



DELIVERABLE 4.1

“WASTE MANAGEMENT ROADMAP FOR MOGILEV CITY, BELARUS “

Project:

“Waste management in transition economies”

WaTra

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To help ensure the implementation of national waste legislation and the waste hierarchy, including by addressing the still very predominant reliance on landfilling municipal waste (about 85 %), the following recommendations are made:

Main recommendations

At the national level to Introduce a landfill tax and progressively increase the landfill tax to divert waste from landfill. Use revenues to support separate collection and alternative infrastructure
Extend and improve the cost-effectiveness, monitoring and transparency of existing EPR schemes
Implement the bio-waste strategy including specific measures to divert biodegradable waste from landfill
Intensify inspection and enforcement activities in order to ensure compliance with legal provisions for municipal waste management
Establish regional and local waste management programs including specific policy measures how to achieve the targets set by the national waste legislation. Analysis of the current waste management situation on the basis of robust data, analysis of impacts of implementation of the policy measures, required infrastructures and projections of future waste generation and treatment
Improve and control separate collection infrastructure and schemes. Implement and diverse door-to-door separate collection
Initiate comprehensive awareness raising campaigns on separate collection and proper waste management
Improve the utilisation and allocation of available funding in order to support waste prevention, preparing for reuse and recycling





Main problems of solid waste management in Belarus

Waste management largely diverting from waste hierarchy - significant dependence on landfilling

The main management method for municipal waste is landfilling: The disposal rate is about 85 %.

High share of biodegradable waste disposed of in landfills and missing separate collection of bio-waste fraction

Capacity of waste treatment infrastructure for bio-waste (sorting plants, composting and MBT plants) is currently not sufficient. There is no separate collection of bio-waste. The awareness for bio-waste management is generally low.

Incomplete coverage of households with separate waste collection, especially in rural areas

The effectiveness of separate collection is limited and is currently implemented mainly in urban areas. According to data of 2008, separate waste collection system covered 45,8 % of urban and 14,4 % of rural population in Mogilev region.

Weak capacity to implement projects and other administrative drawbacks

There is no IWMS at the local level. The weak component of the MSWM system in all countries is the forecasting and planning in the waste sector. Approved national strategies, programs and plans include, of course, elements of the forecasting and planning, but they are not detailed.





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Waste management situation in Belarus: driver factors

Social factors	Technological factors	Economic factors
<p>(1) Low level of environmental awareness in general. But youth (partly) has active position and ready to protect environment and implement new techniques for resource and energy saving</p> <p>(2) Soviet experience of recycling and use of collateral price for glass</p> <p>(3) Strong interests to save money (4) People are ready to separate collection of MSW</p> <p>(5) Lack of the development of civil society, local communities</p> <p>(6) Lack of trust to government and local authority, at the same time a huge trust to President</p> <p>(7) Population is quite inert in satisfaction of its complaints</p> <p>(8) Local authorities and governmental official are care about their job security more than about efficiency of their activities.</p> <p>(9) Small amount but quite active environmental NGOs. At the same time, the issue of MSW management is not of sphere of NGOs interests</p> <p>(10) Local authorities and governmental official are afraid to work with NGOs</p>	<p>(11) Outdated but still existing facilities (from soviet times) for composting in Mogilev city</p> <p>(12) Step by step modernization of special cars, waste bins and sorting lines, but with pace lower that necessary</p> <p>(13) Existing landfills almost exhaust their capacity</p> <p>(14) Availability of technologies and best practices for waste treatment and disposal</p> <p>(15) Well-developed (in compare with Russia or Kazakhstan) recycling sector (recycling plants, as well as system of collecting SRM from industrial plants and population)</p> <p>(16) Established legal entity (Operator of recyclables) responsible for EPR implementation</p> <p>(17) Lack of treatment technologies and treatment facilities for a list of hazardous waste in Belarus. It will be change in the next future</p> <p>(18) Imperfection of procedures and technological infrastructure for collection, transportation and sorting of MSW</p>	<p>(19) Low tariffs and fees, which will be steadily increased by government</p> <p>(20) Cross-subsidization, but in next years it will be change. People will cover all cost for MSW removal and disposal</p> <p>(21) Collateral price for package will be implemented</p> <p>(22) Lack of private business in WM sector</p> <p>(23) Lack of budget financing (local and regional as well as national)</p> <p>(24) Lack of investment in particular of international funding for construction or development projects</p> <p>(25) Low prices for recyclables which could be increased in close future</p> <p>(26) Low incomes of population in general</p> <p>(27) National economic crises, huge international loans and deficit of national budget</p> <p>(28) Financial support from Russia (could be reduced by any reasons). Dependence on Russian oil and gas</p> <p>(29) Implementation of EPR in WM sector</p>





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Environmental factors	Political factors	Legislative factors
<p>(30) Existing landfills do not meet modern environmental standards</p> <p>(31) Trend to reduce number of mini-landfills by expansion of larger one</p> <p>(32) Illegal dumps, wasting of ecosystems are widespread issue</p> <p>(33) Contamination of ground water, soil and air by landfills</p> <p>(34) Landfills take a valuable agricultural or forest land for their expansion</p> <p>(35) Contamination by radioactive particles (as a result of Chernobyl accident) of some areas, materials and etc. Special procedures and regimes are established for contaminated areas</p>	<p>(36) Sound national policy in recycling and waste treatment. Declared aims related to construction of WTPs and WIPs including Mogilev city, strong policy in sorting at places of MSW generation</p> <p>(37) Approved regional and local programs on SRM collection and modernization of MSW management</p> <p>(38) Weakness of self-governmental bodies in Belarus, their dependence on national authority (and funding from national budget)</p> <p>(39) Un-transparency of tariff policy in municipal sector</p> <p>(40) Outdated tariff policy in municipal and WM sector which could be reworded in next years</p> <p>(41) High level of bureaucracy, long and complicated administrative procedures involved a lot of different state agencies with unclear distribution of power and responsibilities</p> <p>(42) Stable political situation in country</p> <p>(43) Stable and peaceful relations with neighbors. Close relation with Russia, in the same time efforts to strength relations with EU</p>	<p>(44) Developed legislation on WM at national level. At the same time, confusions, gaps, mismatches and overlapping in legislative documents</p> <p>(45) Licensing of activities of WM treatment, disposal and recycling</p> <p>(46) Lack of regional and local instruments (economical and institutional) for effective MSW management established and regulated by legislative documents</p> <p>(47) Strict legislation rules are compensated by weak enforcement</p> <p>(48) Strict state administrative control of some areas of recycling (first of all metals – ferrous, non-ferrous, precious)</p>

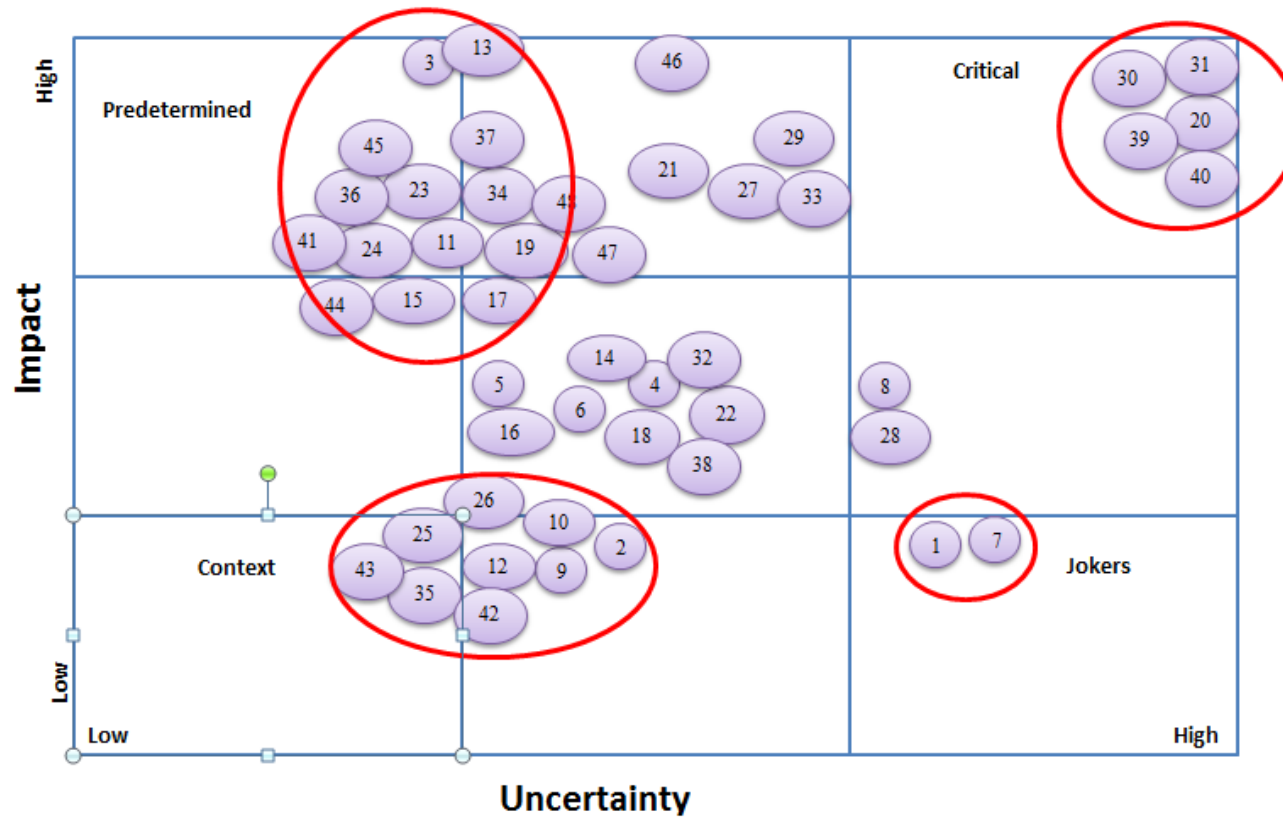




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Fig. 1. Impact of driver factors on municipal solid waste management





All drivers were divided into next groups: Critical factors – factors with maximum impact as well as maximum uncertainty; Predetermined factors – factors with high impact and low uncertainty; Context factors – factors with low uncertainty and low impact; Potential jokers – factors with high uncertainty and low impact;

The scale from 1 to 4 points was used. 4 points were equal to drivers with maximum of impact or maximum of uncertainty.

Potential jokers are factors linked to environmental awareness and community inertness on WM issues. From one hand, these factors have quite low impact on WM in general, but from other hand, it's impossible to predict future changes.

Context factors relate to economic, political and social conditions in Belarus (current and future).

Predetermined factors relate to policy on WM and environment protection, lack of investment and funding, lack of treatment technologies for hazardous waste and well-developed recycling sector, and etc.

Critical factors are related to environmental impact of landfills and tariff policy in countries, that why these drivers are identified as scenario axes.

In the result, four scenario lines were identified (fig.2): Balance rock, Step back, Shadow energy and Green driver. Balance rock is scenario “business as usual”. Step back is the worst scenario line, when all waste is landfilled. Other two scenario lines related to waste treatment – to recycling in the case of Green driver or to incineration in the case of Shadow energy.

Further improvement of solid waste management system links to the implementation scenarios Shadow energy and Green driver (depends on the established goals at the local level).

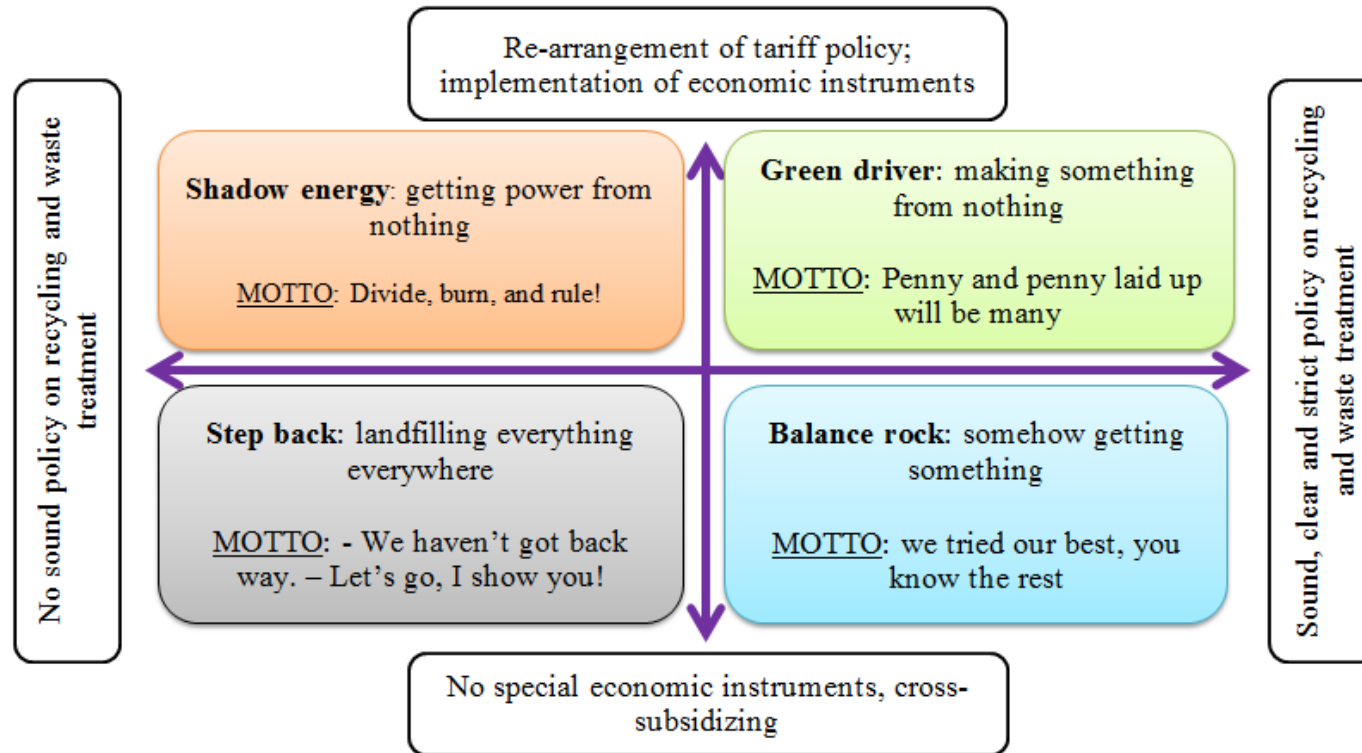




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Fig.2. Scenario matrix on MSW improving in Mogilev city and Mogilev district



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Action plan

SHADOW ENERGY	GREEN DRIVER
MEASURE 1. Establish a landfill tax	
<p>1.1 Establish and implement a landfill tax starting from at least 12 €/t. <i>Result: Landfilling made less attractive, switch to other competitive options</i></p>	
<p>1.2 Utilize revenues from the landfill tax to further develop infrastructure for source separated collection (including home composting) as well as awareness campaigns. <i>Result: Improved treatment of municipal waste; Increased awareness on waste management issues</i></p>	
MEASURE 2: Restrictions on landfilling certain types of waste	
<p>2.1 Implement / control restrictions/ bans in landfilling certain waste streams, such as biodegradable waste, paper, glass, wood, textiles, recyclables, etc. <i>Results: Potentially high benefits; increase resource efficiency; avoidance of GHG emissions; biodegradable waste landfilled reduced; increase in composting/ anaerobic digestion; increasing energy recovery</i></p>	
<p>2.2 Larger penalties for non-compliance with specific targets or restrictions/ban <i>Result: Improved treatment of municipal waste; Increased awareness on waste management issues</i></p>	
MEASURE 3: Improve waste management planning and establish the regional/local waste management plans, data quality, forecasting and projections	
<p>3.1 Elaboration of regional strategy and regional/local Plans <i>Result: Define mixture of technologies, capacities and funding needs in the waste sector</i></p>	
<p>3.2 Improve the quality of data/indicators regarding waste quantities generated, collected, recycled, recovered and disposed <i>Result: Transparency and improvement of reporting</i></p>	
<p>3.3 Forecast with as much accuracy as possible future municipal waste generation and treatment capacities <i>Result: Identification of short-comings and areas where action is required</i></p>	





SHADOW ENERGY	GREEN DRIVER
<p>MEASURE 4: Development of the capacity for “Waste-to-energy” facilities <i>Result: Improved treatment of municipal waste</i></p>	<p>MEASURE 4: Implement PAYT scheme <i>Results:</i> <i>Increase of separately collection -</i> <i>Reduction of landfill dependency -</i> <i>revenues available for local waste management</i></p>
<p>4.1 Construct facilities of “Waste-to-energy”</p>	<p>4.1 Implement PAYT as soon as appropriate collection and treatment infrastructure are in place, starting with pilot projects</p>
<p>4.2 Clearly define the term “pre-treatment” and calorific values and TOC value (following a thorough consultation; exact conditions, technical details and timeplan to be specified)</p>	<p>4.2 Support municipalities by introducing PAYT scheme by providing information on how to set up/introduce such systems by making available guidance, support experience exchange, conferences, buddy systems, awareness on benefits and costs</p>
<p>4.3 Inform households/support information provision by local authorities on “Waste-to-energy” strategy by leaflets and brochures and campaigns</p>	<p>4.3 Inform households/support information provision by local authorities on PAYT scheme by leaflets and brochures and campaigns, inform on benefits and possibility to save money if separation is properly applied</p>
	<p>MEASURE 5: Enforce Extended Producer Responsibility (EPR) schemes <i>Results: Enforce common rules for all market players; transparency; increase potential for longer life cycle, reuse and recycling; lower waste generation during production; improved performance of deposit refund systems</i></p>
	<p>5.1 Expand the principle of EPR or voluntary agreement schemes for non-</p>





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	packaging waste flows (i.e. expired pharmaceuticals, household hazardous waste)
	5.2 Set in place and improve the performance of deposit refund systems for packaging (glass, plastic, metal, etc.) in combination with EPR schemes by increasing incentives (e.g. increase deposit and refunds) and improving awareness raising to public
	5.3 Enforce regulation and control of existing Recycling Schemes; Improve transparency of the system

