It's either tied on a wooden frame (macramé board) or hung from the ceiling. Beads or shells can be used to beautify the work. From old fabric, old jute thread/sack, Chester cover, hammock, frames, old jar / bottle hanger and curtains can be made or produced.

Rug Making

• **Rug hooking:** It is both art and craft where rugs are made by pulling loops of yarn or fabric, through a stiff woven base such as burlap, linen or rug warp. The loops are pulled through the backing material by using a crochet-type hook mounted in a handle (usually wood) for leverage. (Spiro, 2008). In contrast, latch hooking uses a hinged hook to form a knotted pile from short, pre-cut pieces of yarn. It is used to create wall hangings, tablecloth, covers and rugs. Designs made range from flowers to animals and geometric.

• **Rug Tufting:** It is a method of making soft fluffy rugs with hand or tufting gun. A sheet of canvas or similar fabric like jute makes the foundation, while wool strands are used through the canvas using tufting gun or hand. The canvas backing has the design of the rug drawn up on its back, and as he weaves the rug will fill in the design with yarn working from the back. The yarn strands are brought in and out of the canvas base so the rug pile is built up overtime (sonyawinner.com 2023). Wool remnants and fabric scraps can be used to make the tufting.

Others: Old paint buckets/containers with old sheets, linen or towel can be used with cement to make flower/plant pots. Plastic bottles can be shredded and made into table decor. Fabric scraps can be shredded and use as pillow fillings. Empty tape rolls, old jute rope, ice cream straws are recycled to make wall hangings and wall mate paper flower. Old boxes into picture frames, left over fabrics into throws, tool holder and Tatami pillows. Old paint buckets can be recycled to upholstered side stool.

Summary

Nigerian cities and towns are currently facing serious environmental challenge due to poor solid waste management. It is generated at a rate beyond the capacity of authorities to handle for the sake of maintaining a sustainable urban environment. This has resulted in a poor solid waste management that portends serious environmental crisis in most Nigerian towns and cities. Waste generation encompasses those activities in which materials are identified as being no longer of value and are either thrown away or gathered together for disposal. When standard of living rises, people consume more, so waste increases. A healthy environment in most part of Nigeria has been compromised by indiscriminate disposal of solid waste such as; it requires efficient management since solid waste generation occurs as a result of human activities. The need for adequate waste management strategy in any community cannot be overemphasized, because inadequate waste management creates a negative impact on the environment and human health.

Conclusion

In Nigeria mountains of waste have become permanent features of landscape in major cities, it is estimated that 32 to 42 million tons of solid waste is generated on annual basis and out of this volume only 20 to 30 percent is collected and properly disposed of, mainly because 2/3rd of urban households in low-income neighborhoods lack formal waste management services unlike middle class and affluent neighborhoods where waste is regularly collected. This reality portends a very dire future for city residents in low-income areas who are unable to manage the volume of waste presently produced which are in form of liquid and solid state, resulting

in a plethora of health in environmental challenges for these residents. Waste management is an important element of environmental protection. Its purpose is to provide hygienic, efficient and economic solid waste strategy, collection, transportation and treatment or disposal of waste without polluting the atmosphere, soil or water system. The global population and increased urbanization have resulted in the increased population of municipal solid waste, thus becoming a critical issue as a result of its poor management and inappropriate disposal. In the past 30 years, Nigeria's major cities have been rapidly urbanizing, attracting, hordes of people in search of a better life. There has been a significant increase in the volume of waste generated which has put city authorities under immense pressure to develop more efficient solid waste system especially in low-income neighborhoods. Nwosu and Emeka study results showed that waste management in Nigeria is poor, interwoven with several challenges as increase in population, area covered, increase in urbanization and industrialization, tenure of government, over dependence on government authorities for waste management, finance and other factors of the environment. However solid waste management can be achieved through public enlightenment, composting, management improvement and strengthening, and supporting waste management agencies. It can also be affected by poor funding, poor management strategies, population growth, poor legislation and implementation of policies. Thus, the goal of the sustenance of a healthy environment requires paying careful attention to the environment which entails the proper management of solid waste.

Recommendations

1. Public awareness campaign via electronic and print media by the chiefs and community leaders to enlighten the general

public on the danger of poor waste disposal and the need for effective waste management.

2. There should be public and private partnership for effective waste management in order to sustain a healthy environment,

3. There should be proper town planning for effective waste management.

4. There should be proper landfill facilities for a proper deposition of waste.

5. Nigerian government should have political will to implement strategies on waste management. 6. Households, individuals and business organizations should be committed to minimize the use of materials that generate much waste and be able to reuse some of the waste materials like plastic containers materials and textile

7. Households should sort out their waste materials to be able to recycle or donate to the needy.

8. Community should leave the culture of throw-away by being creative in making some wastes like boxes, papers, plastics, jars and cans into something more useful for function and beautification in the household. The recycling plant/industries put in place by the government is not fully functional and are not adequate to take the volume of wastes in the country.

9. Government and private agencies should partner for sustainable waste management.

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