

Organization of Business Activities with Account to Environmental and Economic Aspects*

OLEKSANDR V. KUBATKOⁱ, OLEKSANDRA V. KUBATKOⁱⁱ,
TETYANA I. SACHNENKOⁱⁱⁱ, ODEWOLE OLUWATOBI OLUWASEUN^{iv}

One of the most urgent environmental problems today is the pollution of the environment by emissions of harmful substances and industrial waste. The negative impact on the environment and people is becoming more widespread, and its disposal methods inhibit the development of the economic system. In a market economy, entrepreneurs are not interested in increasing environmental costs, which naturally lead to higher production costs and reduce profits. The impact on the environment is becoming more widespread every year and has led to an ecological crisis in some parts of the world. Waste recycling has been constantly discussed since a person “produces” more than 250 kg of household waste per year. At the enterprise, these figures reach 10 000 kg. In recent years, Ukraine has imported about 30-50 thousand tons of PET granulate, which is gradually accumulating in landfills in the form of packaging, bottles, films. Such hazardous pollutants affect the environment through soil and water.

In contrast, Ukraine does not yet have successful experience in waste management. In our opinion, such behavior is the ignorance of the population about waste disposal and replacement of a particular product with a more environmentally friendly one. The functioning of enterprises and farms does not always have the equipment to dispose of waste, and there is no room for the disposal of unnecessary products and raw materials. However, the problem of lack of innovative equipment arises due to a lack of adequate funding. Therefore, the lack of possibilities for a comprehensive solution to the situation creates a barrier, which does not allow to take proper measures to eliminate and reduce the amount of garbage. Despite many regulations and legal frameworks for regulating waste management, there is no cost-effective policy, and there is no regional waste management program and plan for their proper disposal. It can be concluded that the recycling and disposal of waste will reduce the need for waste incineration, create conditions for improving the economic component of the region and the country as a whole with an account of environmental quality standards. The paper pays attention to the essence of waste disposal; identified ways to recycle garbage.

Keywords: entrepreneurship, efficiency, profitability, costs, profit, economic development, garbage processing, utilization, secondary raw materials, waste processing.

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ⁱ Oleksandr V. Kubatko, Doctor in Economics, Professor, Associate Professor at the Department of Economics, Entrepreneurship and Business Administration, Sumy State University;

ⁱⁱ Oleksandra V. Kubatko, Candidate of Economic Sciences, Associate Professor, Senior Lecturer at the Department of Economics, Entrepreneurship and Business Administration, Sumy State University;

ⁱⁱⁱ Tetyana I. Sachnenko, Student of Academic and Research Institute of Business, Economics and Management, Sumy State University;

^{iv} Odewole Oluwatobi Oluwaseun, Fundakleen Global Resources limited, IPWA PLC (Nigeria); PhD Student of Academic and Research Institute of Business, Economics and Management, Sumy State University.

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Introduction. The well-known Chinese company Tus Sunergy Company Limited plans to build ten waste processing plants in Ukraine, allowing for a waste recycling rate of 36 % and waste treatment – 60 %. Currently, these figures do not rise to 7 % and 12 %, respectively [1, 2]. It is impossible to achieve this goal due to the common problems that exist in the waste processing industry, in particular:

- The volume of waste increases, and the potential of the territories of their utilization decreases
- The waste management sector is becoming more complicated, resulting in rising prices for waste disposal.
- From technological progress, the waste composition becomes more complex and includes even more hazardous elements.

Therefore, to eliminate the problems associated with waste recycling, it is necessary to solve local problems, namely: environmental consequences that are related to the impact of garbage on the environment and human health in Ukraine; to analyze the types of waste with methods of their processing and to find proposals and ways to solve the sorting of garbage at the enterprise and increase the efficiency of the garbage processing enterprise.

The article aims to develop a theoretical grounding to waste disposal and a causal analysis of the impact of recycling on the country's economy.

Research results. Any production in manufacturing products accumulates a large amount of unnecessary and unusable material for further use in its activities. The composition of garbage depends on the type of activity of the enterprise. Still, since the landfill produces products from all organizations, one can make a general list of household waste that falls into landfills. This garbage is an inhomogeneous mixture of food residues, plastic, metal, paper, etc. It may differ in its fractional (particle size) and chemical composition. Ukraine produces 474 million tons of solid waste per year, as shown in the diagram (Figure 1).

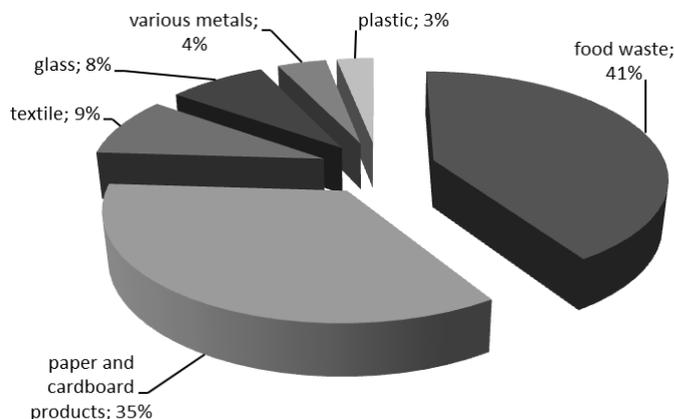


Figure 1. The composition of solid waste that falls into landfills. (built on data [3]).

In this case, only 3-4 % of solid waste can be used for specific technological processes. Still, other substances that are not recyclable must be disposed of by all safety rules. There are several ways to deal with this: burying, burning, or disposing of it. As a result, the only advantage of waste incineration is speed, which is not an economically rational for the state and the enterprise. It brings neither profit nor harm to the environment. Isolating waste by

burying it is cheaper than incinerating, but it is not the ultimate solution. Toxic waste enters the soil and water along with rain or snow. Thus, methane is released, which adversely affects the health of living beings; in addition, it is very flammable. As a result, there may be significant economic losses in the event of a fire or critical environment for the enterprise budget or the budget of the state or region where the burial takes place. Therefore, in our opinion, each of these methods of waste management has certain disadvantages, so we believe that the safest and most advanced type of waste disposal is recycling, which, firstly, reduces the area of landfills, and secondly avoids environmental pollution, third, saves natural resources through the use of secondary raw materials [4].

The problem of garbage management in different European countries is solved in different ways. Almost every EU country in the daily struggle for the garbage problem has relatively high results and achievements. As early as the beginning of the 1980s, the practice of separating garbage by citizens began to be widely used in Europe. Today, there are some positive changes in solving the problem of waste disposal.

It is logical that pragmatic Europeans collect garbage and share it for ease of disposal and expect to benefit economically. Europeans recycle garbage and obtain valuable raw materials from it, which are suitable for various industries. It is not the city that pays for garbage disposal, but its inhabitants. Careful sorting makes recycling cheaper, and the lower the cost of utilities, the lower the tariffs for citizens. By burning half of the household waste, the incinerator produces 1 million tons of steam – enough to provide electricity to 12 % of the city's households. Only gases are released into the atmosphere, passed through special filters, so the pipes of incinerators smoke weakly and almost odorless.

The organization of business activities aimed at the waste recycling sector in Ukraine is at an early stage. The need for a strategy for the development of the waste processing industry is pointed out not only by scientists but also by entrepreneurs. However, the first steps in this direction were taken only five years ago. The first impetus was the tragedy at the Hrybovytsia landfill near Lviv in late May 2016, and its subsequent closure, and the still unresolved problem of Lviv garbage removal [6]. This once again shows the severity of the problem of waste disposal. Lviv is not the only city in Ukraine that is an ecologically dangerous zone. The difficult situation with garbage throughout the country also worries both environmentalists and its residents. Today, waste is most affected by the waste in such areas and individual cities and towns as Uzhgorod, Ternopil, Kamyanets-Podilsky, Odesa, Mykolayiv, Kyiv, Lviv Dnipro, Kharkiv, Kramatorsk, Donetsk [7]. In general, each region can be analyzed in terms of economic benefits for the organization of the waste processing industry. Due to the growing amount of garbage, such enterprises are now relevant. After the plant's construction, there will always be a stable supply because Ukraine is an industrial state, so factories and small institutions produce products in the regions. Comparing other Ukrainian cities, we can conclude that the enterprises of the waste processing industry will not have competitors in terms of recycling and proper disposal. In addition, third-party companies will be able to ensure the supply of raw materials; the city council also has some interest in the prosperity of such business to maintain the country's environmentally friendly state and create additional budget revenues by the law. Therefore, financial support from the state for waste management is guaranteed and justified.

Since there is a large amount of waste in operation and development of products incinerated and pollutes the environment, it seems that business focusing on recycling has significant potential and the impetus for growth. However, the construction of plants requires significant investments, which do not have small businesses. Lack of financial resources can be ensured by choosing the proper methods. There are various ways to obtain financing in a

business idea, in particular, to find investors, receive financial support from the state or invest their funds. However, as mentioned earlier, cash contributions are significant, so if the entrepreneur does not have the considerable start-up capital to build a business quickly, it can be forgotten. Receiving money from the state or investors requires a more specific plan and financial calculations with a subsequent focus on the payback period and profit in the future. However, in business circles, it is believed that getting money from investors is more likely. Because the current circumstances of the pandemic are forcing the state to focus on supporting existing economic entities in our work, we accept that obtaining financial support from investors is the most likely.

In addition, the topic of preserving the environment in quality and livable environment is quite relevant. Thus, international companies (funds) such as “USAID”, “EBRD”, “BlackRock”, “Green for Growth Fund”, “Kernel” [8, 9, 10] and others invest in the fight for a normal ecological state and support business plans that further help to restore the quality of the environment and reduce the negative impact on the environment. It is now known that Ukraine has more than once been involved in such support. Many projects have been implemented, which have had some positive developments and effective results. Thus, such projects include “Sustainable Development in Adidas LLC”, “Unconventional Gas in Ukraine”, “Eco-School” and many others that are related to environmental protection. [9, 11]. However, to implement the project, it is not enough to find the necessary amount of money for implementation; one also needs to consider many other components, which in the further analysis will help the desired level of income and expenses of the recycling plant.

Of course, the main component of the fundraising process is the preparation of a business plan, each element of which is divided into items: documentation, raw materials, equipment, selection of personnel, sales channels, calculation of projected profits, marketing plan and analysis of enterprise profitability. Thus, in this paper, we propose analyzing some elements of the business plan to have a more urgent idea of the organization of business with a focus on waste management.

Choice of premises. When building a plant, it is important to decide on the choice of premises or find a suitable area where machinery, machines, equipment, and specialized equipment will be located. Depending on the available budget, such beliefs can be rented or purchased independently. The direction of the waste processing business is quite new for Ukraine, so the acquisition of large-scale areas can be risky, leading to the purchase of many types of equipment. Premises not more than 500 square meters will be enough to accommodate production facilities, storage, and garage for equipment, staff restroom, the necessary space for managers, and space for other ancillary facilities. According to safety standards, such plants are opened outside the city, but it's not bad because near a small town, the rent is lower, and the administration is more loyal. The best location for such a plant will be the area near the landfill. This will minimize the cost of transporting garbage or near enterprises with which it is easy to establish contact for the disposal of waste from production to the recycling plant. It is important to note that the mandatory criterion for construction is the presence of a water source. Accordingly, in compliance with all regulations, including sanitary and fire, you can build a business. The cost of renting the premises and renting the surrounding area is approximately \$ 1,205 per month, provided that the additional costs are associated with the renovation of the premises.

Documentation. Only an enterprise with all licenses and permits from government agencies can work with waste, especially hazardous waste. To obtain the necessary documents, it is better to turn to professionals, as there is a high probability of rejection when trying to register. Funds spent on documents are not reimbursed, and therefore there is a risk

of losing a large amount of money. The term for obtaining licenses is from four to eight months. After holding the rights, the project documentation with a detailed description of technological operations is drawn up. With this description, the entrepreneur has the opportunity to obtain a permit from the fire inspection, water, and utilities [3].

Raw. At the first stage of the plant's operation, it is necessary to determine the specific type of waste or several wastes that the plant plans to recycle. It should be based on the area's geographical features, the existing demand for secondary raw materials, and the possibility of selling to other cities. But now the issue of waste distribution has become global so that the analysis can find relevant areas in this area (Fig. 2).

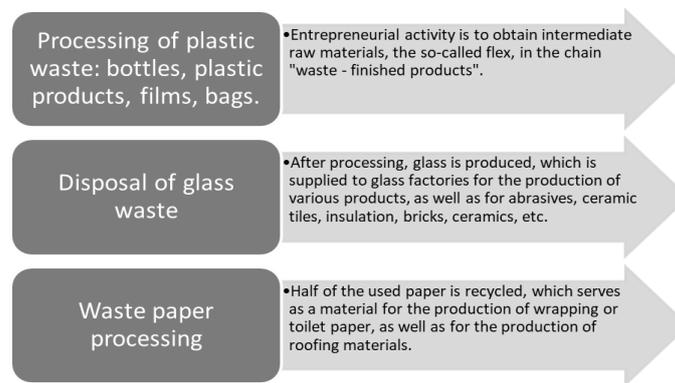


Figure 2. The most relevant areas in the waste processing industry (built by the authors on the basis of [3])

Of course, most of the raw material is in the landfill; some manage to agree with the administration that the cars bring garbage directly, bypassing the city landfill. Waste is an inexhaustible raw material that replenishes its reserves every day, so the question of their shortage is unrealistic [3].

Equipment. Garbage recycling equipment depends on the selected type of raw material waste. Therefore, the company needs appropriate equipment and facilities, in particular:

- machines for shredding garbage;
- sorting line;
- press;
- devices for heat treatment;
- the device for washing;
- the device for drying;
- storage compartment;
- magnetic installation.

Additional equipment may be needed for different types of waste and the manufacture of semi-finished products or incineration of waste for energy. If one does not include these additional costs to purchase equipment and choose an essential set for one or more products, then on average, organizing a mini-production for waste processing will cost 100 thousand dollars [12].

Selection of the necessary personnel. The equipment must be under the constant supervision of workers. That is why the company will need staff. Production differs from trade in that the equipment should not be idle; the company works around the clock. Even with a small production, one shift requires 10-15 workers, particularly a shift supervisor, a specialist in repairing equipment and electrical networks. The purchase of raw materials and sales, paperwork, accounting and other accounting requires a team of 3-5 office workers. The salary fund at the enterprise, depending on the location, will be 4 thousand dollars a month [13].

Calculation of projected profit from processing. Every day the planned plant processes 50 tons of household waste. Waste is accepted for recycling for \$ 12 per ton. This figure can be obtained by considering the filling of garbage cans located near residential buildings and polymers, food waste, paper and cardboard, rubber, metal, textiles, construction debris, and wood. The central place among the removed household waste to the landfill is paper, cardboard, and food waste (61.5-73.7 % of the total mass). If we consider sorted waste, the prices may be as follows: aluminum can for 1 kilogram is 0.5 dollars; waste paper – \$ 0.06 per kilogram; and extruded plastic bottles and polymers – from 0.12 to 0.3 dollars per kilogram; We conditionally consider that 7.5 tons of waste are sorted per day, the average cost of re-sorting waste is 0, \$ 1 per kilogram. The projected profit is given in table 1 [14].

Table 1

Projected revenue of the waste processing plant

	Revenue from waste sales	Revenue from waste collection
Formulas	Revenue from sales of waste = = (50 tons * \$ 12 per ton) * 365 days	Revenue from waste reception = = (7.5 tons * \$ 100 per ton) * 365 days
Profit	\$ 219,000	\$ 273,750
Total	\$ 492,750	

Constructed by the author based on calculations [14].

It is calculating the profitability of the enterprise. Every entrepreneur, seeing the idea of business, undoubtedly thought t the question of its profitability. From the study of the business plan for constructing a recycling plant, it is needed to calculate the profit or loss, payback period, and profitability based on table 2. The relevant calculations are made based on the processed material [13, 14, 15, 16, 17].

Table 2

List of variable and fixed costs

Fixed costs	
Salary	48 450 \$
FTO taxes	14 600 \$
Rent	13 100 \$
Amortization	68 700 \$
Accountant services	860 \$
Variable costs	
Spare parts, consumables	2 300 \$
Uniform	4 000 \$
Utility costs	6 000 \$
Fuel costs	4 500 \$
Insurance	0 \$
POP costs	12 000 \$
Other variable costs	4 700 \$
Advertising	14 400 \$
Total	179 210 \$

After the calculation, one can determine the payback period, but since the figures are not exact, the process of activity may change the influence of economic, political factors or emergencies. The main financial indicators are shown in table 3.

Table 3

Main financial indicators

Indicator	Value
Revenue of the enterprise, USD	492 750
Profit of the enterprise, USD	213 540
Investment in the project, USD	279 210
Payback period, months	5.7
Profitability, %	76.5

Constructed by the author based on calculations [5].

Thus, the resulting probability is 76.5 %, which occurred due to the ideal proportion. When planning a real business, all prices will be able to change. Still, profitability is guaranteed not to fall below 40 %, so there is no doubt about the city's profitability.

In market conditions, there is fierce competition, which requires companies to constantly increase efficiency and intensify efforts to promote products on the market. The importance of increasing the economic efficiency of activities leads to the search for reserves and ways to build a business in a competitive environment. Accepting untapped opportunities to increase production per unit of total costs is due to the more rational use of all enterprise resources. In addition, the factors influencing efficiency are the organization of production and labor, improving the quality of natural resources, improving management, and improving the technical level of the enterprise. Among the main ways available in improving efficiency in waste sorting and disposal, the organizational and technological level of production is essential. Within the corporate direction, attention is paid to the effectiveness of waste management from the workplace of an individual worker or specialist to the level of the enterprise as a whole.

The importance of improving equipment improves the operation of garbage distribution devices, in particular: tanks, devices that plant workers will use. However, with sufficient financial support, there is a way to purchase equipment for the distribution or separate storage of waste, which improves the sorting of unnecessary raw materials, product left over after production. The intangible component includes eco-culture as part of the corporate culture. Landscaping and cleaning of parks, battery collection, waste sorting, stationery from recycled materials, abandonment of disposable tableware, promotion of eco-transport, economical consumption of electricity and water, transition to alternative energy sources [18] and the second are the organizational and legal component. Thus, the priority is to improve the management system; to successfully implement its enterprise development strategy, it is necessary to carry out effective, efficient and competitive business activities. Only skillful use of the whole system of these factors can provide a good production efficiency rate. There are 15 glass processing plants in Ukraine, 15 for paper processing, 16 for metal processing, 19 for PET processing, and 36 for processing of secondary polymers, which are not fully loaded. Less than 1 % of all waste is recycled; most of it is either incinerated or buried in the soil [19].

Conclusions. Urgent waste disposal problems become relevant, especially when Ukraine has billions of tons of garbage and industrial waste in its "stocks". At the same time, Europe widely uses such waste in various spheres of production for economic gain. Analysis of the problem of disposal of unnecessary products and raw materials showed the need for a systematic approach to solving this problem. This approach requires creating and implementing a set of organizational, economic, technical, and environmental measures. The critical points of this approach are the organization of the separate collection, transportation, waste sorting, recycling and utilization of garbage, and reducing the amount of production waste. Waste reduction can be implemented with the help of the necessary legislation,

recycling schemes, and equipment upgrades. Also, the landfills themselves are no longer adapted to the amount of garbage that is buried in them.

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Організація підприємницької діяльності з урахуванням еколого-економічних аспектів

ОЛЕКСАНДР ВАСИЛЬОВИЧ КУБАТКО^{*},
ОЛЕКСАНДРА ВІКТОРОВНА КУБАТКО^{},**
ТЕТЯНА ІГОРІВНА САХНЕНКО^{*},**
ОДЕВОЛЕ ОЛУВАТОБІ ОЛУВАСЕУН^{**}**

^{*} доктор економічних наук, доцент, доцент кафедри економіки, підприємництва та бізнес-адміністрування Сумського державного університету,
вул. Римського-Корсакова, 2, г. Суми, 40007, Україна,
тел.: 00-380-542-332223, e-mail: okubatko@econ.sumdu.edu.ua

^{**} кандидат економічних наук, доцент, старший викладач кафедри економіки, підприємництва та бізнес-адміністрування Сумського державного університету,
вул. Р.-Корсакова, 2, м. Суми, 40007, Україна,
тел.: 00-380-542-332223, e-mail: o.kubatko@econ.sumdu.edu.ua

^{***} студентка Навчально-наукового інституту бізнесу, економіки та менеджменту
Сумського державного університету,
вул. Р.-Корсакова, 2, м. Суми, 40007, Україна,
тел.: 00-380-542-332223, e-mail: tetiana.sakhnenko@student.sumdu.edu.ua

^{****} Fundakleen Global Resources limited, IPWA PLC (Нігерія); аспірант Навчально-наукового інституту бізнесу, економіки та менеджменту Сумського державного університету,
вул. Р.-Корсакова, 2, м. Суми, 40007, Україна,
тел.: 00-380-542-332223, e-mail: odewoletobi@gmail.com

Однією з найгостріших екологічних проблем сьогодні є забруднення навколишнього середовища не тільки викидами шкідливих речовин, але й промисловими відходами. Негативний вплив на навколишнє середовище та людей набуває все більшого поширення, а методи його утилізації гальмують розвиток економічної системи. В умовах ринкової економіки підприємці не зацікавлені у збільшенні екологічних витрат, що, природно, призводить до зростання собівартості продукції та зменшення прибутку. Вплив на навколишнє середовище з кожним роком стає все більш розповсюдженим, і до цього часу в деяких частинах світу це призвело до екологічної кризи. Питання переробки відходів обговорювалось і постійно обговорюється. Тому що людина «виробляє» понад 250 кг побутових відходів на рік. На підприємстві ці показники сягають 10 000 кг. Також відомо, що за останні роки Україна імпортувала близько 30-50 тис. Тонн грануляту ПЕТ, який поступово накопичується на звалищах у вигляді упаковки, пляшок, плівок. Такі небезпечні забруднювачі впливають на навколишнє середовище через ґрунт та воду. На відміну від цього, Україна ще не має успішного досвіду поводження з відходами. На наш погляд, причинами такої поведінки є незнання населення щодо утилізації відходів та заміни певного товару на більш екологічний. Функціонуючі підприємства та ферми не завжди мають обладнання для утилізації відходів, і немає місця для утилізації непотрібної продукції та сировини. Однак проблема відсутності інноваційного обладнання виникає через відсутність належного фінансування. Тому неможливість комплексного вирішення проблеми створює бар'єр, який не дозволяє вжити ефективних заходів щодо усунення та зменшення кількості сміття. Незважаючи на велику кількість нормативно-правових актів та нормативно-правової бази щодо регулювання поводження з відходами, не існує економічно ефективної політики, а також не існує регіональної

програми поводження з відходами та плану їх належного захоронення. В результаті ретельного аналізу ситуації можна зробити висновок, що переробка та утилізація відходів зменшить потребу у спалюванні відходів, створить умови для поліпшення економічної складової регіону та країни в цілому з урахуванням екологічних стандартів якості. У роботі звертається увага на особливості сутності утилізації відходів; визначено способи переробки сміття.

Ключові слова: підприємництво, ефективність, рентабельність, витрати, прибуток, економічний розвиток, сміттепереробка, утилізація, вторинна сировина, переробка відходів

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