Recovery of Recyclable Waste – Taxation and Accounting Monograph in Romania

Teodor Hada
"Bogdan Voda" University, Cluj-Napoca, Romania
teohada@yahoo.com
Iulia Cristina Iuga
Dorin Wainberg
"1st of December 1918" University of Alba Iulia, Romania
iuga_iulia@yahoo.com
dwainberg@uab.ro

Abstract

Solid waste management has received increasing attention due to the urgent need to fulfill with the principles of the circular economy. Romanian waste generators have the obligation to maintain waste management by type of waste. By the principle of generator pays, a tax of 2% of the value of the waste sold by the generator was imposed on the collecting company. The collection of the tax is done by stopping at the source, so the obligation to pay to the Environmental Fund is the responsibility of the authorized company to take over the waste from the generator. The added value of this paper is the combination of accounting regulations and the role of the Romanian Environmental Protection Agency in this vast area of waste recycling. The purpose of this paper was to detail the accounting records related to the sale of generated waste to the company authorized for collection.

Key words: solid waste management, accounting records, sale of generated waste
J.E.L. classification: Q53, Q56

1. Introduction

Waste recycling as a result of economic activities has become an important branch of every economy. Each company, depending on its activity, produces a smaller or larger amount of recyclable waste.

Recycling is the introduction of waste or scrap into a technological process in order to obtain its reuse and recovery for ecological purposes. Recycling reduces the consumption of new raw materials and also reduces energy consumption and the level of contamination of the natural environment.

Among the benefits of recycling for the environment are: recycling significantly reduces landfilling in landfills that not only massively pollutes the environment but also creates a desolate image of cities, destroying the health of those living around them; by recycling them, the pollutants released into the air and water by depositing waste in landfills are considerably reduced; recycling reduces greenhouse gas emissions from the atmosphere. This is done by replacing the used virgin raw material with secondary raw material resulting from recycling. By recycling, we save the community's energy costs in the long run, if we only consider the fact that the energy saved by recycling a single bottle can power a light bulb for four hours. Recycling preserves the Earth's natural resources.

Nowadays, most of the products of various industries can be recycled: packaging, glass, metal, electrical and electronics, batteries, tires and plastics, batteries, used oil and more. The use of refillable containers saves both raw materials and energy, because if it is returnable the container can be refilled *n* times it is equivalent to *n* disposable containers of the same size. Regarding the

recycling of scrap metal: metals are materials that can be recycled 90-95% if collected selectively. Certain metals, such as aluminum, can be recycled indefinitely. By recycling metals, energy consumption is reduced by 70% compared to the production of a completely new element.

Regarding the recycling of paper and cardboard: almost any kind of paper and cardboard can be recycled. Recycling technology can remove inks, staples, glue to which books are attached, but not oil. Therefore, oil and food stained paper and cardboard cannot be recycled. In addition, waxed, laminated or plastic-coated paper (glossy magazine covers), napkins or other used sanitary paper products cannot be recycled. A ton of recycled paper saves 17 trees from cutting. For every ton of recycled paper, over 26 tons of water and almost 1.8 tons of fuel are saved. Cardboard can be recycled many times, but not indefinitely. That is why it is good to avoid packaging as much as possible, even if it is made of paper.

The glass can be recycled by melting, without losing its properties. Also, the costs of recycling are lower than those of producing glass from raw materials, thus saving energy. Only glass of the same color can be made of colored glass. Therefore, colorless glass is more valuable, as it can be reused for many purposes. Heat-resistant glass is not recycled with ordinary glass, as it affects the melting process.

The purpose of this paper was to detail the accounting records related to the sale of generated waste to the company authorized for collection. The accounting records differ depending on the VAT payer's status of both the seller and the buyer.

2. Literature review

Solid waste collection allows recycled materials to be processed into new products. Waste, and especially plastic waste, is a major global challenge. For example, plastic represents about 10% - 15% of the weight of municipal solid generated waste (it also differs depending on the country), it represents a huge fraction in volume, reaching up to 40% (P. Singh and V.P Sharma, 2016). About 40% of plastic waste ends up in landfills, 25% is incinerated, 16% is recycled, and the remaining 19% is dumped in the environment (Kuan Shiong Khoo, Lih Yiing Ho, Hooi Ren Lim, Hui Yi Leong, Kit Wayne Chew, 2021).

In the case of e-waste, collection and recycling vary significantly globally. For example, Europe generates the most e-waste per capita (16.2 kg), but excels in the collection and recycling of e-waste (42.5%), setting the global standard Baldé, CP; Bel, G.; Forti, V.; Kuehr, R., 2020). In contrast, Oceania generates similar amounts of e-waste per capita (16.1 kg) as Europe, but by comparison, has one of the lowest recycling rates in the world (8.8%) (Van Yken, J.; Boxall, NJ; Cheng, KY; Nikoloski, AN; Moheimani, NR; Kaksonen, AH, 2021).

Glass is another major component of e-waste, which accounts for up to 12% of e-waste generated worldwide (Baldé, C.P.; Bel, G.; Forti, V.; Kuehr, R., 2020). CRT glass has been used in the past in monitors and televisions. CRTs are classified as hazardous waste due to the lead content of the glass. Advances in technology have slowly replaced CRTs with liquid crystal displays (LEDs) and organic light emitting diodes (OLEDs); Ling, TC; Sarker, PK; Su, W.; Liu, J.; Wu, W.; Tang, J., 2018) Globally, 26% of disused CRTs are recycled, and 59% % of these are sent to landfills (Yao, Z.; Wu, D.; Liu, J.; Wu, W .; Zhao, H.; Tang, J., 2017).

The COVID-19 pandemic has raised issues with waste management practices. During the pandemic, there was a huge increase in the amount of personal protective equipment (face masks, gloves and other protective equipment) and a wide distribution of infectious waste from hospitals, health care units and quarantined households (Dwi Hantoko, Xiaodong Li, Agamuthu Pariatamby, Kunio Yoshikawa, Mika Horttanainen, Mi Yan, 2021).

Solid waste management has received increasing attention due to the urgent need to comply with the principles of the circular economy and to recover the value of waste (de Souza Lima Cano, N., Iacovidou, E., Rutkowski, E.W. 2022).

Medina (2005) distinguished four different types of public recycling policies, as follows: neglect, repression, collusion, and stimulus in which recycling stakeholders are supported by policies.

3. Research methodology

In Romania, the regulation of environmental protection is done by GEO 195/2005 on environmental protection.

As a result of the awareness of the benefits of recycling, there has been a demand for raw materials obtained from waste. The recyclable waste market has grown significantly in the last 10 years due to the growing demand for products that contain recycled raw materials.

Until raw materials arrive, recyclable waste goes through a series of technological steps. The first stage takes place within the waste generating company, as follows: in order to be recycled, the waste must be sorted and stored by categories (metal, paper and cardboard, plastic, glass, etc.).

The waste generators in Romania have the obligation to keep the waste management by type of waste and to send it to the Environmental Protection Agency monthly until the 10th of each month for the previous month. On the principle of *the generator pays*, by GEO 196/2005 a tax of 2% of the value of the waste sold by the generator to the collecting company was imposed. This tax is recognized at the time of invoicing the waste, and appears as a distinctive negative value on the invoice. The collection of the tax is done by stopping at the source, so the obligation to pay to the Environmental Fund is the responsibility of the authorized company to take over the waste from the generator.

The Romanian Environment Fund is used to finance pilot projects and programs and the following categories of projects and programs for environmental protection: reducing the impact on the atmosphere, water and soil, including air quality monitoring; noise reduction; waste management; education and public awareness on environmental protection; programs for financing investments in environmental infrastructure for selective collection, treatment and recycling of waste.

Most importantly, the recovery of waste resources depends on the process chain (i.e. the activities and performance of the value chain) and structures created and relationships throughout the value chain, which bring together production, distribution, access and management (Iacovidou et al., 2020).

4. Findings

The accounting monograph related to the sale of generated waste to the company authorized for collection differs depending on the VAT payer status of both the seller and the buyer (Tables 1, 2 and 3).

Table no 1. Accounting monograph if the seller is not a VAT payer

Case 1. The seller is not a VAT payer
The seller will register:
-recognition as additional inventory of generated waste: 346 = 758 quantity x price from the contract with the waste collection company - waste sales: 4111 = 703 quantity x the price of the contract with the waste collection company - calculation and reduction of the receivable from the client with the value of the environmental fund: 635 = 4111 2% x (quantity x price from the contract with the waste collection company) - subtraction of the sold waste: 658 = 346 quantity x price from the contract with the waste collection company
The buyer will register:
- receipt of purchased waste: 401 = % 301 quantity x price of the contract with the waste generating company 447 2% x (price of the contract with the waste generating company)

Source: Authors' contribution

According to case 2 (Table 2), the acquisition cost of the waste for the collecting company also includes the VAT collected by the generating company. Therefore, it is recommended that waste collection companies opt as a VAT payer when preparing and submitting the tax vector to the Financial Administration.

Table 2. Accounting monograph if the seller is a VAT payer and the buyer is not a VAT payer

Case 2. The seller is a VAT payer and the buyer is not a VAT payer:
The seller will register: - recognition of generated waste as additional inventory: 346 = 758 quantity x price from the contract with the waste collection company - waste sales: 4111 = % 703 quantity x price from the contract with the waste collection company 4427 19% x (quantity x price from the contract with the waste collection company) - calculation and reduction of the receivable from the client with the value of the environmental fund 635 = 4111 2% x (quantity x price from the contract with the waste collection company) - subtraction of sold waste: 658 = 346 quantity x price from the contract with the waste collection company If the seller applies the VAT COLLECTION system, the VAT registration related to the sale of waste will be made in account 4428 NON-CHARGABLE VAT, this amount will be resumed in account 4427 VAT COLLECTED at the time of collection of the invoice from the customer by the operation: 4428= 4427
The buyer will register: - receipt of purchased waste: 401 = % 301 quantity x price from the contract with the waste collection company + 19% x (quantity x price from the contract with the waste collection company) 447 2% x (price from the contract with the waste collection company)

Source: Authors' contribution

In case 3, the invoicing of the waste will be done with REVERSE TAXATION according to the law no. 227/2015, art. 109- simplified measures. Thus, the seller has the obligation to write on the waste sales invoice the statement REVERSE TAXATION; otherwise the VAT deductibility for the buyer will not be recognized.

Table 3. Accounting monograph where both (seller and buyer) are VAT payers

Case 3. The seller and the buyer are the payers of VAT
The seller will register: - recognition of generated waste as additional inventory: 346 = 758 quantity x price from the contract with the waste collection company - waste sales: 4111 = 703 quantity x price from the contract with the waste collection company - calculation and reduction of the receivable from the client with the value of the environmental fund 635 = 4111 2% x (quantity x price from the contract with the waste collection company) - subtraction of the sold waste: 658 = 346 quantity x price from the contract with the waste collection company
The seller will register: - receipt of purchased waste: 401 = % 301 quantity x price from the contract with the waste collection company 447 x (quantity x price from the contract with the waste collection company) - registration of the REVERSE TAXATION operation: 4426=4427 19% x quantity x price from the contract with the waste collection company

Source: Authors' contribution

For reasons of prudence, the waste generating company may choose that at the time of registering the inventory surplus of the recyclable generated waste, the inventory value should be a small one such as 0.01 lei / kg.

5. Conclusions

Global population growth, urbanization, technological development, and economic growth generate large amounts of waste, but also put great pressure on the Earth's finite material and energy resources. Recycling is a key practice for the successful operation of zero waste cities. It is essential to understand the recycling potential of recyclable waste.

The problem is the management of the Earth's resources and our obligation to consider the resource needs of future generations and the sustainability of the earth's ecosystem. Environmental concerns caused by inadequate waste management as well as measures to combat global warming promote actions for sustainable waste management.

Since the company's waste streams contain material and energy resources, decision-making on waste management must be inextricably linked to the problems of conservation and use of resources.

Waste will become the major resource in the future circular economy.

One problem in supporting the proper management of recyclable waste, and especially plastic waste, is the action of legislative regulation (taxation, incentives, liability) that affects the producer or consumer. In most cases, taxes are focused on the consumer, who is found guilty of misuse or selection and does not participate in recycling efforts. But the major role of the producer must also be emphasized. Consumers buy according to the choice offered by the manufacturers without having the complete knowledge or information about the composition of the material. Regulation targeting the manufacturer could encourage redesign, as due to the responsibility to recycle or handle end-of-life products, efforts will be made to improve the ease of recycling.

The main opportunities identified by better waste management are: avoiding the loss of economic value and generating job opportunities, as well as conditioning the behavior of stakeholders. On the other hand, we emphasize that poor management of recyclable waste can pose a threat to human health (R. Santagata, M. Ripa, A. Genovese, S. Ulgiati, 2021).

Recyclable waste, if used properly and correctly through circular economy strategies, prevents spills into the environment.

6. References

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