

RESYCELL

**A Sustainable Bi-Concept for Commercializing
Plastic Wastes to Renewable Energy**

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PROPOSAL SUMMARY

Plastic waste as cause of pollution and environmental hazard is a long overdue problem, as is a challenge confronted by all countries of the modern world. With the increase in population, urbanization, economic growth and lifestyle orientations, it is anticipated that plastic waste will triple over the years especially polyethylene terephthalate("PET") from post-consumer beverages and water bottles as the growing utilization of plastics in industrial and consumer awareness applications, combined with increased consumer awareness surrounding solid waste recycling, which has led to an increased demand for energy generation,recycled plastic resins and products that can be used in construction.

Linked to this global concerns about plastic waste management, there is a broader necessity to mitigate climate change/emergency on a "Macro" Scale through a "Micro grid" Scale, using innovative mode of "Concept" called "**Resycell**". This concept is a sustainable model towards providing an independent bi-analytical sustainable recycling means and renewable energy generation. Resycell will capitalize on the opportunities in the use of use of plastic waste to generate electricity, produce recycled resin and production of building materials through three main divisions: an Energy Generation Division,Recycling Division and Production Division.

The Company will create a microgrid PET collecting and processing plant, in every city and communities located in different parts of Nigeria where it will be able to collect and process the plastic waste, using the liquid residues obtained to generate electricity with its invented machines and will on the other hand use the solid residues obtained during the processing of the plastic waste to produce new materials like construction tools. The Company already has commitments available from customers to purchase all of the products produced.

I. INTRODUCTION

The problem of plastic waste management are wide and far-reaching, while the human and environmental concerns keeps emanating as the ratio keeps increasing. These have attracted considerable attention from scholars, activists, governments, private and multilateral organizations.

This relatively newer dimension to this problem called "**Resycell**" emphasizes recycling, but in "slang" fallacy but in trendy parlance.

"**Resycell**", which has received paltry scholarly attention thus far, is a reconceptualisation of recycling waste dimension to the global waste challenge in regulatory and trade terms. So, in order to ingrain a sustainable waste management culture, this strategy was "innovative". In the strictest sense, recycling of a material would produce a fresh supply of the same material for example; used office paper would be converted into new office paper, or used foamed polystyrene into new polystyrene. It has been a common practice for most of human history, with recorded advocates as far back as Plato in 400 B.c. During periods when resources were scarce, archaeological studies of ancient waste dump show less household waste (such as ash, broken tools and pottery) implying more waste was been recycled in the absence of new material. Beverage bottles were recycled with a refundable deposit at some drink manufacturers in Great Britain and Ireland around 1800, notably Schweppes. An official recycling system with refundable deposits was established in Sweden for bottles in 1884 and aluminum beverage can in 1982, by law, leading to a

recycling rate for beverage containers of 84 – 99% depending on the type and average use of a glass bottle is over 20 refills.

In some prosperous and many less prosperous countries in the world, the traditional job of recycling is performed by the entrepreneurial poor such as the Karung guni, Zabaleen, the rag- and -bone man, waste picker and junk man. With the creation of large recycling organizations that may be profitable, either by law or economies of scale. The poor are more likely to be driven out of the recycling and the remanufacturing market. To compensate for this loss of income to the poor, a society may need to create additional forms of societal programs to help support the poor—as the “**Resycel+**” concept, because; like the parable of the broken window, there is a net loss to the poor and possibly the whole of the society to make recycling artificially profitable through law. However, as seen in Brazil and Argentina, waste pickers/ informal recycler are able to work alongside governments. In (semi) funded cooperatives or start-up, allowing informal recycling to be legitimized as a paying government job or private investment opportunity.

There had been tremendous improvement in attempts to turn waste around the world. Some have even gone further to generate energy from refuse as it has been done by **Resycell** [https://www.google.com.ng/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0ahUKEwjusr-lkNnPAhVIMo8KHZSwCKUQtwIIO DAF&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DuKnJiI BjbPg&usg=AFQjCNECdWowKVI7OB4-HT6TT_v73ZEosQ] by turning waste nylon bags to biofuel to generate light.





But, Nigeria, despite this huge potentials, has never given much thought to this invent[PROTYPES], which will carry its burden of filth that turns its environment into an eye sore and explore it into new projects.

In eventual every urban centre around the country, heaps of refuse dumps literally jostle space with human beings; yet, no one seems to bother about it, which of course has turned a common norm; a vivid picture of what Nigerian streets have become shows-- empty cans, pockets of assorted food, drinks and fastfood left-overs; disused items, and lately the "pure water" cellophanes, which have assured a notorious identity, all pile the streets as though they are articles of ornament. Travel from Lagos to East and up to North, the same disgusting picture stares you in the face.

About 10,000 metric is said to be generated in the metropolis daily, this amounts to 300,000 metric tones monthly and 3.6 million metric tones annually. This staggering figure over time, then posed a Herculean task to the state government over the years, making the cities to always accommodate piles of refuse, littering the streets. Although, attempts at converting wastes into value seemed to remain feebly an unsustainable idea.

The "**Resycel+**" concept ensures that environmental sanitation not just improve, but are being sustained with subsequent benefits through the financial and health sectors especially that of poor inhabitants. The concept is fostering the emergence of a skilled and unskilled effective business sector wherein social enterprises, founded by and in poor urban communities are deriving wealth from the provision of environmental services and derivative from recycling and re-use activities. The waste

therefore becomes the catalyst for income generation, energy generation and, creates of employment opportunities within the country.

Furthermore, the paper examines the social economic implications of initiating **“Resycel+”** concept while pointing out the economic and environmental advantages of its utilization both to the primary consumer and globally. Most importantly, the paper highlights the socio-cultural expectations of adopting this bi-analytical concept while pointing out real-time lessons learnt.

Ultimately, the paper presents the **“Resycel+”** concept as an bi-analytical concept for sustainable Micro and Macro scale model in commercializing waste management and generation of electricity, so as to speed-up proper socio-economic sustainability in populous and developing countries/cities.

II. “Resycel+” CONCEPT

This **“Resycel+”** is an enterprenuer design concept. The Concept is designed to sustain both urban and rural settlers. The main aim of this concept is to provide an independent Bi-analytical energy sustainable **“MICRO”** and **“MACRO”** Grids in populous and developing countries/cities, thereby instilling a proper waste management orientation, generating electricity, support financial literacy and local digital content while with ultimate aim of contributing in global climate change challenges.

Before now in Nigeria, particularly in urban cities, garbage was disposed of and dumped at every available space on the street, road-side and canals without consideration for the negative consequences of the wastes, so much that taking care of it requires burning at landfills or garbage dumps. This, however, creates pollution and attendant health hazards, which, experts says leads to approximately 20,000 deaths across the nation yearly. In spite of that, efforts at making people pay to have their waste evacuated by government approved agents had not properly worked, thus leading to a change in strategy of having waste bins in front of every house as is done in organized societies. This has equally failed due to what may attribute to poverty.

The idea of this concept/strategy called "**Resycel+**" where waste dispose is exchange for its monetary value, is for rich/average/poor/skilled/unskilled or those that are interested especially the investors; thereby empowering people.

This "**Resycel+**" concept will also help promote cleaner initiatives that supports other diverse energy projects as energy from waste (biofuel) can produce electricity, which can also renewably power the "**Resycel+**" grids where Uchemeka could have disposed his "used plastic pet-bottled can" and in-turn credits his e-account/mobile top-up with as little as assumed sum of "50 Kobo" or "5 cents". This would mean more than societal norm for Emmanuel. It would give him a sense of belonging/financial value.

This concept is modified with financial, statistical and economic details for the target urban and rural settlers.

Equivalently, it is initiated to ascertain aspiring Youths/Entrepreneurs to brainstorm innovative ideas towards a safe, affordable, healthy and productive lifestyle.

Expected results:

- Proper Independent bi-analytical energy sustainable initiatives obtained.
- The emergence of a unskilled and skilled effective business sector wherein social enterprises; founded by and in poor/rich communities, derive wealth from the provision of environmental services and derivative from recycling and re-use activities.
- Sustained environmental sanitation improvement, with subsequent benefits in financial and health sectors for rural/urban inhabitants through service provision as a result of partnership involving local government, private sector and civil society.
- Improve awareness amongst all stakeholders, including policy makers on the rights and entitlement of poor dwellers to a clean environment.
- Enhance public and private partnership integration (PPI)
- Enhance proper local digital data/content through the pay-per-cycle model

III. RECYCLING CONSUMER WASTE

A number of different systems have been implemented to collect recyclates from the general waste stream. These systems lie along the stream of trade-off between public convenience and government ease and expense. The three main categories of collection are “drop-off centers” “buy-back centers” and curbside collection”.

Drop-off centers: This requires the waste producer to carry the waste to central location; either an installed or mobile collection station or the reprocessing plant itself. They are the easiest type of collection to establish, but suffer from low and unpredictable throughput.



Buy-back centers: These differ in that the cleaned recyclates are purchased, thus providing a clear incentive for use and creating a stable supply. The post-processed material can then be sold on, hopefully creating a profit. Unfortunately, government subsidies are necessary to make buy-back centers a viable enterprise.

Curbside collection: This encompasses many subtly different systems, which differ mostly on where in the process the recyclates are sorted and cleaned. The main categories are mixed waste collection, commingled

recyclable and source separation. A waste collection vehicle generally picks up the waste



IV. COST BENEFIT ANALYSIS

Environmental effects of recycling

Material	Energy Savings	Air Pollution Savings
Aluminum	95%	95%
Cardboard	24%	--
Glass	5-30%	20%
Paper	40%	73%
Plastic	70%	--
Steel	60%	--

VI. STATISTICAL, FINANCIAL AND ECONOMIC INCLUSIVE DETAILS

According to research conducted done by the Nigeria Deposit Insurance Co-operation (NDIC) through its Department of Research, Policy and International Relations; quote: "100 million Nigerians living in poverty represents 61 percent of the population".

And through the National Bureau of Statistics (NBS) sources the (NDIC) also stated that 84 percent of Nigerian earns less than \$2 dollars per day. This research also projected that globally, human population is expected to exceed a billion by 2050. With the current assumed 180million population, Nigeria, would be the world's fourth or even most populous country with over 400million people by 2050, this means a triple in its wastes. In other accordance still, there is gender inequality which is a barrier to economic inclusion. Women comprise the majority of economically disadvantaged groups. They perform 66 percent of the world's work, produce 50 percent of the food, but earn only 10 percent of the income and only own 1 percent of the property. Out of the 572 million working poor in the world, an estimated 343 million or 60 percent are women.

Several United Nations agencies are investing heavily in financial inclusion programs, designed to bring financial services to the poor and make them less aid-dependent. Although the efforts made so far have been sizable, observers are beginning to wonder if the programs can succeed on their own. But, with idea like "**Resycel+**" concept behind financial inclusion, making financial services such as credit, savings and insurance available to rural areas as those living on just \$2 dollars on a day. And this concept will reached the rural poor and their lives would

improve tremendously with the goal to create an opportunity where the program will ultimately bring a full values chain improvement that can outlive world food programs (WFPs) participation.

Apart from the fact that this concept will induce self-sufficient for the local people to create their own and also provide jobs, this concept will make the rural poor to stop taking donations. Although, it is yet clear if the rural poor can truly be self-reliant, except for this trait of the concept/strategy which have so far been run only on a small scale by "**WECYCLERS**" a Start-up in Nigeria whose concept focuses on community engagements which supports wealth creation and financial literacy – educating those living on a few dollars a day of daily expenses about how to make wealth out of wastes.

So with proper support and publicity, this concept "**Resycel+**" will advocate widespread socio-economic sustainability and advance proper ICT-based energy solutions within the Nigeria State and beyond.

VIII BUSINESS MODEL DELIVERY

The business delivery of this concept lies with the collaboration of government, private like the **WECYCLERS**, and public sectors. The government sectors include the Ministry of Environment, National Orientation Agency, National Deposit Insurance Corporation (NDIC), Ministry of Finance, ICT Ministry, and Security Agencies. The private sectors; include – Banks, Telecommunication Agencies, Assorted Food/Drinks Companies and so on. While the public sectors includes:- Both

urban and rural Settlers, which constitute of Men, Women and Children of different age and grades. And with proper integration between these sectors; Social and environmental standards will be achieved.

Also in support of this, according to research conduct by (NDIC) on environmental issues; this properly favor the private sectors, who tends to gain mostly from this sort of concept, the (NDIC) explained that private sectors can access international capital from international finance institutions (IFI's) which this sort of concept will attract, thereby reducing their exposure to credit, compliance and reputation risks.

Other private sectors like the telecommunications will participate through its proper data capturing details that helps in local digital data/content. It's provision of mobile networks to poor rural settlers, thereby enhancing and supporting its mobile communication businesses.

The government on its part will serve as regulatory or monitor to the transaction/co-ordination, towards increased demand in recycled product labeling. Producers are required to label their packaging with amount of recycle material in the product (including the packaging), consumers are better able to make educated choices. Consumers with sufficient buying power can then choose more environmental conscious options, prompt producers to increase the amount of recycled material in their product, and indirectly increase demand. Standardized recycling labeling can also have a positive effect on supply of recyclates if the labeling includes information on how and were the product can be recycled.

Governments have also legislation to increase and maintain a demand for recycled materials. Four methods of such legislation exist;

minimum recycled mandates, utilization rate, procurement policies, recycled product labeling.

Both minimum recycled content mandates and utilization rates increase demand directly by forcing manufacturers to include recycling in their operations, content mandate specify that a certain percentage of a new product must consist of recycled material. Utilization rates are a more flexible option; industries are permitted to meet the recycling out in exchange for (trade) able credits. Opponents to both of these methods point to the large increase in reporting requirements they impose, and claim that they rob industry of necessary flexibility.

Government can use their own purchasing power to increase recycling demand through what are called " procurement policies" these policies are either "set-asides" which earmark a certain amount of spending solely towards recycled products or "price preference" programs which provide a larger budget when recycled items are purchases. Additional regulations can target specific case: in the United States, for example, the Environmental Protection Agency mandates the purchase of oil, paper, tires and building insulation from recycled or re-refined sources when ever possible. Finally, this concept will enhance proper local digital data documentation for the public.

To the public sector, the concept will make financial service such as credit, savings and insurance available to everyone especially poor people in Africa's rural areas.

IX. RECYCLING ENERGY PROJECTS (REPs)

In a bid to ultimately provide a complete environment with no energy loss or no/minimal emission, this concept also incorporates other diversified enrich energy projects.

Despite huge potentials in waste, Nigeria; as both a populous and developing country never gave much thought to it.

XI. CONCLUSION

it is well recognized that the focus on waste management needs commercial view so as to meet up with challenges in the global scene.

The Nigeria States and globally needs this Bi-analytical sustainable concept for its development and ever increasing population especially the poor rural settlers, in order to make them self-reliant, financial literate and proper local digital content/data, so as to enhance future sustainable socio-economic development.

XII. REFERENCES

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