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Feasibility Study

Development of integrated municipal solid waste management in the district Făleşti

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EXECUTIVE SUMMARY

This feasibility study has been developed within the project "*Cross-Border Improvement of Solid Municipal Waste Management in the Republic of Moldova, Romania and Ukraine (SMWM)*" (code MIS ETC-1106) financed by the European Union through the Joint Operational Program Romania-Ukraine-Republic of Moldova 2007-2013 in order to determine the technical and economic, as well as financial rationale to develop the infrastructure for efficient solid municipal waste management, to expand the activities of the waste removal service under the Municipal Company "Municipal and Housing Service Production Unit" of Falesti town (hereinafter I.M. DPGCL Falesti) to the rural localities of the district, which will contribute to improvement of the service quality and efficiency, will create new opportunities for economic development, investment attraction, improvement of living standards of the population and reduction of environmental pollution.

Falesti district is situated in the North-Western part of the republic and consists of 76 localities, of which: 1 town, 1 locality within the territory of the town, 32 villages (communes) and 74 localities within villages (communes). The total area makes up 1,072.6 km², or 3.15% of the area of the Republic of Moldova (RM). At present, the district population makes up around 90 thousand inhabitants, including urban population -15 thousand (17%), and rural population -75 thousand (83%), with a density of 84 inhabitants/km². The district is crossed by 14 small rivers, the total length of which makes up 318.6 km. The length of the public road network makes up 361 km, of which 114 km account for national roads and 247 km for local roads.

The main economic activities in the district are as follows: agriculture, trade, services, transport, pharmaceuticals, etc. The sector economy is mainly focused on production of sugar, industrial washing machines, wine, champagne and spirits, oil depositing, etc. At the moment, 1,326 economic agents carry out their activities in the district, the majority of which work in the agricultural sector and trade, as well as 166 public institutions and 102 educational institutions. 39 sources of pollution have been identified in the district: JSC Sudzucker Moldova, Falesti Sugar Factory, with a high impact on the environment, while the rest with a medium impact.

The study has covered the existing situation with solid municipal waste management within 2007-2012.

In 2012, 52 waste deposits were arranged on the territory of the district with a total area of about 34 ha and authorized by the local public administration authorities in coordination with the Falesti Environmental Inspection (EI). Out of these, only the town dump situated on the territory of Calugar commune with an area of 8.28 ha complies with the sanitary and hygiene standards. Also, 21 Bekkari holes and 195 chaotic dumps with an area of 21 ha have been identified.

Solid municipal waste collection in Falesti district takes place mainly in a mixed manner, and the entire collected quantity is removed to deposits. Separate collection is applied in most of Falesti town, as well as in some rural mayoralities. Waste collection in the urban area and in a part of rural localities takes place at pre-collection platforms (PPs). Up till now, 129 waste PPs have been constructed and 419 containers installed, of which 52 PPs and 190 containers in Falesti district, 73 PPs and 229 containers on the territory of rural mayoralities and 4 PPs in Fabrica de Zahar village, which are not endowed with containers.

There is only one waste removal operator - I.M. DPGCL Falesti, which deals mainly with municipal waste removal. By now, the company has signed contracts for waste collection and disposal services with 99% of the population of Falesti town and agreements with 7 rural mayoralities (Calugar, Risipeni, Sarata Veche, Pinzareni, Falestii Noi, Ilenuta, Egorovca). The monthly fee for waste collection and disposal services amounts to 6 MDL/person for consumers in housing blocks, 11.27 MDL/person for consumers within individual households and 77.80 MDL/m³, VAT excluded, for legal entities or individuals carrying out various activities. The tariff for waste removal from the territory of rural mayoralities connected to the waste collection and disposal service amounts to 77.80 MDL/m³, VAT excluded, plus the fuel cost correlated to the number of km of the covered route and the cost of additional fuel consumption, in compliance with the established standards.

The level of coverage with waste collection and disposal services in the urban area - Falesti town - has grown considerably within 2007-2012 from 36% to 99%, that is, by almost 3 times. At the moment, connection to the waste collection and disposal service in rural localities makes up 22%, which is about twice as much as in 2010.

Carrying out the analysis of the situation existing in the district with regard to solid municipal waste generation by the district population for the analyzed period, we noticed that most of the quantity had been accumulated in the rural area, due to population concentration in rural localities. Thus, the quantity of waste generated by the district population in 2012 was estimated at 15.9 thousand tons, including 5 thousand tons in the urban area and 10.9 thousand tons in the rural area.

The quantity of waste collected from the population of Falesti town connected to the waste collection and disposal service has grown 3 times within the analyzed period, making up 1.9 thousand tons in 2007 and 5.1 thousand tons in 2012. Also, there has been an increase of almost 2 times in the quantity of waste removed from economic agents and public institutions, from 410 tons in 2007 to 654 tons in 2012. Starting from 2010, the waste removal operator has been practicing separate collection of glass, plastic and biodegradable waste, while starting from 2011 also of wood. In the urban area, the total quantity of waste collected within the reference period has grown significantly, from around 3.8 thousand tons in 2007 to 11.3 thousand tons in 2012, that is, by almost 3 times. In 2010, the waste removal operator started removing waste from the rural area, and in 2012 the transported quantity reached around 393 tons.

6 organic waste composting platforms have been constructed in the district (2 in Navirnet village, 1 in Falesti town, 1 in Bocani village, 1 in Ciolacu Vechi village (Ciolacul Nou commune) and 4 composting stations for farmers (in Hiliuti village, Navirnet village, Horesti village and Rediul de Sus village (Albinetul Vechi commune). These have been constructed within household waste management projects implemented in the district. Within 2007-2012, an average of 120.7 thousand tons/year of animal waste was accumulating in Falesti district. Increase in the quantity of organic waste within 2010-2012 was determined by the increasing number of swine and birds. On average, a household has *0.2 cattle*, *0.3 swine*, *1.2 sheep and goats*, *0.07 horses*, *6.3 birds*, while the annual amount of stable waste accumulated at present by a household makes up around 4 tons.

For Falesti town and rural mayoralities in the district, it is proposed to implement a waste collection system through PPs. The waste removal operator I.M. DPGCL Falesti shall be in charge of collecting, transporting and depositing solid municipal waste from the population, economic agents and public institutions, as well as disinsection, disinfection and deratization.

The outlook of solid municipal waste generation has been produced for 2013-2020 based on the quantity of waste generated in 2012, population evolution in the district, extent of coverage by waste collection and disposal services, as well as on the annual variation of the solid municipal waste generation indicator. Thus, for the outlook period, there is likely to be an increase by 56% in the quantity of solid municipal waste generated by the population of Falesti district, from 17.5 thousand tons/year in 2013 to 27.3 thousand tons/year in 2020, which is determined by the annual increase in the waste generation indicator per capita. The outlook of the solid municipal waste quantity collected in the district registers an essential increase of almost 3 times, from 9.5 thousand tons/year in 2013 to 24.8 thousand tons/year in 2020. The quantity of solid municipal waste generated and not collected will be decreasing significantly, from 8.0 thousand tons/year in 2013 to 2.5 thousand tons/year in 2020, or by 68.7%. It is expected that in 2015 the entire quantity of solid municipal waste generated by the population in the urban area will be collected.

According to the outlook, the quantity of collected municipal waste from trade, industry and institutions registers an increase of 42.8% within 2013-2020. According to the calculations, the quantity of waste collected from gardens and parks will grow by 30.2% within the outlook period, from markets by 33.3%, while from streets by 33.3% as well.

In order to establish integrated solid municipal waste management in Falesti district, it is necessary to build 680 PPs and install 2,815 containers, of which 721 for paper and cardboard, 726 for glass, 684 for plastic and 684 for other waste. In Falesti town, there is a need to build 16 platforms and procure 82 containers, while in Fabrica

de Zahar village - 6 platforms and 40 containers. In order for the waste removal operator to carry out waste removal activities throughout the entire district, there is a need to procure 7 dump-trucks with the capacity of 8m³ and 3 dump-trucks with the capacity of 22 m³, 1 excavator-loader, 1 bulldozer, 1 branch-cutting machine, office equipment and computers.

The cost-benefit analysis details investment costs, as well as general operation and maintenance costs of the proposed municipal waste management system, also preparing a preliminary estimation of the updated net value of the whole investment. The main premises taken in consideration are as follows: (i) the outlook period covers 8 years (2013-2020); (ii) tariffs for services are established based on the need to cover operational costs and to ensure profitability of the company; (iii) investment will be financed from non-refundable sources and funds (grants). The investment costs are determined for the option of constructing 680 waste PPs with 4 containers at each on the territory of mayoralities of Falesti district and endowing the waste removal operator with machinery, office equipment and computers. The total value of investment is estimated at 28.1 million MDL, or 1.6 million EUR.

Taking into account that the waste removal operator, I.M. DPGCL Falesti, does not have a strategy to raise tariffs for waste collection and disposal and that there is a draft law establishing a new calculation methodology for waste collection and disposal services, we have used the currently existing tariffs for the purposes of the outlook.

In compliance with current legislation provisions, local public authorities have exclusive competence and are in charge of developing and approving local standards and regulations of operators' functioning in order to regulate activities of public municipal services. Bearing these provisions in mind, it is proposed to regulate activities of the Falesti district waste removal service based on provisions of the *Regulations of waste collection in Falesti district*. The developed regulations will give detailed definitions of: (i) the scope and access to waste collection and disposal services; (ii) conditions and modalities to ensure municipal waste pre-collection, collection, transportation and depositing services, as well as disinfection, disinsection and deratization; (iii) collection modality and periodicity; (iv) municipal waste sorting and controlled depositing; (v) obligations of the sorting station operational staff; (vi) establishment and administration of waste deposits; (vii) rules for keeping the public area clean; (viii) rights and obligations of the waste removal operator and users; (ix) tariffs; (x) sanctions for violation of regulation provisions; (xi) performance indicators and evaluation of waste collection and disposal services.

In order to develop an integrated solid municipal waste management, as well as for a good functioning of the waste removal operator that will ensure collection and disposal of municipal waste from the district localities, it has been proposed to reorganize I.M. DPGCL Falesti by separating the waste collection and disposal services from the "Apa-Canal" subdivision and the "Termocom" subdivision. Also, along with expansion of the waste collection and disposal service throughout the district, it is recommended to increase the number of staff from 39 units to 66 units. Thus, under *Sanitary Cleaning* to add 40 staff units (10 drivers, 20 loaders, 8 sorting station operators, 1 excavator driver and 1 bulldozer driver), while under *Territory Arrangement* to add 26 units (12 sweepers, 3 loaders, 11 workers, of which 4 for green space arrangement).

It is proposed to organize the new waste management system in 5 stages, including: (i) development and approval of the regulatory framework for organization and functioning; (ii) internal management capacity building; (iii) PP construction and commissioning, procurement of the necessary machinery and equipment; (iv) launching and operating of the new waste collection and disposal system; (v) monitoring and evaluation of the service activities.