

ENTREPRENEURSHIP FOR ZERO WASTE STRATEGY IN OMSK CITY

Sergey Kostarev

Omsk Institute of Russian State University of Trade and Economics

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1 Introduction

Omsk is one of the largest cities in the Asian part of Russia with a population of over 1.1 million people. The city produces a significant amount of household waste: 1.7 million cubic meter per annum. But only 75% of waste goes to organized landfills.

There has been a certain progress in waste collection for the last four years which is due to changes in the form of proprietorship of enterprises. Up to the end of 2002 household waste had been collected by special municipal enterprises which worked in every administrative district of the city. In 2003-2004 there was increase in private companies' activity in waste collection and transport.

Some minor part of household waste is recycled; it mainly includes paper, metal, textiles and plastic bottles. There used to be several enterprises that undertake in waste collection and recycling. But at present there are only two companies that collect recyclable waste from people and organizations. So in 2002 over 30000 tones of household waste were recycled and in 2006 – less than 13000 tones. So the volume of recycling decreased significantly and waste market loose more than 1 million euro per years. Moreover there is recycling less 5 % of total household waste in Omsk city so waste market capacity is more than 20 million euro per year.

“Zero waste” strategy for Omsk city had been created for building capacity of waste management entrepreneurship. Developing of markets for waste recycles and services improving had been identified as priority policies and should be realized by involving wide range of small and medium enterprises.

2 Vision of Zero waste strategy

Thinking about the future of our city we want to see Omsk:

- Ø Clean,
- Ø Convenient,
- Ø Profitable,
- Ø Educated.

In short, we would like Miracle-Omsk (The Russian acronym ChUDO means “miracle”).

All these characteristics can apply to waste management, to one of the most important and complicated sides of the city's life as well.

At the same time we will realize:

Clean – means that all the waste in the city is either properly transported to specially equipped landfills or is recycled.

Convenient – means that a well-organized waste collection and transportation system is convenient for the city inhabitants and organizations.

Profitable – means that waste collection and recycling are profitable and attract a lot of businesses.

Educated – means that people know how they should collect and segregate waste, and also they take part in minimizing its amount.

When it has reached the intended level of household waste treatment our city will have taken a step towards sustainable development and a comfortable life.

3 Background information

Omsk is cities with a population of over 1.1 Million people. The city produces a significant amount of household waste: 1.7 million cubic metres per annum. But only 1.3 million cubic metre (75%) go to organized landfills outside inhabited area, 400 000 cubic metre (25%) are left in the city or go to illegal dumps. Some minor part of household waste is recycled; it mainly includes paper, metal, textiles and plastic bottles.

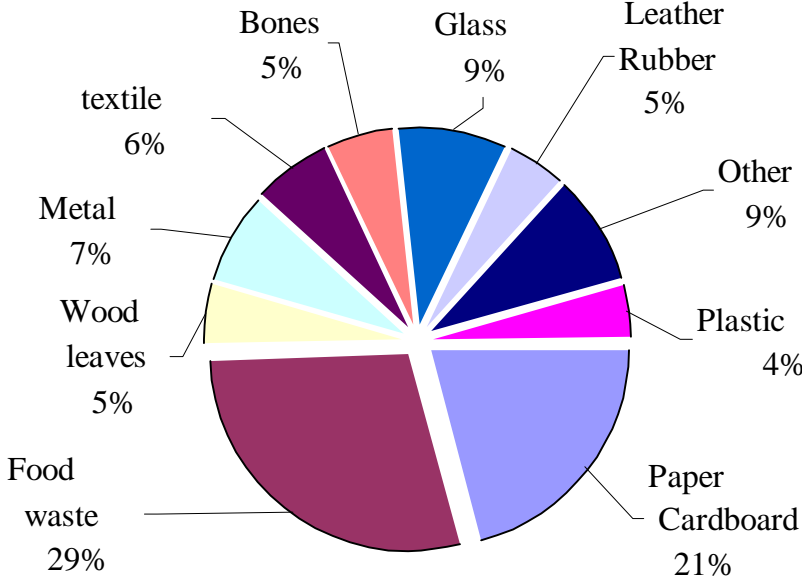


Fig 1. Household waste composition in Omsk, %, late 1990s

The layout Omsk has peculiarities which result in serious problems for waste collection and transport. The city occupies a large area - about 500 sq.km, but stretched along the Irtysh River. The part of the right-bank is cut by a second river – Om. Industrial areas are mixed with a living area which is not compact; 60% of it is occupied by wooden houses.

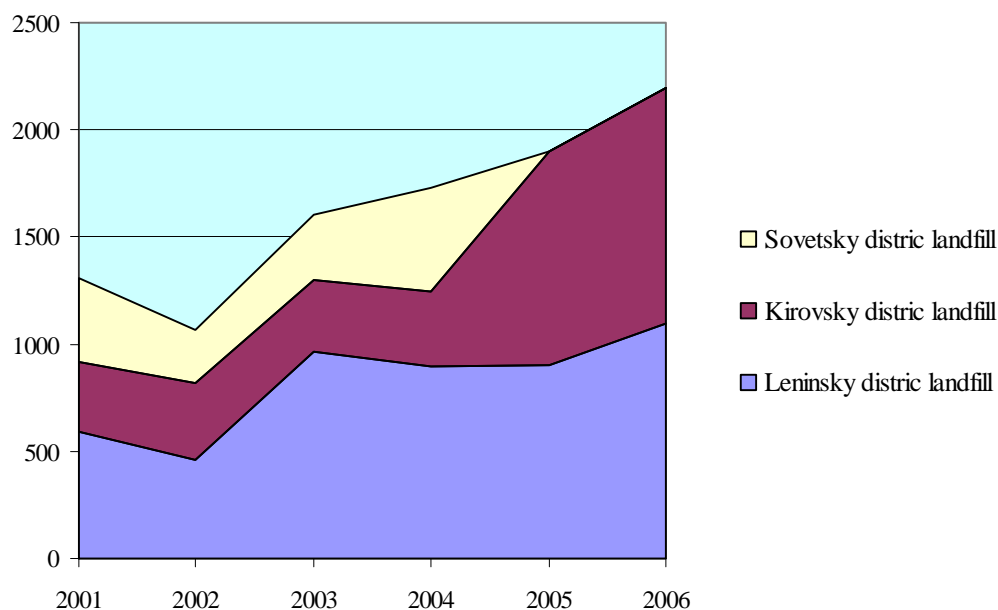
The system of treatment of municipal waste in Russia is based on 98% of waste going to landfills and illegal dumps.

At present there are 2 landfills working in Omsk: Kirovskaya and Leninskaya, which do not fully meet the requirements of environmental legislation. Soviet district landfill was closed in 2005 because it did not meet environmental protection requirements. The absence of any landfill in the northern part of the city resulted in increased costs for waste transport (up to 9 million roubles = 260 thousand euros per annum).

Table 1. Main characteristics of municipal landfills

Landfill	Start of exploitation	Area, hectares
Leninsky district landfill	1959	110
Kirovsky district landfill	1952	125
Sovetsky district landfill (closed in 2005)	1986	10

The volume of waste that is produced and land filled is increasing. 2002 was an exception when there was a crisis in the system of waste collecting enterprises which led to a decrease in the amount of waste going outside the city to landfills.

**Fig. 2. Volume of waste going to legal landfills, thousand m³**

There has been a certain progress in waste collection for the last four years which is due to changes in the form of proprietorship of enterprises.

Up to the end of 2002 household waste had been collected by special municipal enterprises which worked in every administrative district of the city. In 2003-2004 there was increase in private companies' activity in waste collection and transport.

At present there are the following organizations responsible for household waste collection and transportation:

1) "Clean City" has been collecting household waste from Leninsky district since June, 1, 2004 and from Central district since December, 1, 2004. The company has 37 special waste-collecting vehicles and uses Leninsky district landfill.

2) "Skat" company has been collecting household waste from Kirovsky district since December 2004 and from Soviet district since May 2005. The company has 15 special waste-collecting vehicles and uses Kirovsky district landfill.

3) Waste from Oktyabrsky district is collected by a municipal enterprise as it always used to be. There are 12 special waste-collecting vehicles.

During the period from 2002 to 2005 there was a certain increase in the means of household waste collection and transport but the necessary amount is still not achieved. It should be noted that population points out that there is satisfactory quality of waste collection services from areas of blocks-of-flats, so the conclusion can be drawn that it is necessary to review the number of special vehicles needed and to focus not on an increase in their number but a replacement of old ones.

For the last years there have been changes not only in waste collection tariffs but also the way of payment. From March 2000 till early 2004 the tariff was 3 roubles per person per month or 29,3 roubles per m³, in 2004 the tariff was 5,3 roubles per person per month. Since January 2005, a new method for collecting charges has been introduced. Waste collection is included in the total sum of charges for housing services. Housing maintenance tariff implied 0,34 roubles per 1 m² of the living area which makes about 6,62 roubles per person per month.

The commercial fee for waste collection is 67,88 roubles per container (0.75 m³) or 90,5 roubles per 1 m³. Enterprises, organizations and markets have contracts with waste collectors, including municipal ones.

Due to the limitations of the existing waste collection and transport system, especially in wooden house areas, illegal dumps keep on emerging. There are several dozens of them in the city with a total area of 25 hectares and it is constantly increasing.

The main reasons for illegal dumping are:

Bad organization of waste collection in wooden houses areas

Waste collectors do not do their work properly

People and enterprises are unwilling to pay for waste collection

4 Recyclable waste collection and segregation

There used to be several enterprises that undertake in waste collection and recycling. Until 2004 there were 2 main organizations:

“Sibvtorsyrje” (with a staff of 90 people and 39 collection points),

“Omskvtorsyrje” (17 people, 6 collection points).

But at present there is only one company that collects recyclable waste from people and organizations – “Omskvtorsyrje”.

Table 2. Collection of recyclable materials

Organization	Number of collection points	Paper, tonnes per year	Textile, tonnes per year	Plastic, tonnes per year	Glass, tonnes per year
2002		26 000	800	600	5 000
“Sibvtorsyrje”	38	20 000.	600	600	5000
“Omskvtorsyrje”	6	6 000	200	-	-
2004		8 000	317	58	-
“Omskvtorsyrje”	17	8 000.	317	58	-
2005		8 700	60	11	11 700
“Omskvtorsyrje”	5	8 700.	60	11	11700
2006		12 000	32	16	-
“Omskvtorsyrje”	5	12 000.	32	16	-

So in 2002 over 30000 tones of household waste were recycled and in 2006 – 12000 tones. Than the volume of recycling decreased significantly and waste market lose a lot of money.

For example, average buying prices are:

For mackle-paper – from 40-50 euro per tonne at primary market to 100 euro at derivative market after sorting.

For plastic – 120 euro per tonne.

So enterprises lose 1-2 million euros every year. Moreover there is recycling less 5 % of total household waste in Omsk city so sorting for recycling waste market capacity is more than 20-40 million euros per year.

5 Waste management System analis

5.1 SWOT-analyses of the household waste management system

This analysis was conducted by the group of experts in the “Zero waste” project.

Strengths	Opportunities
Several competing organizations in waste collection. Business is interested in investment in waste recycling. There are some recycling companies. Interest (and responsibility) of city administration in solving waste problems.	Creating a market for waste recycling and disposal. Involving people and SHCs in solving waste problems. Organizing segregated collection of recyclable and reusable waste. Introducing new technologies for waste recycling.
Weaknesses	Threats
Small amount of money obtained from population for waste collection, especially in wooden houses areas. Insufficient number of special vehicles. Lack of landfills for household waste disposal. Lack of civilized market for waste collection and disposal.	Increasing social tension if fees for waste collection are raised. Overflowing landfills. Emergency situations caused by violations of rules in waste collection and disposal.

5.2. Stakeholder analysis of the household waste management system

The analysis was conducted in groups comprising a mixture of stakeholders (administration, businesses, self-help committees, general public) using the brain-storming method. The purpose was to reveal the most urgent problems in terms of corporate opinion of all the stakeholders.

Positive dynamics in waste management in Omsk:

Private companies collecting and transporting waste

Waste collection from blocks of flats in time

Involving inhabitants periodically in cleaning their areas

Problems revealed:

Low level of environmental culture

Lack of material and technical equipment for waste collection and processing

Lack of competition in waste management

5.3. Expert analysis of the household waste management system

Expert – head of waste management of Oxfordshire County Council Adam Symons.

Positive sides:

High value of waste, and there are enterprises which are ready to pay for large amounts of good quality waste.

There are active people who are ready to implement new ways of waste collection and disposal.

There is space for segregated waste collection near houses.

There are big sites for landfills.

Other points to take into account:

A lot of waste is produced.

There are no exact data about waste composition at present.

Few options for segregated waste collection.

The majority of the population is not interested.

Undeveloped infrastructure in waste management and low quality of services provided.

Low cost of labour (less than a third of total costs).

Few options at present for waste disposal (only landfills).

Not enough space for segregated waste collection in flats.

There are few enterprises collecting and recycling waste.

Non-motivated Self-help committees (they have little interest in waste management).

Complex and unsystematic set of standards in waste sphere.

Lack of flexibility in the level of fees for household waste collection from people and organizations.

No central body for waste management in the city.

6 Strategy Policies

Strategic planning implies defining some policies to enable us to reach our vision and to solve the identified problems. These policies should be defined and agreed with all stakeholders in the waste management process: administration, businesses, and people (represented by the City Council, SHCs and NGOs).

The initial list of policies includes the following:

1. Waste minimization
2. Reduction of everyday waste
3. Encouraging reuse of clothes and packaging

4. Developing markets for waste recycling.
5. Composting.
6. Use of waste that cannot be recycled
7. Building a landfill for waste disposal
8. Creating the legal basis for the waste trade
9. Improving and developing waste collection and disposal services
10. Environmental education
11. Providing competition in waste management
12. Improving the collection of the waste collection charges
13. Solving the problem of illegal dumping
14. Creating an organizational structure for dealing with waste management

6.1. Waste minimization

It is the most perspective policy because it leads to savings in the resources needed for waste disposal and recycling and also improves the general quality of life.

The main activities could be:

Reducing the amount of packaging and altering its quality.

Instructions on packaging explaining the disposal process

Raising charges for waste collection and disposal.

Implementing new technologies for making goods which produce less waste.

6.2. Reduction of everyday waste

It is connected with the general level of environmental culture and also with knowledge about “no waste” technologies in everyday life.

The main activities are implemented through training and social advertisement:

Re-use of packaging.

Composting.

Refusal to use unnecessary packaging.

6.3. Encouraging reuse

It reduces the general amount of waste produced and enables us to provide help for poorer people.

The main activities are connected with building the capacity for material and moral interest in prolonging the life of things.

Developing technologies for production of goods which can be used many times.

Organization of collection points for clothes and packaging.

Special marking explaining the possibility of re-use.

Material encouragement to bring goods for re-use (by charging a deposit on them).

6.4. Waste recycling markets developing

Markets for waste recycling will reduce the expenditures of municipal authorities and the population on waste collection and disposal due to competition between different businesses. Besides it will provide maximum comfort for people in waste treating process.

It is necessary to build capacity to increase attractiveness of waste processing activities:

Waste charges should be equal to the expenses for its disposal.

Stimulate the organization of activities for waste recycling on behalf of authorities (tax benefits and direct assistance).

Organize a waste exchange.

Organize places for segregated waste to be collected.

6.5. Composting

Composting is the most effective way of disposing of food, garden and biological waste. It not only provides waste recycling but produces a substance which can be used for the benefit of parks and gardens.

At present it is necessary to advertise this method heavily. Training in modern composting technologies, which enable waste to be recycled during one season, is also essential:

Train people from wooden house areas how to compost.

Equip special sites for composting waste from municipal parks and gardens.

6.6. Use of waste that cannot be recycled

If waste that cannot be recycled is produced, it is necessary to collect it and look for the ways to use and technologies which enable it to be re-used:

Special collection points for non-recyclable waste.

Try and find uses for the waste.

6.7. Building landfills for waste disposal

The quantity and quality of landfills should provide for proper collection and safe allocation of all non-recyclable household waste. The location of landfills should lead not only to minimization of transport costs but also to preservation of the environment.

Since building and running landfills involves great expenditure it is wise to develop landfill designs on a competitive basis with wide public consultation:

Chose a site agreed with inhabitants.

Create joint-stock companies to build landfills.

To hold a competition.

To study and implement best practice.

To support new national ideas.

6.8. Creating the legal basis for waste trade

It is necessary not only to define the standards for waste arising and the responsibilities of the population and organizations if they are violated but also to work out rules and regulations for waste collection, transportation and disposal, and also a legal basis for selling and buying waste.

6.9. Improving and developing waste collection and disposal services

It is essential to develop the material and technical equipment of waste collectors, and equipping collection sites with modern and aesthetically attractive facilities is also important. Besides personnel should have a material interest in providing good-quality services:

Use special vehicles.

Provide sites and containers according to aesthetic standards.

Special uniform for street-cleaners and waste collectors.

High salary for these workers and to stimulate high-quality work.

Form a necessity in quality services.

6.10. Environmental education

Its main task is raising the level of understanding about treating household waste. A clean city, as well as the well-being of people depends on that because waste collection and transport is paid for by of people.

Different methods of environmental training and education should be used:

Personal example of famous people (celebrities).

Special lessons and encouragement for teachers

Information materials.

Annual topical competitions.

Social advertisement in mass media, in streets, etc.

Creating a special active encouragement team with a special program of performances.

6.11. Providing competition in waste management

Competition will lead to reduction in cost and improvements in the quality of services provided but only if the price for waste collection and transport is correct. The main point is to encourage competition between reliable businesses:

To organize a competitive tender for long-term services provision.

To implement a method of enterprises assessment considering population's opinion.

6.12. Improving collection of waste collection fees

At present the proportion of the assigned charges collected in wooden house areas is significantly lower than that in areas with blocks of flats. First of all this is because of the low living standards of people living there, and also because of the unsatisfactory quality of the services. That is why we should focus on improving the quality of services and public control:

To make the quality of services dependant on fee collection, and provide additional services on condition that enough fees are collected.

To develop the legal base and a system of fines if the rules of maintenance for housing areas are broken.

Social advertisement and educational programs involving public organizations and educational institutions.

6.13. Solving the problem of illegal dumping

It is impossible liquidates all illegal dumping but we can significantly reduce its quantity by effective waste collection and transport and also by raising the general culture of living together:

To provide additional containers and their proper collection in time.

To make areas with illegal dumps to meet particular area needs (parks, flower beds, etc.)

Special activities (competitions, encouragement, persuasion).

6.14. Creating an organization structure for waste management

A special structure within the city administration (department or division) is necessary to coordinate activities of all the departments and structures, to appraise options and to monitor and to evaluate implementation and to organize and provide conditions for open dialogue with the people about the implementation of waste management and zero-waste strategies.

7 Priorities and implementation plan

Priorities chosen from policies by the stakeholder meeting:

Improving and developing waste collection and disposal services.

Developing markets for waste recycling.

Environmental education.

In order to implement the mentioned activities we need to develop programs which will include an action plan, parties responsible for implementation, sources of funding, the mechanisms of implementing the program. Parties responsible for certain activities should be structural divisions of the city administration which have corresponding authorities and power. For example, the City Services Department should be responsible for all the activities connected with improving the quality of services in sanitary cleaning, the Education Department should be in charge of activities aimed at training and education, Economic Department should be responsible for the development of markets, etc.

At present there are action plan of the “Clean City” which will solve part of the problems mentioned above, mainly those connected with strengthening the material and technical base of enterprises working with waste, widening landfills and organizing segregated waste collection for recycling.

8 Conclusion: Evaluation and Developing the strategy

Due to the changing conditions in which the city operates and due to scientific and technical progress we suggest reviewing the strategy annually.

It should include:

Analysis of the implementation of accepted programs.

Wide discussion of the outcomes of activities every year.

Suggestions about changing the priorities.

Discussing new programs or additions to existing ones.

The method of discussion: public hearings, organized by the city administration jointly with the City Council. All stakeholders will be invited and enterprises especially.

Thus we can maintain household waste collecting and sorting is attractive objects for small and medium enterprises. Moreover these activities will be supported by authorities and population and guarantee sustainable development of city territory.

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Contact:

Sergey Kostarev
professor of Omsk Institute of RSUTE
box 5433, 644047, Omsk-47, RUSSIA
+7 3812 295443
Email: skostarev@yandex.ru