

1 Capacity-Building in Waste Wealth: Reusing of Discarded Tires 2 for Making Home use Furniture

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6

7 **Abstract**

8 This paper discussed the capacity-building and its relevance in the transformation of waste to
9 wealth. The study enunciated that capacity building strategies harness creative skills for
10 stimulating entrepreneurial opportunities. It emphasized that entrepreneurial ideas in the
11 areas of waste to wealth contribute immensely to the economic growth of developing countries
12 to create sustainable jobs. The paper noted that reusing tires and other waste items is more
13 environmentally sustainable recycling processes which pollute the environment. However, the
14 researchers skillfully reused discarded tires in producing home use furniture. Foam and Adire
15 fabric were utilized as a cover for the produced furniture for usability and attractiveness.
16 Metal stands were affixed underneath the furniture to achieve balance and durability. The
17 produced furniture are suitable for homes and public use.

18

19 *Index terms—*

20 **1 I. Introduction**

21 capacity building is the development of knowledge, skills, and attitudes in individuals and groups of people relevant
22 in the design, development, and maintenance of institutional and operational infrastructures using processes
23 locally meaningful. Entrepreneurial development is anchored on robust capacity-building strategies that involves
24 harnessing creative skills essential to create economic opportunities. The increasing population in Nigeria is an
25 enabler for creative minds to deploy their skills in stimulating viable employment opportunities which provides
26 means of livelihood for the growing labour force. Creative entrepreneurial initiative contribute immensely to the
27 economic growth of developing countries in creating sustainable jobs. Apparently, Nigeria confronts challenges
28 of an ineffective waste collection systems, inadequate coverage of the collection system, and poor management
29 of collected wastes. The creation of regulatory frameworks to encourage private individuals to invest in waste
30 collection, recycling, and reuse are necessary to build capacity in waste to wealth. Used or expired items
31 in the environments such as empty cans, containers, used/expired tires can be transformed into objects of high
32 premium value when recreated or reworked by creative minds. Recreating disposed items could be a source of
33 livelihood and income-earning in a developing economy like Nigeria. Entrepreneurial prospects in the waste to
34 the wealth value chain are focused on transforming expired used objects into valuable functional items to generate
35 sustainable livelihoods. The business model of a waste management venture involved in the reuse of waste
36 materials should entail feasibility/cost-benefit analyses; returns on investment/pay-back analyses; branding,
37 marketing and distribution networks; analysis of competitiveness. The easy access to unused or expired tires
38 spurs entrepreneurial drive into these areas and enable skillful creative individuals to explore the transformation
39 of these into objects functional objects of value. Apparently, this creative method of managing disposed tires
40 preserves it for future reuse and more appropriate than the destructive way of recycling through burning.

41 **2 a) Solid Waste Management in Nigeria**

42 The rapid increase in the global population has driven an upsurge in socioeconomic activities such as
43 industrialization, technological developments, changing lifestyles, and consumption patterns. Daily human

5 IV. CONCLUSION

44 activities produce different kinds of waste constituting harmful environmental threat to residents of cities in
45 developing nations across the world. Nigeria, with a population exceeding 170 million, is one of the largest
46 producers of solid waste in Africa (Bioenergy Consult, 2019). Nigeria generates more than 32 million tons of
47 solid waste annually, out of which only 20-30% is collected (Bioenergy Consult, 2019). However, the Nigerian
48 federal government promulgated environmental 1988 to safeguard the public space from environmental nuisances
49 that endangers society. Adewole (2009) noted that one of the few statutes in Nigeria, which attempts to define
50 waste is the Lagos State Environmental Edicts 1985, therein Section 32, waste is defined as follows:

51 Waste includes: i. Waste of all descriptions. ii. Any substance, which constitutes scrap materials or effluent or
52 other unwanted surplus substances arising Sridhar (1996) defined waste any unavoidable material resulting from
53 domestic activity or industrial operation for which there is no economic demand and which must be disposed
54 of Adewole (2009) Disposed tires constitute a large chunk of the municipal solid wastes in Nigeria due to the
55 countrys heavy reliance on road transportation. The discarded tires are not fit to be used by vehicles because
56 their continuous usage can cause an accident leading to the loss of human lives. Often, waste tires are retreaded
57 for reuse, or processed into crumbs for making surfaces and into chips for use as a solid fuel (foramfera, 2018).
58 However, the uncondusive business environment in Nigeria caused by poor infrastructure and multi-tax system
59 hinders industries such as tire production factories that can either retread or recycled for use. The previously
60 available ones have relocated to neighboring countries. Used tires are typically discarded, reused or burnt. Open-
61 air burning of tires pollute the air, contaminate the soils, alters their physical and mechanical properties and
62 makes the soil prone to ecological disasters. Hence, this research reused discarded tires to produce furniture
63 suitable for home use. This research design is product development. The research population is eight unused
64 and expired tires packed from dumpsites around Ifo Ogun State. The materials utilized for this research include
65 unused tires, fabrics, dye, hydro Sulphate, Soda, Foam, wooden plank, Binding wire a) Procedure of Production

66 3 Production of Center Table

67 Tires were washed and dried to remove dirts. The fabric was also washed and spread in the sun to dry, then dyed
68 into red and blue using Adire technique (see Plate 2). Dyed fabric was ironed for smoothening. Foam materials
69 with minimal thickness were wrapped and fixed firmly on the tires using stapled gun to prevent removal of the
70 foam from the tyre. Likewise, the dyed fabric with Adire patterns were laid and wrapped on the foam covering
71 the exterior of the tires (see Plate 3, and Plate 4). To create a seat, two wrapped tires were fixed together using
72 a screwed steel plate (see Plate 5); short pieces of 2×3 planks were inserted into the joined tires and nailed on
73 wooden round shape base fixed underneath the lower tires. A round glass piece was placed and affixed on the
74 upper part of the joined tires to produce the center table. Adhesives was applied to the edges of the wrapped
75 foam and fabric to achieve good finishing. Some of the tires were cut into two, using saw blade and small pieces
76 square-shaped plywood were inserted into the openings to brace and strengthen that section of the seat to provide
77 the needed comfort when rested upon. These parts of the furniture were wrapped and covered with foam and
78 Adire fabric. The back rest was placed on a complete tyre that has an underneath base affixed with 4pieces
79 of 2×3 in the interior and covered on to the top with roundish based wrapped with foam and Adire fabric, which
80 enables users to seat. Four sets of these seats were produced and each has aluminum steel attached underneath
81 to create balance for the seats and center table

82 Researchers

83 4 III. Discussions and Results

84 The result shows that expired, and used tires can be skillfully reused to create objects of premium and functional
85 value. The produced furniture resonate comforts and style. Balancing and movability are the trademarks of these
86 creative items. The steel stands attached underneath the furniture's enhance balancing and movability. Adire
87 fabric covers add richness and colourful socio-cultural embodiments to the furniture. Also, incorporated foam
88 material enables easiness and usability. These furniture fit for both indoors and outdoors due to the aesthetics
89 and adaptability features. Therefore, they are suitable for offices, banks, hotels, public buildings, homes and
90 others. Tires are sturdy and non-degradable, hence the furniture will be durable and long-lasting.

91 5 IV. Conclusion

92 The transformation of expired and used tires into the home and office use furniture showcases the entrepreneurial
93 opportunities therein in the application creative skills to items of perceived little or no value. Capacity building
94 in waste wealth leverages a sustainable means of livelihood across the value of production of in the reuse of
95 discarded items. Also, this type of entrepreneurial venture can easily be setup because the primary materials are
96 cheaply available. Creative reuse of discarded items such as tires hitherto changes the perception of these items
97 as being objects of no value that constitute an environmental nuisance that could endanger human lives. Reuse
98 is environmentally friendly, safe and cost-effective approach to disposing waste materials than other recycling
99 methods. ¹



Figure 1:



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Figure 2: Plate 2 : 1 :Plate 7 :



Figure 3:



Figure 4:



Figure 5:

100 [] , <http://www.academicjournals.org/INGOJ>

101 [International Journal of Research Engineering ()] , <http://www.ijresm.com> *International Journal of Re-*
102 *search Engineering* 2018. Vol2on25/ 12/2019. 2 (2019) . (Science and Management)

103 [Foramfera ()] Foramfera . *Scrap Tyre Recycling In Nigeria*, 2018.

104 [Amber et al. ()] 'Municipal waste in Nigeria generation, characteristics and energy potential of solid'. I Amber
105 , D Kulla , N Gukop . *Asian J. Eng. Sci. Technol* 2012. 2 p. .

106 [Solid Waste Management in Nigeria ()] *Solid Waste Management in Nigeria*, 05/12/2019. 2019.

107 [The Pre-Feasibility Report (2019)] *The Pre-Feasibility Report*, 7/12/2019.

108 [Adewole (2009)] 'Waste management towards sustainable development in Nigeria: A case study of Lagos state'.
109 A T Adewole . *International NGO Journal* 2009. April 2009. 4 (4) p. .

110 [Sridhar (1996)] *Women in Waste Management. A Seminar Paper Sponsored by LHHP and the British Council*
111 *on Educating Women for Sustainable Environmental Management*, Mkc Sridhar . 1996. March 5-7. Owerri,
112 Nigeria.