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(IJPPA) **A Review on the Commercialisation of Scrap within the
Perspective of the Circular Economy in Uganda**



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A Review on the Commercialisation of Scrap within the Perspective of the Circular Economy in Uganda

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Abstract

Purpose: This study aimed to review commercialisation of scrap with a view of stimulating the circular economy of Uganda.

Methodology: A desk review method was adopted seeing that the researchers did not have any funds devoted to this research coupled with limited time as a result of busy work schedules. This method is handy in unearthing important issues using secondary data such as academic journals, text books, periodic reports, policy documents and other official documents of government and non-state actors such as the civil society.

Findings: The circular economy in Uganda offers opportunities for the reuse of materials, job creation, waste reduction, and resource preservation, but challenges such as inadequate infrastructure, the informal sector, health and safety risks, limited access to raw materials, insufficient financing, and a lack of regulation and enforcement need to be addressed. Solutions to promote a safer and more sustainable circular economy include reducing waste at the source, promoting reuse and repair, and designing products for circularity. A multi-stakeholder approach that involves collaboration and partnerships between the government, private sector, and communities is needed.

Unique Contribution to Theory, Practice and Policy: This review acts as an eye opener to the urban authorities in Uganda and the region seeing that commercialisation of scrap serves as a form of employment for several youths, generates revenues and more importantly helps to mitigate climate change variability on top of maintaining cleaner cities and towns.

Keywords: *Circular Economy, Reduce, Reuse, Recycle, Recovery, Scrap*



1. Introduction

This study seeks to explore scrap business and the circular economy in Uganda. Scrap business is the process of collecting, sorting, and selling waste materials such as metal, plastic, paper, and electronic waste for recycling. It is a critical part of the circular economy, which seeks to minimize waste and promote sustainability. The modern scrap industry began in the late 19th century with the growth of the steel industry and the need for a reliable source of scrap metal, leading to the development of a market for scrap materials and the emergence of commercialisation of scrap, creating a circular economy. In 2012, the Ellen MacArthur Foundation emphasized the importance of recycling and recovering materials in a closed-loop system, which includes the collection and sorting of waste materials through the scrap business. Commercialisation of scrap has evolved to include a wide range of materials beyond metal, such as paper, plastics, and electronic waste, becoming a critical element of the circular economy.

The circular economy is an economic concept that seeks to use resources more efficiently and extend the lifespan of commodities in order to reduce waste. It has been around for several decades but was popularized in recent years by the Ellen MacArthur Foundation in 2012, titled "Towards the Circular Economy: Economic and Business Rationale for an Accelerated Transition." The concept is based on three principles driven by design: eliminating waste and pollution; circulating products and materials (at their highest value); and regenerating nature. It is underpinned by a transition to renewable energy and materials. It is a systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution. It decouples economic activity from the consumption of finite resources and is resilient for businesses, people, and the environment. The circular economy will give us the tools to tackle climate change and biodiversity loss together while addressing important social needs.

The scrap trade in Uganda offers opportunities for a circular economy, including the reuse of materials, creating jobs, reducing waste, and preserving resources. The circular economy aims to use resources more efficiently by extending the lifespan of commodities and creating new markets for recycled materials, which can have positive effects on the economy, society, and environment. To take advantage of these opportunities, businesses and communities must collaborate to develop a more sustainable and effective use of resources while also helping local communities and safeguarding the environment. The principles of "people, planet, and profit" are essential for guiding these ideals.

1.1 Conceptualisation of key issues in the commercialisation of scrap

Studies have described a circular economy as an economic model that aims to keep materials and resources in use for as long as possible by designing out waste and pollution and regenerating natural systems. It is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems (Ellen MacArthur Foundation, 2012). Further, it has been maintained that reducing refers to the act of minimizing the amount of waste

generated, either through using less of a particular material or product or by eliminating it altogether, also stated as the minimum use of raw materials (Europe Zero Waste Principles, 2021). In addition, reusing can be used to refer to the act of using a product or material more than once, either for the same purpose or for a different one, without significantly altering its properties. It is also known as the maximum reuse of products and components (U.S Environmental Protection Agency, 2021). Also, recycling refers to the process of converting waste materials into new products or materials. This involves breaking down the waste material into its basic components and reusing them in the manufacturing of new products. Simply referred to as the high-quality reuse of raw materials (Bhattacharya, 2021). These processes call for recovery, which is the process of retrieving or extracting useful materials or energy from waste materials that would otherwise be discarded. This can be done through processes such as composting, anaerobic digestion, or incineration (European Commission, 2020). Uganda, and several countries in the region, appear to be grappling with the challenge of scrap especially the one which discarded or leftover material, usually from a manufacturing process or from a product that has reached the end of its useful life. This can include materials such as metal, plastic, paper, and electronic waste (Tanskanen et al., 2019). In a number of cases, scrap has turned out to be regarded as waste materials seeing it is no longer useful or needed and is either thrown away or left to accumulate in the environment. This can include organic and inorganic materials, such as food scraps, paper, plastic, and metals (Ekins et al., 2019).

1.2 Background to the study

The global scrap industry is worth billions of dollars and is an important part of the global economy, with significant economic, environmental, and social benefits. However, it faces challenges such as fluctuating commodity prices, limited access to raw materials, and competition from low-cost producers. The Bureau of International Recycling reported that the global scrap trade was valued at over \$468 billion in 2019, with more than 700 million tons of scrap materials traded globally each year. Commercialisation of scrap provides a reliable source of raw materials for manufacturing processes, reducing the need for new resource extraction and promoting sustainability. However, it also faces a number of challenges, including trade barriers, regulatory issues, and supply chain disruptions, which can impact demand and pricing. Commercialisation of scrap is playing an important role in the global economy as it recognizes the importance of sustainable resource management and the circular economy. With the right policies and investments, it can promote economic growth, reduce waste, and improve sustainability at the global level.

Commercialisation of scrap in sub-Saharan Africa is an important source of income for many individuals and small businesses, but it is also a significant source of environmental pollution and health hazards due to its unregulated and informal nature. It provides a reliable source of raw materials for local manufacturers and creates jobs, but faces challenges such as a lack of formal regulations and policies, fluctuating commodity prices, and limited access to finance and

infrastructure. Despite these challenges, the industry is likely to continue to grow in importance, creating new opportunities for economic growth and environmental sustainability. According to the 2013 technical guide published by the International Finance Corporation (IFC) on "Scrap Recycling in Sub-Saharan Africa," commercialisation of scrap plays a significant role in the region's economy by providing raw materials for local manufacturers and supporting businesses. However, a lack of regulations and policies can lead to unsafe working conditions, environmental damage, fluctuating commodity prices, and limited access to finance and infrastructure.

Commercialisation of scrap in Uganda is a crucial part of the informal economy, providing employment and income for many households. It generates an estimated \$112 million in revenue per year and employs 20,000 people in the Kampala metropolitan area alone. Though facing challenges like inadequate infrastructure and limited financing, the industry has the potential to create more formal and sustainable jobs (ILO, 2016). The sector is largely unregulated and informal, but it still plays a significant role in providing raw materials for other industries and generating income. However, the industry faces environmental and health hazards like burning plastic waste and hazardous waste disposal. The Waste to Wealth program is among the initiatives aimed at addressing these issues by training individuals in recycling and waste management skills, which could contribute to Uganda's GDP.

To address the challenges faced by the industry, the Ugandan government has launched programs like the Waste to Wealth program and the Uganda Waste Management Policy. The Waste to Wealth program, supported by the United Nations Development Programme (UNDP), was launched in 2010 to create jobs and reduce waste. The Uganda Waste Management Policy was introduced in 2015 by the Ministry of Water and Environment to promote waste management and recycling while contributing to sustainable development and job creation. These initiatives seek to formalize and regulate the industry, thus enhancing its contribution to the economy while minimizing its negative impact on the environment and public health.

1.2 Statement of the Problem

Inadequate capital and financial resources: Lack of access to finance and investment is a major challenge for the waste recycling enterprises in Uganda. This hinders the adoption of circular economy practices, which require significant investment in infrastructure, equipment, and technology (Banjo & Okere, 2020). However, the scrap business in Uganda suffers from a shortage of skilled labor, which limits their capacity to implement circular economy principles. This is due to limited formal training and education opportunities for workers in the sector (Kituyi & Wathum, 2015). Also, lack of a well-developed market for recycled products is a challenge for the scrap business in Uganda. This limits their ability to generate revenue from their operations and discourages investment in circular economy practices (Banjo & Okere, 2020). Correspondingly, lack of infrastructure and equipment, such as recycling plants and waste collection vehicles, is a major challenge for the scrap business in Uganda. This limits their ability to collect, process, and recycle waste, and to implement circular economy practices (Kituyi

&Wathum, 2015). This makes it difficult to monitor and control environmental pollution and health hazards, as well as collect and process large volumes of waste materials efficiently and safely. Inadequate infrastructure, the informal sector, health and safety risks, limited access to raw materials, insufficient financing, and a lack of regulation and enforcement. In addition, the absence of a clear and strong policy and legal framework for waste management in Uganda is a challenge for the scrap business. This hinders the adoption of circular economy principles and limits the potential for private sector involvement in the sector (Mirembe & Kyomuhendo, 2018). Likewise, there is limited public awareness and participation in waste management practices in Uganda. This limits the potential for circular economy practices to be adopted by the scrap business and hinders the development of a well-functioning waste management system (Mirembe & Kyomuhendo, 2018). Additionally, the source of scrap from scavengers or collectors has heightened cases of vandalism of infrastructure such as; electricity power lines and pylons, construction materials, signposts or billboards, road signage, guard rails on road arms, fencing materials from residential places or homesteads, institutions, businesses, and farms, not to mention breakages into automobiles. This problem statement highlights concerns raised by critics of the scrap business. They argue that it is not a complete solution to waste and pollution and doesn't tackle the root causes of these issues. Addressing these issues is crucial to ensure that the industry operates safely, sustainably and effectively.

1.3 Purpose of the Study

This study aims to assess the commercialisation of scrap in Uganda. Consequently, it is guided by the four research questions: (i) what are the main challenges faced by the scrap business in Uganda, particularly in relation to the circular economy? (ii) What practical strategies are available to stakeholders in Uganda to address these challenges? (iii) what specific solutions could be implemented to address the challenges faced? (iv) What are the potential economic, social, and environmental benefits of promoting the circular economy within the scrap business in Uganda, and how can these benefits be measured and evaluated?

These questions are significant because by answering them it will help the government in identifying the challenges that the scrap business faces in Uganda and the measures that can be taken to address them. This can help the government in developing policies and regulations that can promote the circular economy and boost the economy. Also, it can help the private sector in identifying opportunities for growth and investment in the scrap business. It can also help in developing strategies for managing waste and promoting the circular economy, which can lead to increased profitability and competitiveness. Correspondingly, it can provide policy regulators with information on the challenges faced by the scrap business and the measures that can be taken to address them. This can help in developing policies and regulations that can promote the circular economy and sustainable development. More still, it can help development agencies in identifying areas where they can support the scrap business in Uganda. This can include providing financial and technical assistance to stakeholders in the sector, as well as supporting policy and regulatory

reforms. As noted, it will contribute to the body of knowledge on the circular economy and waste management in developing countries. It can also provide a basis for further research in the area. Again, it can help business institutions in identifying best practices for managing waste and promoting the circular economy. It can also help in identifying potential partners and collaborators in the scrap business sector. And, it will aid citizens in understanding the importance of waste management and the circular economy. It can also help in promoting public awareness and engagement in waste management practices that can contribute to sustainable development.

2. Methodology

The methodology used in the study of the scrap business in Uganda involved a desk review of obtainable literature including exploration and review of reports and available publications. Secondary data were preferred to ensure a comprehensive and robust analysis of obtainable literature. The focus was on understanding the challenges to commercialisation of scrap, measures being undertaken so far, and potential solutions to the issues faced in the sector, particularly in relation to a circular economy.

3.0 Findings and Discussion

The findings and discussion are presented in the framework of each of the four study questions above.

3.1 Challenges faced in the commercialisation of scrap in Uganda

A number of challenges have been identified in terms of capital, labour, market, infrastructure, funding. Inadequate capital and financial resources, lack of skilled labour, and insufficient access to markets remain key challenges facing waste recycling enterprises in Kampala, Uganda (Banjo & Okere, 2020). As a result, adequate capital and financial resources should be made available to waste recycling enterprises in Kampala, Uganda, to address their financial challenges. This could be done through government grants, private-sector investments, and partnerships with financial institutions. Similarly, limited infrastructure and equipment, lack of formal training and education, and limited access to financing as barriers to integrating the informal sector into formal waste management systems in developing countries like Uganda (Kituyi & Wathum, 2015). Hence, efforts should be made to provide formal training and education to workers in the waste recycling sector in Uganda. This could include vocational training programs and workshops on business management, marketing, and sales.

Both city and municipal solid waste management in Uganda face acute challenges of inadequate funding, weak policy and legal frameworks, and lack of public awareness and participation (Mirembe & Kyomuhendo, 2018). Consequently, improved access to markets could be achieved by strengthening the linkages between waste recycling enterprises and the formal waste management sector, as well as exploring export opportunities for recycled materials. Thus, it is noted that public awareness and participation in municipal solid waste management should be promoted through community education campaigns and stakeholder engagement. Governments

and NGOs can play a crucial role in promoting public awareness and participation in waste management.

3.2 Practical strategies available to stakeholders in Uganda

The Waste to Wealth Program in Uganda, implemented by the United Nations Development Programme, aims to promote sustainable waste management practices and create economic opportunities for waste entrepreneurs. The Waste to Wealth Program in Uganda should be expanded and scaled up to reach more waste entrepreneurs across the country. This could be done through partnerships with local governments, private sector actors, and NGOs. Accordingly, the National Environment (Waste Management) Regulations, 2015, established by the Government of Uganda, provide guidelines for the collection, transportation, and disposal of waste. The National Environment (Waste Management) Regulations, 2015 should be enforced effectively to ensure that waste collection, transportation, and disposal are carried out in compliance with the guidelines. This could be achieved through stricter penalties for non-compliance and increased monitoring and enforcement.

When analysing the policy, legal, and institutional frameworks for solid waste management in Uganda, Kyambadde et al. (2019) highlighted efforts aimed to decentralize waste management and increase private sector participation. It was maintained that decentralization of waste management should be further promoted, and private sector involvement should be increased to improve the efficiency and effectiveness of waste management systems in Uganda. This could be done through public-private partnerships and incentives for private sector actors to invest in waste management.

3.3 Promoting and integrating circular economy through commercialisation of scrap in Uganda

Researchers have developed a taxonomy of green maritime logistics practices and performance indicators, which could be adapted for the scrap business in Uganda to promote circular economy principles (Cucchiella et al., 2016). They suggested that the taxonomy of green maritime logistics practices and performance indicators should be adapted and applied to the scrap business in Uganda to promote circular economy principles. The taxonomy could include practices such as waste reduction, reuse, and recycling, as well as the adoption of green technologies and practices.

Other studies explored the potential of scrap tires as sources of energy and materials, suggesting that their use could support circular economy principles and contribute to environmental and economic benefits (Adeniran & Yusuf, 2016). The potential of scrap tires as sources of energy and materials should be explored further in Uganda. This could include the development of technologies for converting scrap tires into energy and materials, as well as the establishment of partnerships between waste recycling enterprises and energy companies. In a study that sought to investigate the role of private sector involvement in sustainable waste management in Kampala, Uganda, Muhwezi and Banadda (2020) highlighted the potential for private sector initiatives to promote circular economy principles and create economic opportunities. They revealed that

private sector involvement in sustainable waste management should be encouraged and incentivized in Uganda. This could include the provision of tax breaks and other financial incentives for waste recycling enterprises, as well as the establishment of partnerships between private sector actors and government agencies.

3.4 Economic, social, and environmental benefits of promoting circular economy

In their analysis of the environmental and economic benefits of circular economy practices in early adopter countries, Salhofer and Obersteiner (2019) found that circular economy principles can contribute to environmental protection, resource efficiency, and economic growth. They further indicated that the practices of a circular economy can contribute to environmental protection, resource efficiency, and economic growth in Uganda. Governments, NGOs, and other stakeholders should work together to promote the adoption of circular economy principles in the scrap business and other sectors. Also, Ghisellini et al. (2016) reviewed the expected transition to a balanced interplay of environmental and economic systems through circular economy principles, and underscored the potential for creating new jobs and markets, reducing environmental impacts, as well as improving quality of life. Thus, transition to a balanced interplay of environmental and economic systems through circular economy principles can create new jobs and markets, reduce environmental impacts, and improve quality of life in Uganda. This should be highlighted and communicated to stakeholders to encourage adoption of circular economy practices.

In their assessment of the social benefits of circular economy practices, including job creation, improved resource efficiency, and increased social well-being, Kusch-Brandt et al. (2019) revealed the social benefits of circular economy practices, such as job creation, improved resource efficiency, and increased social well-being, should be emphasized to promote their adoption in Uganda. This could be done through public education campaigns and stakeholder engagement. Their study highlights the potential benefits of commercialisation of scrap in Uganda and the challenges that it faces. The benefits include economic, social, and environmental advantages through the circular economy approach. The challenges include inadequate infrastructure, health and safety risks, limited access to raw materials, insufficient financing, and a lack of regulation and enforcement. The implications of that study suggest that addressing the challenges facing commercialisation of scrap will be crucial for promoting a safer and more sustainable circular economy. The potential solutions outlined in the study, such as improving infrastructure, increasing financing options, and strengthening regulatory frameworks, can help overcome these challenges. Addressing these challenges can lead to job creation, waste reduction, and resource conservation, which can have positive economic and environmental impacts.

All obtainable studies appear to provide valuable insights into the challenges and opportunities facing commercialisation of scrap in Uganda. Therefore, calling for further research with the aim to explore the feasibility and impact of specific interventions, such as financing options or education campaigns, in promoting a circular economy in the country in addition to the potential for replicating the study's findings in other regional countries facing similar challenges.

4. Conclusion

Commercialisation of scrap has the potential to provide economic, social, and environmental benefits, including reducing waste, conserving natural resources, and creating jobs and income opportunities. In Uganda, the circular economy offers opportunities for the reuse of materials, creating jobs, reducing waste, and preserving resources, but there are also challenges such as inadequate infrastructure, the informal sector, health and safety risks, limited access to raw materials, insufficient financing, and a lack of regulation and enforcement. Addressing these issues is necessary to ensure the industry operates safely, sustainably, and effectively. Additionally, reducing waste at the source, promoting reuse and repair, and designing products for circularity can further contribute to a more sustainable and efficient use of resources.

5. Recommendations

The challenges facing commercialisation of scrap in Uganda require a concerted effort by various stakeholders to develop sustainable solutions. It is recommended that: one, the government and private sector could invest in infrastructure to improve the collection and processing of scrap materials. This includes building sorting and processing facilities, improving road networks, and investing in equipment and technology for efficient collection and processing. Two, the government and private sector could provide incentives for the collection and sorting of scrap materials, such as tax breaks or subsidies to businesses that source materials from local communities. Three, both the government and the private sector could provide financing options for businesses in commercialisation of scrap to help them invest in equipment and technology to improve efficiency and productivity. Four, education and awareness-raising campaigns could be conducted to inform the public about the benefits of recycling and the importance of responsible waste management. This could help reduce the amount of waste generated and improve the quality of the materials collected. Five, businesses, governments, and communities could collaborate and form partnerships to develop sustainable solutions for commercialisation of scrap. This includes working together to improve infrastructure, access to raw materials, financing, and forming partnerships to develop sustainable solutions for commercialisation of scrap. This includes working together to improve infrastructure, access to raw materials, financing, regulation, and enforcement.

Six, the government could strengthen regulatory frameworks and enforcement measures to ensure that scrap businesses operate in a safe and environmentally sustainable manner. This includes enforcing environmental and health regulations, setting up monitoring systems, and conducting regular inspections. Seven, in addition to enforcing environmental and health regulations, the government could strengthen regulatory frameworks and enforcement measures to protect scrap businesses from vandalism and theft by scavengers. Therefore, to deter vandalism and theft of scrap materials, the government could increase penalties, surveillance, and patrols, as well as provide security measures. Awareness campaigns could also be implemented to educate the public about the negative impacts of these actions on commercialisation of scrap and the wider

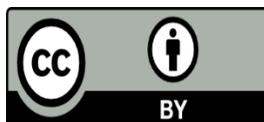
community. Additionally, responsible scrap collection practices could be encouraged through collaboration with local communities and vigilantes. Taken together, the implementation of measures such as increasing penalties, providing security measures, increasing surveillance, creating awareness, and encouraging responsible scrap collection practices can protect commercialisation of scrap from vandalism and theft, thereby promoting a safer and more sustainable circular economy. However, addressing the challenges facing commercialisation of scrap in Uganda will ultimately require a multi-stakeholder approach involving collaboration and partnerships between the government, private sector, and communities.

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