

Solid waste management in Ukraine



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Dear Reader,
It is my great pleasure to introduce you to our new publication about attractive sectors of Ukraine, made in partnership with Deloitte.

We developed these brochures to make information about sectors of Ukraine accessible and easy to understand. The booklets provide analysis of economic attractiveness, as well as comparative characteristics and undiscovered opportunities.

Ukraine enjoys a long industrial tradition, robust transportation and technical infrastructure, rich natural resources, strong secondary and tertiary education, a broad network of research and development institutes, and a large pool of technically skilled labor. As a WTO member since 2008 and having signed International Agreements for the Avoidance of Double Taxation with 63 countries, Ukraine is a fair player in the business world, a transparent and predictable partner.

InvestUkraine offers individual support to investors and is here to assist potential investors with setting up production in Ukraine. We offer professional support in obtaining information and analysis, legal advice, site visits, site selection services, assistance in communication with local authorities, and an aftercare program.

I encourage you to consider Ukraine as a place for your future business and discover all the benefits of locating your company's operations in our country.

I look forward to welcoming you in Ukraine.

Sergiy Yevtushenko,
Head
InvestUkraine
State Agency for Investment and
National Projects of Ukraine



A favorable geographic position, vast consumer market, ample resources and high level of education – all these factors ensure great investment potential for the economy of Ukraine.

At present, Ukrainian market is at the development stage. There are many niches and opportunities for introducing new players and strengthening the positions of existing ones. However, most of Ukraine's industries lack investments, though international investors are highly interested in them. We believe that foreign investments will be very successful and promote economic growth if a favorable investment climate is created in Ukraine.

To assist you in determining the most promising areas to invest in and get an insight into Ukrainian market, Deloitte experts in cooperation with InvestUkraine have conducted this research.

We hope that this overview will be useful and interesting for all companies interested in investing in various industries of our country.

Vladimir Vakht,
Managing Partner
Deloitte

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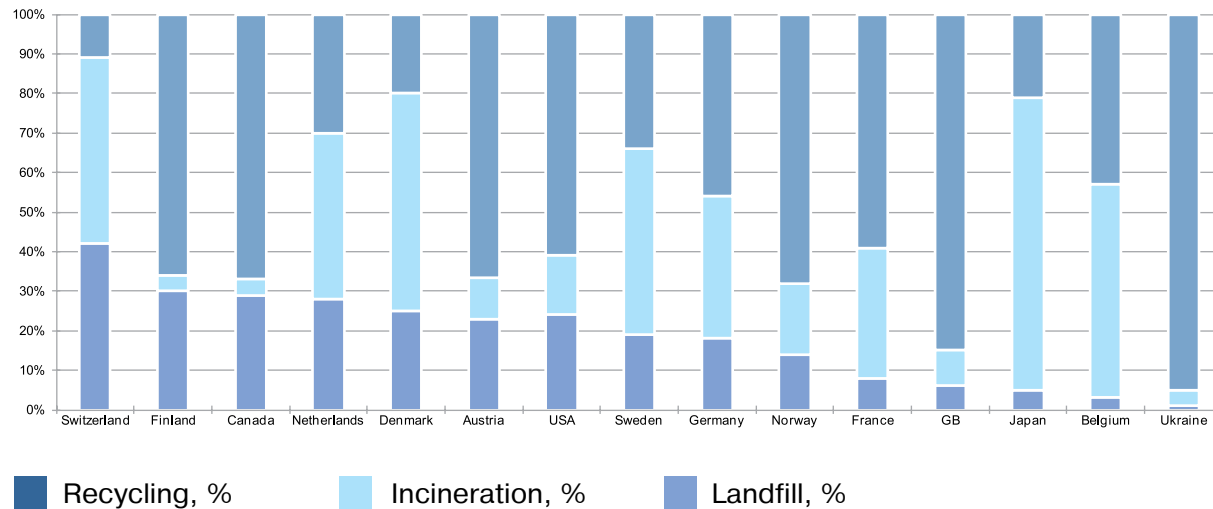
1. Executive summary

For Ukraine, as well as for many other countries, the issue of solid waste treatment is very urgent, considering that accumulated solid waste is the main cause of soil and groundwater pollution. According to the Ministry of Regional Development and Construction (hereinafter - "MRDC") in Ukraine in 2011 about 12 m tons of municipal solid waste (MSW) were produced, and the annual amount is growing by an average of 3-5% per year. Also, according to MRDC, waste accumulated by this point of time contains about 2.5 m tons of paper, 400 thsd tons of steel, 25 thsd tons of ferrous metals, and 400 thsd t of plastic. In 2011, the UNDP estimated the value of raw material potential in case of introduction of separate waste collection and waste recycling would amount to c. UAH 1.3 bn (about EUR 120 m).

Today, the most challenging, yet the most promising areas for development and investment within the industry are:

- Establishment of accounting and control systems of MSW disposal;
- Improvement of management of MSW disposal system and MSW utilization;
- Implementation of educational projects and other measures for shaping public culture of separate waste collection;
- Introduction of separate solid waste collection;
- Construction of modern plants for processing MSW;
- Construction or modernization of plants for processing secondary raw materials and/or usage of secondary fuel (RDF);
- Construction of new landfills;
- Extension of existing landfills and reclamation of closed landfills.

Methods of MSW disposal in Ukraine, compared to those in other developed countries



Source: UNSD

Ukrainian government recognizes importance and urgency of the problem of solid waste treatment in Ukraine and is currently implementing a number of initiatives at the national level:

- National project “Clean City” (under the patronage of the President of Ukraine) - construction of waste processing plants in 10 regions of Ukraine on terms of public-private partnership;
- Implementation of a number of legislative initiatives in order to reform and harmonize domestic standards with the relevant EU directives.

Legislative initiatives Planned are the following:

- Expansion of local communities’ rights regarding the ownership of waste, allowing for better monitoring of the performance of waste collection services;

- Obliging citizens to hold separate collection of waste and obliging legal entities-providers of waste collection services - to ensure separate collection;
- Starting from January 1, 2013 – obliging all citizens to sign agreements with the companies for collection of domestic waste;
- Starting from January 1, 2016 – prohibition of unprocessed waste disposal;
- Implementation of “green tariff” for electricity produced from waste;
- Amending the Code of Ukraine on Administrative Offences, by establishing penalties for violations of waste management laws, such as lack of an agreement with collection companies on disposal of unprocessed waste.

Cities chosen for construction of new waste treatment plants according to the “Clean City” project

#	City	Region	Population (m)	Plant’s projected capacity (thsd t per annum)
1	Kyiv	Central	2.8	300
2	Kharkiv	Eastern	1.5	300
3	Dnipropetrovsk	Central	1.1	300
4	Vinnytsia	Central	0.4	100
5	Poltava	Central	0.3	100
6	Sumy	Eastern	0.3	100
7	Khmelnyskyy	Western	0.3	100
8	Kirovohrad	Central	0.3	100
9	Ternopil	Western	0.2	100
10	Chernivtsi	Western	0.2	100

Source: State Agency for Investment and National Projects of Ukraine, Ukrstat.

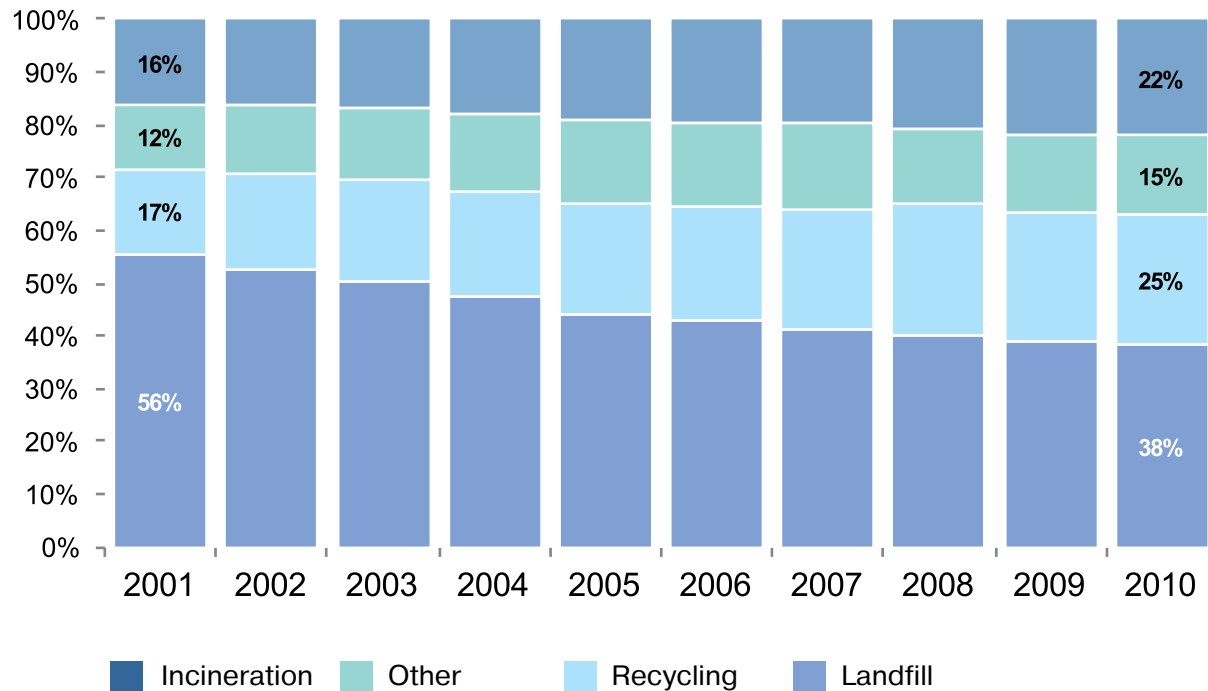
Despite certain difficulties associated with working in the industry, private companies are demonstrating great interest in it. Even though most of the companies either provide services of collection and transportation of waste or are involved in waste sorting with low-tech equipment, there is already an undertaking of large-scale projects in Donetsk, where the construction of a waste incineration plant with capacity of 470 thsd tons of solid waste per year, and production of 242,876 MW hours/year of electricity and 527,992 MW hours/year of thermal energy is planned by attracting foreign investments.

Reforms and developments in the field of MSW treatment in Ukraine are also promoted by such international organizations as SDC (Swiss Agency for Development and Cooperation), UNDP (United Nations

Development Program) and DESPRO (Swiss-Ukrainian project “Support of Decentralization in Ukraine”), which implement educational projects in Ukraine and provide consulting support to public and private participants on the issue of MSW treatment.

MSW processing in Ukraine does not yet involve application of high technologies, so acceptance of European practices, effective implementation of reforms and completion of existing projects, can boost rapid growth in the industry. In majority of European countries less than 40% of MSW is landfilled; for comparison, in Ukraine with all existing plants as well as those currently in construction, incl. the “Clean City” project, there will still be a need for landfilling at least 75% of the total MSW.

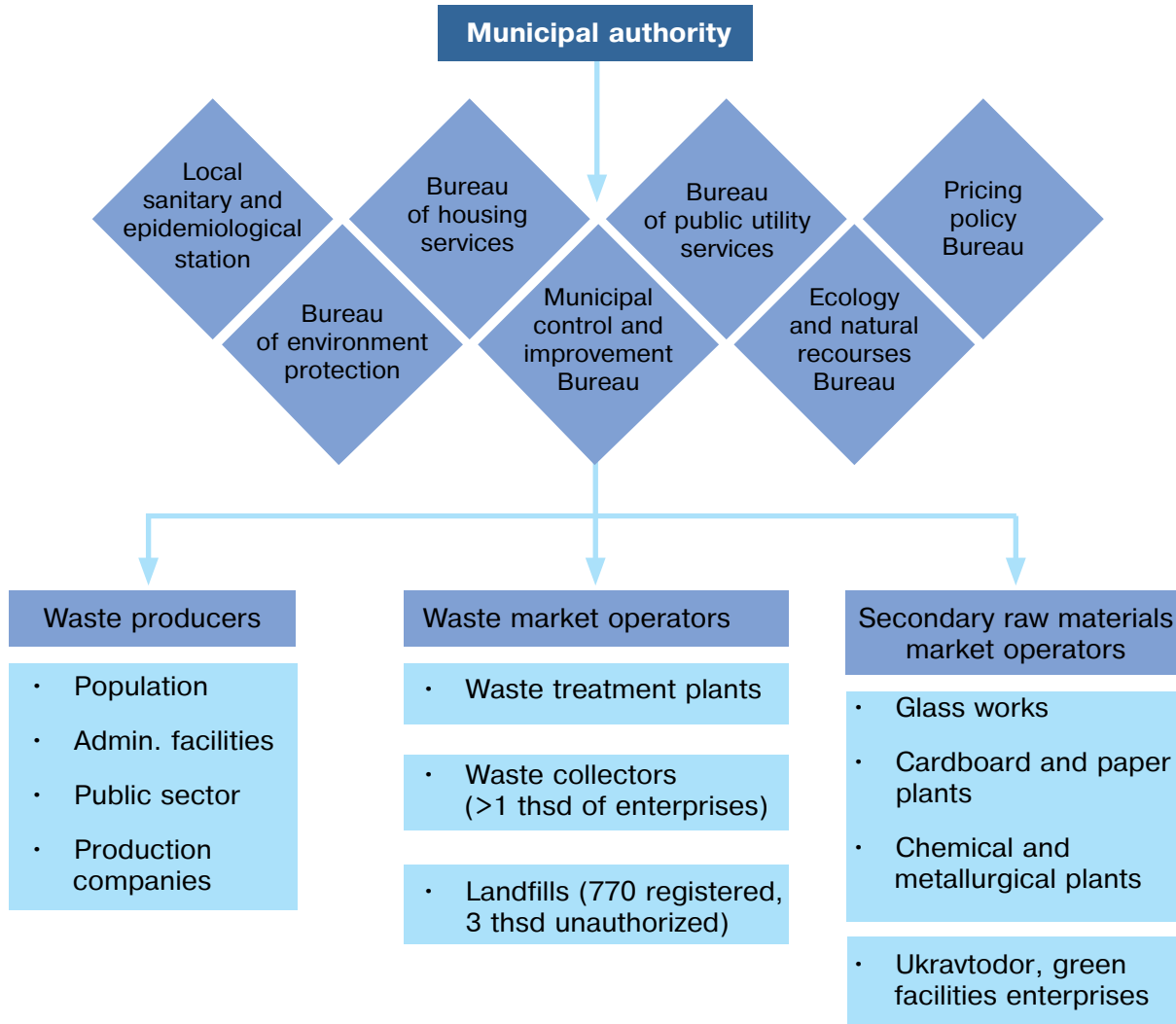
MSW treatment in 27 EU countries



Source: Eurostat

2. Sector overview

Sector business environment



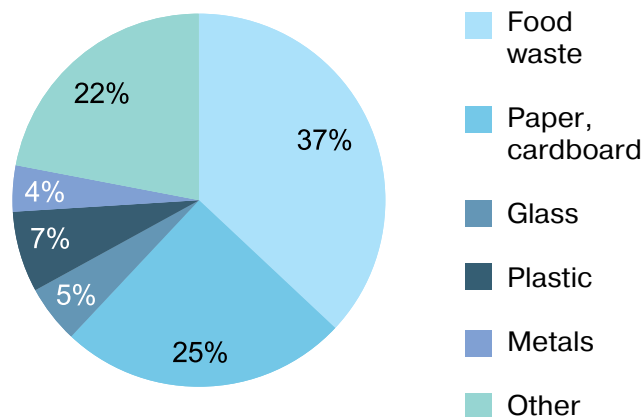
Key sector figures

Solid domestic waste production

According to MRDC, c. 50 m cubic meters of waste are produced annually in Ukraine, or about 11-12 m tons of waste, an average of 240 kg per capita (in large cities this figure may be as high as 400-450 kg/person). The forecasted growth of MSW production is 3-5% per annum. Also, the Ministry estimates that currently there have been accumulated approximately 2.5 m tons of paper and cardboard, 400 thsd tons of ferrous and 25 thsd tons of non-ferrous metals, and 400 thsd tons of plastic in the form of waste.

According to the analytical study carried out in 2011 under the UNDP project "Municipal Governance and Sustainable Development", calculations based on market prices for secondary raw materials in Ukraine resulted in the following estimations of economic effect from operation of waste processing complexes, which incorporate waste sorting stations and incinerators for solid waste: paper and cardboard – UAH 180 m, metals – UAH 225 m, glass – UAH 40 m, polymers – UAH 740 m, textile – UAH 80 m, and heat or electricity generated for the surrounding neighborhoods and waste processing purposes – UAH 35 m. The total effect could amount to UAH 1.3 bn (EUR 120 m).

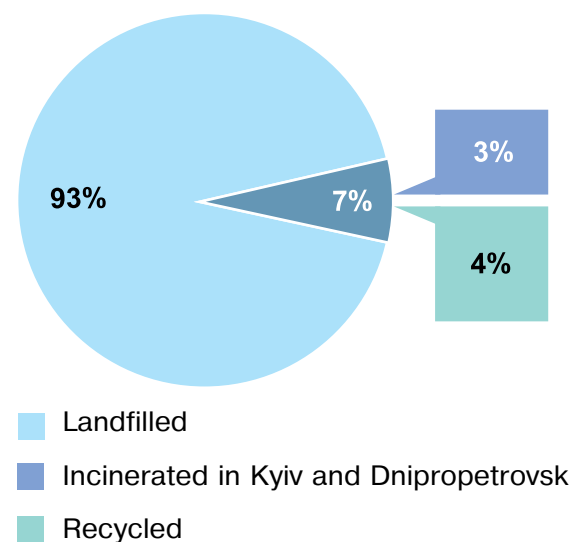
Structure of MSW



Source: Practical manual by O.Ignatenko

In 2011 only 7% of household waste was recycled and disposed of (3% - separately collected and recycled, 4% - burned in two incineration plants - in Kyiv and Dnipropetrovsk).

MSW Treatment in Ukraine in 2011



Source: Ministry of Regional Development and Construction of Ukraine, Practical manual by O.Ignatenko

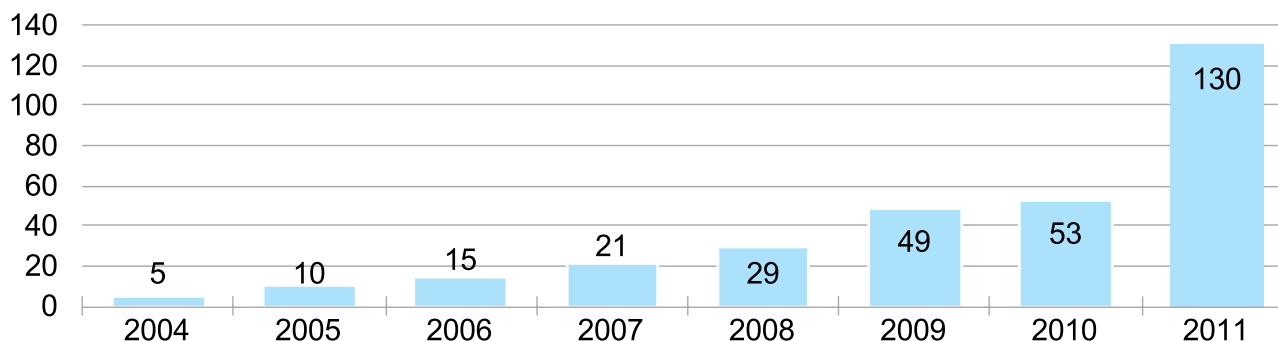
One of the major obstacles for development of waste processing industry in Ukraine is the lack of tradition of separate waste collection. Today there are several waste sorting lines in Ukraine for sorting out glass, plastic, paper and metal raw materials, but their efficiency is very low due to the lack of initial separate collection - the level of processing is only 10-15%.

There have been various initiatives aimed at introduction of separate waste collection by households and legal entities, and in those communities where such initiatives have taken place the level of processing increase to 30-50%. According to the UNDP estimates, competent promotion and implementation of separate collection of solid waste in cities and

towns, as well as establishment and development of technological chains through public utilities or private companies will reduce the daily amount of solid waste brought to local landfills by 25-30%.

Implementation of program of separate solid waste collection in Ukraine started in 2004, yet substantial progress has only been achieved recently. According to MRDC, in 2011 such system has already been implemented in 130 cities (out of 459); however, mostly – only in part – within a couple of the city blocks or only for certain types of waste (e.g. only plastic bottles are collected separately).

Number of cities and towns in Ukraine, where separate waste collection has been introduced



Source: Ministry of Regional Development and Construction of Ukraine

Landfills

In Ukraine MSW is disposed of on 4.5 thsd landfills with the total area of more than 8 thsd ha. Around 314 units (7%) are already overloaded and 897 units (20%) - do not satisfy the environmental safety requirements. The need for new landfills amounts to

about 670 new facilities. Services of centralized collection and disposal of waste cover only 76% of the population; therefore non-authorized landfills are continuously emerging (currently - about 3 thsd, which cover an area of over 1 thsd ha).

3. Leading players

Recycling companies and technologies they use

In 9 Ukrainian cities: Kyiv, Sevastopil, Kharkiv, Chervivtsi, Simferopol, Olexandria (Kirovohradska obl.), Novohrad-Volynskyy, Bucha and Pohreby (Kyivska obl.) there are waste sorting lines in operation, and in 19 more towns such facilities are under construction.

In two cities (Kyiv and Dnipropetrovsk) waste is partially being utilized at incineration plants, and in Lyubotin (Kharkivska obl.) a pilot incineration plant has been recently put into operation.

Waste treatment plants in Ukraine

#	City (town)	Technology
	AR Krym	
1	Saky	Sorting complex
2	Sevastopil	Sorting
	Dnipropetrovska obl.	
3	Dnipropetrovsk	Incineration plant
	Zaporizka obl.	
4	Zaporizhzhia	Sorting complex
	Kyivska obl.	
5	Pohreby	Recycling complex
6	Bucha	Sorting, recycling
7	Kyiv	Sorting
8	Kyiv	Incineration plant
	Kirovohradska obl.	
9	Oleksandria	Sorting line
	Kharkivska obl.	
10	Rohan	Sorting line
11	Lyubotyn	Incineration facility

Source: UNIDO

Projects under development

In Ukraine there are currently no waste treatment plants with foreign investments. The first such plant is planned to be constructed in Donetsk. This project obtained a positive result of the public examination of its feasibility carried out by the State Sanitary and Epidemiological Agency and State Environmental Agency.

The plant is to utilize 470 t of solid waste per year, producing 242,876 MW hours/year of electricity and

527,992 MW hours/year of thermal energy, which will be sold to consumers at existing tariffs, providing hot water and heating for over 100 thsd inhabitants of the surrounding area. It will replace the use of imported natural gas in the volume of 123 m cubic meters.

The plant is supposed to be built at the expense of foreign investors. The amount of foreign investment needed is EUR 409 m.

The project does not require any additional funding from the state or local budgets. The obligations of the municipalities include: sale of land for construction of plant, providing the plant with waste, and signing contract on heat consumption to be provided to households at existing rates, while the electricity generated in the course of plant's operation is to be sold to industrial companies at "green tariff".

Also, the feasibility study for the national project "Clean City" is now being finalized. The project, which is based on public-private partnership, involves con-

4. Legislation

Treatment of dangerous waste, as well as collection and recycling certain kinds of waste (f. e. metal scrap), requires obtaining licenses in Ukraine. Trans-border transportation of waste is subject to obtaining a special permit. Each facility for storage or disposal of waste shall also be operated only upon obtaining a special permit.

The basic regulatory act is the Law of Ukraine "On Waste", which defines the basic principles of the state policy on waste treatment (legal, organizational and economic basis of waste transportation, utilization and disposal).

The main regulatory authorities in the sector are the Ministry of Ecology and Natural Resources of Ukraine, the State Sanitary-Epidemiological Service of Ukraine and municipal authorities. Local authorities also approve the tariffs for the transportation and disposal of waste.

Monitoring of the places of production, collection and disposal of waste is a part of the system of state environmental monitoring.

System and forms of reporting, order of provision and use of the relevant information about the waste as well as the order of review of the nomencla-

struction of waste processing plants in 10 cities of Ukraine. The selection of private investors - project participants is scheduled for the end of 2012. Feasibility study is based on data and field studies of German engineering companies with extensive experience in support of similar projects in Europe. In the feasibility study several options in terms of technology application are considered: starting from simple sorting of waste to biological treatment and incineration. The total investment needed for this project is estimated at EUR 500 m.

ture are done on the basis of the State Register of Waste. The reporting is approved by specially authorized statistical body upon the request of State environmental authority.

There are a number of legislative initiatives implemented in Ukraine for harmonization of domestic standards with the relevant EU directives, such as:

- Expansion of local communities' rights regarding the ownership of waste, allowing for better monitoring of the performance of waste collection services;
- Obliging citizens to hold separate collection of waste and obliging legal entities-providers of waste collection services - to ensure such separate collection;
- Implementation of "green tariff" for electricity produced from waste;
- Amending the Code of Ukraine on Administrative Offences, by establishing penalties for violations of waste management laws, such as lack of an agreement with collection companies on disposal of unprocessed waste.

Storage and disposal of waste is subject to ecology tax. The ecology tax rate depends on the hazard level of waste and ranges from EUR 0.3 to EUR 75 per ton of waste. The tax liability depends on the volume of waste brought to landfills or other facilities during the reporting period (quarter).

With regards to corporate income tax (hereinafter referred to as the "CIT") there is no special treatment of the waste management activities. CIT is

currently calculated at a flat rate of 21%. CIT rate will be reduced to 19% for the period from 1 January 2013 until 31 December 2013; and then to 16% from 1 January 2014 onwards.

Value added tax (hereinafter referred to as the "VAT") currently levied at a rate of 20% of the taxable value of domestic supplies, imported goods and auxiliary services. The VAT rate will be reduced to 17% from 1 January 2014.

5. Organizations and associations of the sector

DESPRO

Swiss-Ukrainian Project "Decentralization Support in Ukraine" (DESPRO), funded by the Swiss Agency for Development and Cooperation (SDC) and implemented by the Swiss Resource Centre and Consultancies for Development (Skat).

Over the course of two years, DESPRO's operations resulted in the implementation of 40 local community projects. Significant social and economic improvements have also been achieved. The total cost of the projects exceeded UAH 7,6 m, nearly 54% of which

was contributed by the Swiss-Ukrainian project DESPRO, while 29% was collected by the community members and the remaining 17% was provided by the local budgets.

Between 2010 and 2012, the Project shall provide further support for communities, expanding the geographical borders of its operation to cover the areas of Autonomous Republic of Crimea, Vinnytska obl. and Sumska obl.

United Nations Development Program

The project started in April 2004 and is being carried out in cooperation with local councils, governmental committees, Ministry of Regional Development and Construction of Ukraine as well as with Ukrainian universities. The main goal of the project is to build up the capacity of local communities to participate in decision-making process and work together to

strengthen the local socio-economic and environmental governance to achieve sustainable development.

The project is funded by the Swiss Agency for Development and Cooperation and the Embassy of the Kingdom of Norway.

EPTISA

EU Project “Waste Governance ENPI-East - European Neighbourhood and Partnership Instrument” started in late 2009 and has 4-year duration. The project is aimed to promote establishment of a sustainable waste management system by enhancing waste management standards, effective implementation of national and local waste initiatives, improving the processes of waste collection and sorting,

and promoting application of recycling systems, usage of recycled materials and safe disposal of waste.

The pilot area for project implementation in Ukraine is Zakarpatska obl. The project is implemented by a consortium led by Eptisa Servicios de Ingenieria (Spain). The project is funded under the ENPI Eastern Regional Programme adopted in 2008.

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