



Contribution of the Waste Management on Job Creation and Anthro-Social Circular Economy

Lucien HAKIZIMANA^{1*}, Jorge Marx GÓMEZ², Laurent NTAGANDA¹

¹Catholic University of Rwanda (CUR), Rwanda

²University of Oldenburg, Germany.

*Corresponding Author

Lucien HAKIZIMANA

Catholic University of Rwanda
(CUR), Rwanda.

Article History

Received: 07.09.2024

Accepted: 15.10.2024

Published: 21.11.2024

Abstract: Globally, waste management is a challenge that affects the world and specifically in Rwandan rural areas, the lack of proper waste management systems has led to environmental degradation, health hazards, and economic losses. This study was conducted in a small city of Byumba which has the perspective of improving its way of waste management in rural area through Gicumbi Agriculture Production Market (GAPM) Ltd. In order to achieve the objectives, the data were collected from the field through the questionnaire that was administrated to a sample of 14 staff of GAPM Ltd and its beneficiaries. The collected data were processed quantitatively and qualitatively and the findings showed that the waste management techniques used by GAPM Ltd are landfill (100%), re-use (100%), recycling (100%), disposal (71.2%), composting (64.3%) and recovery (57.1%). The waste management of GAPM Ltd contributes to anthro-social circular economy in the following ways: job creation (100%), environmental protection (100%); resource conservation (85.7%); social well-being and health (78.6%); economy generation (71.4%) and community engagement (57.1%). Having achieved all objectives and verified all hypotheses, it was suggested that the government should continue sensitizing people about the role of waste management in their socio-economic sustainability.

Keywords: Waste Management, GAPM Ltd, Anthro-social, Circular Economy, Job Creation.

Cite this article:

HAKIZIMANA, L., GÓMEZ, J. M., NTAGANDA, L., (2024). Contribution of the Waste Management on Job Creation and Anthro-Social Circular Economy. *ISAR Journal of Economics and Business Management*, 2(11), 68-73. DOI: <https://doi.org/10.5281/zenodo.14197842>

Introduction

Waste management is the process of collecting, transporting, processing, recycling, and disposing of waste materials in a way that minimizes their impact on the environment and public health. The management of waste is key for sustainable development and reducing the negative effects on the environment. Waste can come from various sources such as households, industries, construction sites, hospitals, and other institutions. Improper handling and disposal of waste can lead to pollution, environmental degradation, health hazards, and resource depletion (Ntuli & Mbohwa 2019).

The following hypothesis guided this study: Waste management can contribute to Job Creation and Anthro-Social Circular Economy. The study was guided by the following three specific questions: What are waste management techniques used for anthro-social development? Does waste management contribute to the circular economy? Does waste management contribute to job creation?

This study involved a sample of 14 respondents composed of staff members of GAPM Ltd and their stakeholders. In order to collect the data from the field, a questionnaire, being a research instrument consisting of a series of questions for the purpose of gathering

information from respondents (Richard 2014), has been used. In this research, the questionnaire has been addressed to randomly selected respondents. The questionnaire comprised both close questions where the respondents used the tick to choose correct answer and open questions where they were free to explain the answers in their own words.

Narrative method has been used with the purpose of exploring and conceptualizing the respondents' experience. As JW Creswell states, this method helps to explore in-depth the meanings people assign to their experiences (Creswell 1994). In this research, narrative method was used in analyzing data where it was necessary to report what the respondents had said on a certain issue. The data collected from respondents and the secondary data collected from the technique of documentation have been processed with analytical method and then interpreted.

Circular economy and anthro-social findings

Items about the demographic characteristics of respondents were established in order to obtain enough information on them. The main items were gender and marital status. These items were judged very important as they allowed knowing exactly the

respondents’ anthropological status and then their involvement in circular economy.

1.1 Demographic findings

The results show that in GAPM Ltd, males are more involved in waste collection (57.1%) than females (42.9%), which is due to the fact that males are the first one to take responsibilities especially in households where they prefer to invest in waste collection for earning money to fulfill their responsibilities. The most important

information here was not this inequality, but the involvement of both genders in waste collection activities. However, these statistics show as well how males are more involved in Rwandan economy than females.

About the marital status of people, the findings show that 35.7% of respondents were single; 42.8% were married; 14.3% were widowed and 7.2% were divorced (figure 1).

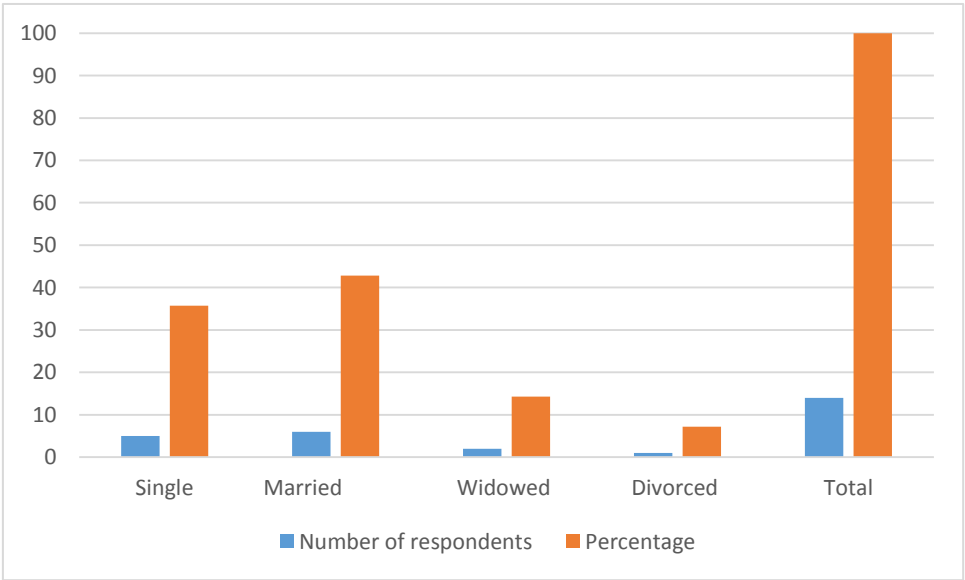


Fig. 1: Marital status of respondents

The information clarifies that the most employed in GAPM Ltd were married people. This also ensured the effectiveness of waste collection in GAPM Ltd because married people are always conscious of what they do. However, this shows as well the marital status which is more involved in the Rwandan economy.

1.2 Techniques of waste management in GAPM Ltd and circular economy

There are several waste management techniques that are used to manage and dispose of waste in a safe and efficient manner (Giusti

2019). Among them we can list landfill, incineration, waste compaction, composting and vermicomposting.

The results show that waste management techniques used in GAPM Ltd are landfill (100%); re-use (100%); suggestion of recycling (100%); recovery (57.2%); disposal (71.2%) and composting (64.3%). The results obtained are summarized in figure 2 below:

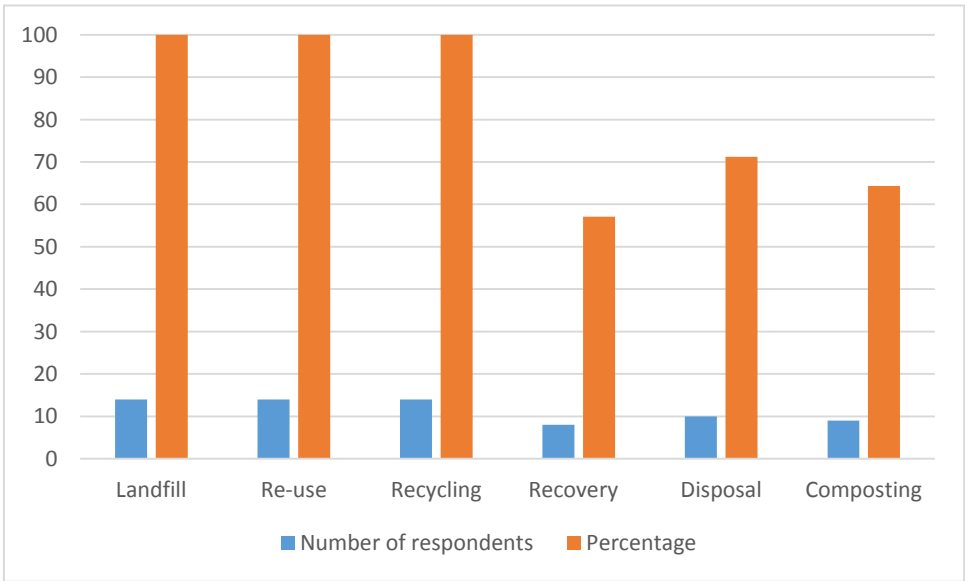


Fig. 2: Techniques of waste management

The first technique is landfill. This is the most common method of waste disposal in Byumba, where waste is buried in designated landfill sites. According to this technique, as said Weaver, the waste is compacted and covered with soil to reduce its volume and prevent odor (Weaver 2016).

The second technique used in Byumba is incineration which involves burning waste to convert it into ash. In Byumba, it is commonly used for organic waste in countryside. In addition, it is used hazardous waste and medical waste (Lohri & Diener 2017). GAPM Ltd manager pointed out another technique called “recycling”. This later involves the collection and processing of waste materials to create new products. According to Giusti, recycling is one of the most effective and useful methods that has gained popularity as a result of the introduction of environmentally friendly policies on governmental levels. In many areas, the local authorities are responsible for the collection of recyclable waste material. In some Rwandan cities, there is a proper system designed for setting up separate receptacles for each type of material that greatly reduces the risk of them mixing with those waste types that need to be discarded away. Once the materials are sorted out, they are transported to the sites where they are required (Giusti 2019). In this way, the recycling is essentially the first procedure that waste materials undergo after which it is decided what will happen to the other waste product.

Another technique is composting which involves the decomposition of organic waste materials such as food waste and yard waste to create a nutrient-rich soil amendment (Weaver 2016). This technique is common in Byumba. Composting is a popular waste management method for household in rural areas. In this method people who own a garden make use of their food waste as compost instead of discarding it. Organic materials are collected in a suitable container and the material is left to decompose (Weaver 2016). In general, each household in Byumba uses this technique of waste management. Once this task is completed, it is added to the soil as a means of providing natural nutrients, which assists in growing the plants, fruits and vegetables. Small farmers in Byumba use this technique for making fertilizers.

In last decades, Rwanda embarked in converting waste into energy through processes such as incineration, gasification. In Byumba, the conversion of waste in energy consist of transforming it in biogas or biomass. This is a very useful waste management method that basically calls for the conversion of non-recyclable waste items into usable ones. This process often results in the production of energy and can be used as a sustainable power source (United Nations Environment Programme 2016). However, in Byumba, the rate of the conversion of the waste in biogas is still low.

In the line of Deveci and Sahin, local government and GAPM Ltd sensitize the households to reduce the amount of waste generated in the first place by using products and materials that are designed to last longer, and by reusing items instead of throwing them away (Deveci & Sahin 2019).

According to Liddle, another important way of converting waste material into something useful is by converting it into animal feed (Liddle 2017). This waste management method is effective mostly on domestic levels in Byumba but it is also applicable to farms. Household waste for example vegetable peels and food scraps are fed to small animals. Similarly, meat bones are given to dogs. Other animals like pigs are indiscriminate when it comes to their diet and it is safe for them to eat most domestic waste type.

Another very significant method of waste management is in the production of firewood (United Nations 2015). Some people, mainly in rural areas, collect discarded furniture, cut up it into pieces that are more manageable and then are used as firewood.

1.3 Strategies of improving the circular economy

The findings from the primary data show that waste management contribute to socio-economic sustainability in the following ways: job creation (100%); resource conservation (85.7%); environmental protection (100%); economy generation (71.4%); social well-being and health (78.6%), as well as community engagement (57.1%). The results obtained are summarized in figure 2 as follow:

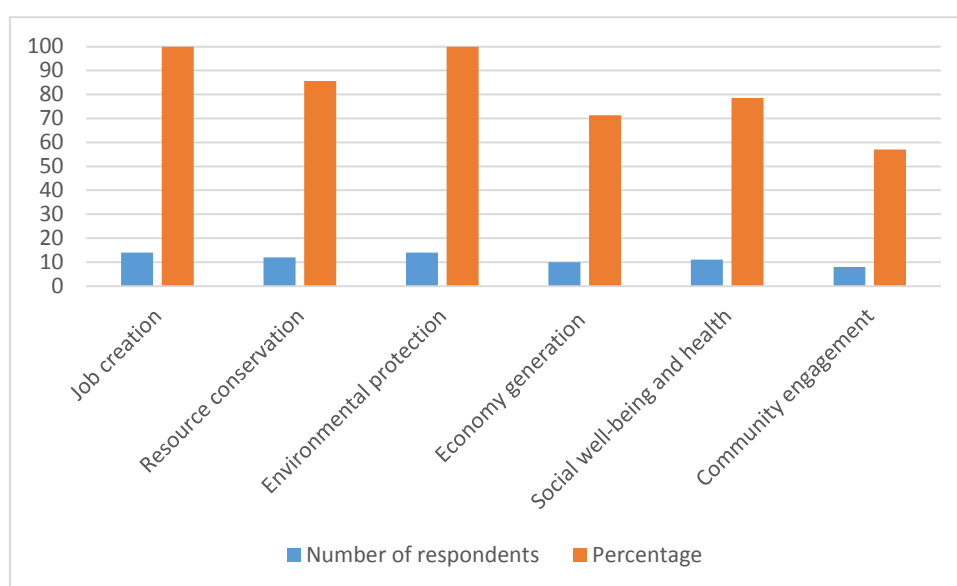


Fig.3: Contribution of waste management on socio-economic

The strategies of improving the circular economy in GAPM Ltd, corroborating with Bob, is the investments in human capital. Human capital, in the form of trainings, is more determinant of economic growth than physical capital (Bob 2011).

1.4 From waste management to job creation

Even though unemployment exists all over the world, states and governments are trying to put in place different mechanisms to create jobs for jobless people. Among those mechanisms, we can mention public works, privatization and self-employment mobilization (Johann 2017).

In Byumba city, the informal sector plays a significant role in waste management. The results showed that the jobs created through waste collection in GAPM Ltd are transportation (100%); cleaning (85.7%); driving (100%); equipment maintenance (71.4%) and machine operators (78.6%). Waste management is a critical component of anthropo-social circular economy and job creation. By adopting sustainable waste management practices, progressively, the environment is protected, natural resources conserved, economic benefits generated, and communities are engaged in sustainable behaviors (Bhide & Narayana 2018).

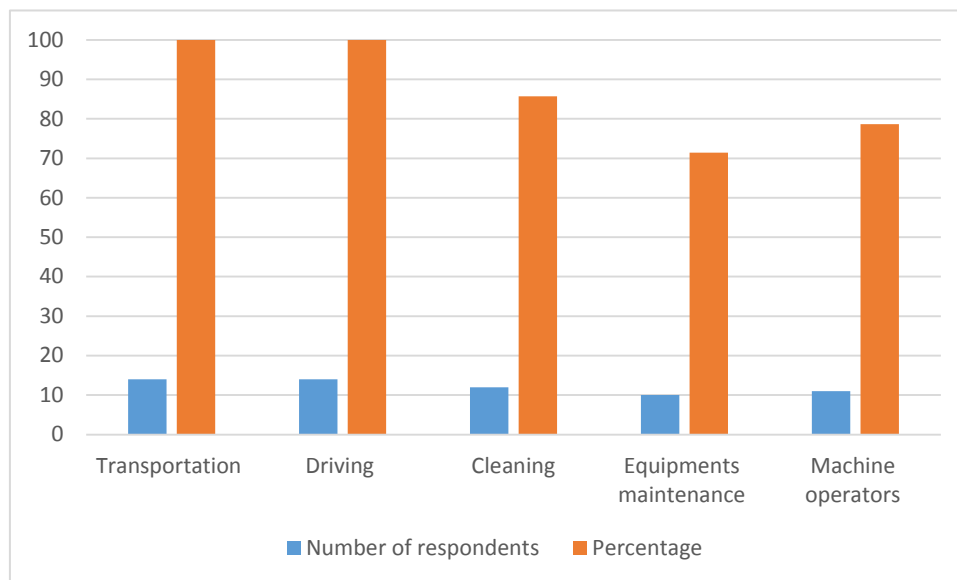


Fig. 4: Jobs created through waste collection

Concerning “transportation, driving and cleaning”, it was stated that waste management involves the collection and transportation of waste materials from homes, businesses, and public areas to treatment facilities or disposal sites and then this process requires a workforce for packing the vehicles, which is also followed by

driving the cars to the disposal sites. According to Andreas, the better qualified people are, the easier it is to find a job since the demand for well-qualified people is quite high (Andreas 2016). The proper waste management creates employment opportunities in various fields.

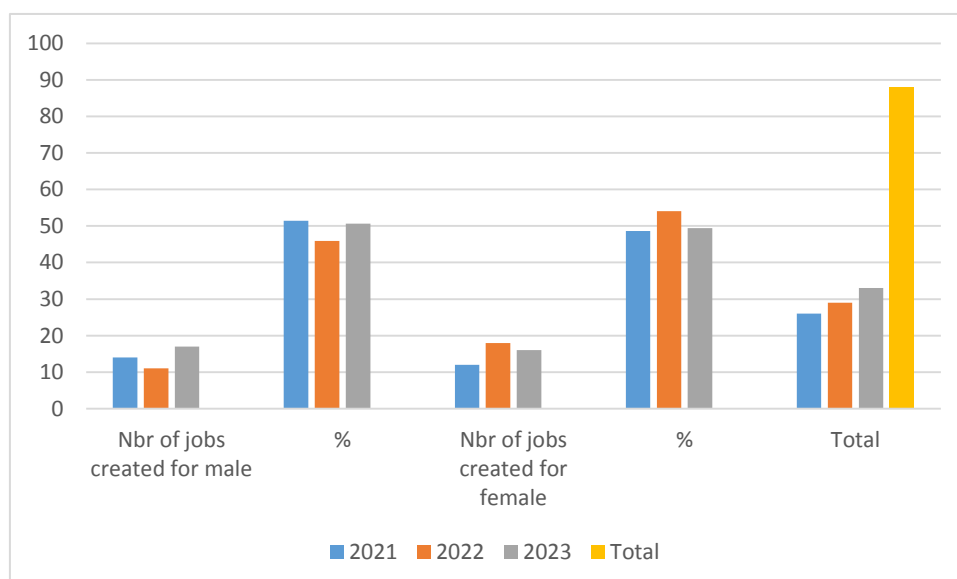


Fig. 5: Number of jobs created by gender

The findings show that in 2021, GAPM Ltd created 14 jobs for males and 12 jobs for females, making 26 jobs created in this year; in 2022, 11 jobs were created for males and 18 jobs for females, making 29 jobs. In 2023, GAPM Ltd created 17 jobs for males and 16 jobs for females, and therefore 33 jobs were created. From the above results, it is deduced that through waste management, GAPM Ltd created jobs in the period 2021-2023. The most interesting thing from the above results is that both genders (male and female) are involved in jobs created by GAPM Ltd and this contributes considerably in socio-economic sustainability. The problem of unemployment can be addressed through a set of strategies established by the governments and states (International Labor Office 2014). In the context of Byumba city, the solutions to unemployment proposed by GAPM Ltd is playing a vital role in social and economic sustainability.

Conclusion

This research was conducted on the contribution of the Waste Management on Job Creation and Anthro-po-Social Circular Economy. The number of respondents was 14 composed of staff members of GAPM Ltd and their stakeholders. We distributed the questionnaire to those respondents who in turn provided data. The data were processed quantitatively and qualitatively, and the analysis and interpretation of the results helped us to arrive at the reliable results.

Effective waste management has the potential to contribute significantly to socio-economic sustainability and job creation. However, there is a need to address the challenges to effective waste management, including inadequate infrastructure, limited financial resources, and low levels of public awareness. By promoting proper waste management practices, it is possible to create new economic opportunities, conserve natural resources, and mitigate the negative impacts of waste on the environment and human health.

The waste management of GAPM Ltd contributes to socio-economic sustainability in different ways such as job creation, resource conservation, environmental protection, economy generation; social well-being and health; and community engagement. In the period from 2021 to 2023, there was an increase in jobs created through waste management for both men and women; therefore, our hypothesis has been confirmed. However, the present study was not exhaustive in matter of waste management, job creation and anthro-po-social circular economy; future researches could be conducted on the challenges to effective waste management and impact of waste on environment, human health and sustainable development.

References

1. African Development Bank (2018): *Level of development of African countries*. Addis-Ababa: Ethiopia.
2. Ahmad, T. and Zia, M. H. (2019): *Socio-economic impact of municipal solid waste management on the communities: A review*. Renewable and Sustainable Energy Reviews.
3. Andreas, P. (2016): *Causes and consequences of unemployment in the world*. New Delhi: India.
4. Anirudh, R. and Alexis Sebaren, G. (2019). *Assessing waste management services in Kigali*. Kigali, Rwanda.
5. Bhide, A. and Narayana, M. (2018): *Economic and social benefits of waste-to-energy in India*. Energy Policy, 113, 55-61.
6. Bob, R. (2011): *Economic development indicators*. Loughborough University.
7. Christia, M., and Gamse, T. (2018): *Development of Waste Management Practices in Indonesia*. European Journal of Scientific Research, ISSN 1450-216X 40(2): 199-210.
8. Creswell, JW. (1994): *A research design: qualitative and quantitative approaches*. Los Angeles: Sage publications
9. Davidson, G. (2011): *Waste Management Practices: Literature Review*. Dalhousie University, Office of Sustainability.
10. Deveci, O. and Sahin, U. (2019): *Circular economy and waste management in Turkey: Review and recommendations*. Journal of Cleaner Production, 216, 234-24.
11. Doron, A. (2018): *Waste of a Nation: Garbage and Growth in India*. Harvard University Press.
12. Francis Yamfwa, K. (2011). *Improving Economics in Less Developed Countries*. Johannesburg: Facts on manufacturing: RSA.
13. Giusti, L. (2019): *A review of waste management practices and their impact on human health*. Waste Management department.
14. International Labor Office (2014): *Developing the Rural Economy through Financial Inclusion: The Role of Access to Finance*, Geneva.
15. James, T. M. (2012): *Job creation policies in Africa*. Oxford University Press: UK.
16. Johann, M. (2017): *Labor, growth and development stream strategies for reducing unemployment in South Africa and the role of organized labor*. University of the Witwatersrand.
17. Kabera et al (2019): *Waste collection rates in Rwanda*. Kigali, Rwanda.
18. Liddle, M. J. (2017): *Recreation Ecology: The Ecological Impact of Outdoor Recreation*. Dordrecht: Kluwer Academic Publishers.
19. Ministry of agriculture and animal resources (2021): *Rwanda feeder roads development project final report resettlement action plan for indicative feeder roads of Agruni Company Ltd*. Kigali, Rwanda.
20. Ministry of Environment (2022): *Waste management strategies in Rwanda*. Kigali, Rwanda.
21. Ministry of Natural Resources and Environment (2022): *National Waste Management Strategy (2019-2023)*. Kigali, Rwanda.
22. National Institute of Statistics Rwanda (2022): *National population Census*. Kigali, Rwanda.
23. Ntuli, F. & Mbohwa, C. (2019): *Economic benefits of waste management: A case study of South Africa*. Journal of Cleaner Production.
24. Richard, N. (2014): *Research instruments*. University of Georgia

25. SIFEM (2022): *Country focus-Rwanda, case study: Agruni Company Ltd.* Switzerland.
26. Ton, K. (2001): *Do SMEs create more and better jobs?* MIT Press, Cambridge: Massachusetts.
27. UN Development Programme (2018): *Rwanda 2014 National Human Development report.* Kigali: Rwanda.
28. United Nations (2015): *Human development report.* Work for Human Development, United Nations Development Program, New York, USA.
29. United Nations Environment Programme. (2016): *Global Waste Management Outlook.* Nairobi: UNEP.
30. Wagner, A. (1995): *Talking about Job Generation: Firm Size and Job Creation in Germany.* University of Lüneburg Working Papers.
31. Weaver, D. (2016): *Sustainable Tourism: Theory and Practice.* Oxford: Elsevier.
32. World Bank (2012): *What a waste: A global review of solid waste management.* Retrieved from <https://openknowledge.worldbank.org/handle/10986/17388>.
33. World Bank (2022): *Current situation of waste management in the world.* Geneva, Switzerland.