Country fact sheet *Moldova*

Introduction

This Country Fact Sheet (CFS) provides an overview of the situation of waste statistics, as of 1 August 2017. The CFS has been completed by the Consultant for the project *Implementation of the Shared Environmental Information System principles and practices in the Eastern Partnership countries (SEIS East) - Waste Statistics.*

"This report has been prepared by Wim Van Breusegem and Jürgen Gonser. Its contents are the sole responsibility of ADE and Gopa and can in no way be taken to reflect the views of the European Commission."

The CFS has been completed mainly on the basis of:

- A desk based review of existing international reports on the waste statistics situation in the country. However, the information derived from these reports has been replaced with more recent and comprehensive information obtained from the countries directly, in particular during a country visit. A list of publications that were reviewed is included as Annex 1, at the end of this CFS.

- Information resulting from the validation by the Consultant of the UNSD questionnaire that was completed by the Country. The validation resulted in a Country Data Validation Report, which is attached to the Final Report of the Project.

- Information provided by the country, during the country visit and following the review of the draft CFS by the country. The draft CFS was submitted to the country for comments following the country visit, with the request to provide additional information or to confirm information that was supplied during the country visit. The country has sent comments and additional information, which allowed the Consultant to finalise the CFS. A list of officials that were met during the country visit, is included as Annex 2, at the end of this CFS.

Theme & topics	Explanations and examples
Part I: Overview of existing waste surveys	
Legal basis for waste management	▪ The National Waste Management Strategy of the Republic of Moldova 2013-2027 (hereinafter referred to as the National Strategy) states that waste management is still a problematic issue in the country, that should be better organised and for which legislation should be improved. Although environmental protection is governed by 35 legal acts and more than 50 Government Decisions, the regulatory framework for the management of waste is far from being satisfactory, according to the Strategy, which lists the following as the main waste legislation: o Law on environment protection, no.1515-XII of 16 June 1993; o Law on the ecological survey and estimation of impact on the environment, no.851-XIII of 29 May 1996 ; o Law on natural resources, no.1102-XIII of 6 February 1997; o Law on the charges for environment pollution, no. 1540-XIII of 25 February 1998; o Law on the regime of hazardous products and substances, no.1236-XIII of 3 July 1997; o Government Decision no. 1296 of 20 November 2008 on the procedure of charging environmental payments for import of goods in the process of use, causes environmental pollution and for plastic and / or tetra pack packaging of import goods. o Government Decision no. 637 of 27 May 2003, approving the Rule on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and as such transposing the Basel Convention. The Law of 09.10.1997, No. 1347, 'On the Waste of Production and Consumption' has been replaced by the Law of 29.07.2016 on Waste, which will enter into force as of 23 December 2017. o The law reportedly aligns the national legislation to EU provisions as stipulated in the Moldova-EU Association Agreement. o The law contains among other a provision on the adoption of the European List of Waste, but most likely an implementing regulation will be needed to effectively introduce the List of Waste. Until effective implementation of the European List of Waste, the National Bureau of Statistics (NBS) is using the existing national waste classifications. o The development of the new Waste Law started more than 10 years ago and its adoption has been announced several times during that period. The NBS has reviewed drafts at some stage and has provided comments, but is however not aware of the content of the latest version, which has been approved, and of its impact on waste statistics.
Legal basis for waste statistics	▪ Law of the Republic of Moldova No. 412, dated 09.12.2004, 'On Official Statistics'. ▪ A new Law on official statistics No 93 from 26.05.2017 was adopted by the Parliament. ▪ Orders approving reporting forms:

Theme & topics	Explanations and examples
	○ Orders of the NBS approving the statistical form No.2 - "Sanitation of localities" for the collection of municipal waste data. ○ Since 2009, cooperation between the National Bureau of Statistics (NBS) and the Ministry of Environment has been substantially strengthened and formalized through a number of joint orders. Through these joint regulations, the methods and tools (i.e. reporting forms) for the collection and processing of data on production waste and on toxic waste, are approved.
Definitions	Provided by the Law of 09.10.1997: ▪ *Waste:* substances, materials, objects, residues of raw materials resulting from economic activities, process of consumption and household activities, which have fully or partially lost their original consumer properties; some of them can be re-used after recycling." ▪ *Production waste:* waste resulting from technological processes ▪ *Consumption waste:* stands for household waste, i.e. waste from domestic and consumer activities. ▪ *Hazardous waste*: toxic, flammable, explosive, corrosive waste, waste of infectious or other nature, which, if released into the environment, might cause harm to plants, animals, a human being ▪ *Neutralisation* of waste is a physical, chemical or biological treatment of waste with the aim of eliminating or reducing waste properties, which present danger for the environment and public health. Provided by the new 2016 Law on Waste: ▪ *Waste* means any substance or object which the holder discards or intends or is required to discard ▪ *Municipal waste* means household waste and similar waste generated from commercial, industrial and administrative activities, as listed in item 20 of the Waste List, approved by the Government. ▪ *Hazardous waste* means waste with one or more of the hazardous properties listed in Annex III. (Annex III of the law is similar to the relevant Annex of the EU Waste Framework Directive. *The impact of the new definitions on the collection of data through the 3 surveys could be clarified.* Provided by the National Strategy: ▪ *Municipal and assimilable waste*: consist of all the waste materials that are produced in the urban and rural areas, in households, institutions, commercial units and services (household waste), waste that is collected from streets, public spaces, parks, green spaces, the waste derived from constructions and demolitions, from the clay obtained after municipal wastewater treatment;

Theme & topics	Explanations and examples
	▪ *Production waste*: consist of all the waste derived from industrial activities; it is represented by production hazardous waste and production non-hazardous waste, where one or several criteria for hazard waste are meet, provided for in the regulatory waste classification framework; ▪ *Waste derived from medical activities*: consist of the waste derived from hospitals, clinics, medical cabinets, which may be divided into two categories: hazardous medical waste, which may be contagious, sharp and keen, anatomic and pathological organs, the waste produced by the units of contagious diseases. etc., except those which have been mentioned above, that form the category of assimilable municipal waste.
Overview of waste surveys / data sources	MD has established three surveys for the collection of waste data: 1. Municipal waste survey (statistical form): ▪ The National Bureau of Statistics (NBS) carries out an annual statistical survey, using the statistical form "*No.2 - Sanitation of localities*". Till 2014 the data was collected only from urban areas, starting with 2014 the data are collected from urban areas and some rural localities. ▪ The form is annually approved by an order of NBS, after consultation with the Ministry of Environment and the Ministry of Regional Development and Construction. ▪ The data collected with this form are used for the completion of UNSD-questionnaire tables R3 and R5. ▪ The NBS would like to revise the form and test it in a pilot project. However, it was advised by the Ministry of Environment to wait for the new Waste Law to enter into force, such that the form can be brought in compliance with the requirements of the law. To comply with the requirements of the new Law, the Ministry of Agriculture, Regional Development and Environment (MARDE) may have specific data collection requests. 2. Survey on generation and utilisation of production and consumption waste (administrative form) ▪ The NBS collects annually data on production and consumption waste, using the administrative form *'Waste Generation and Utilization'*. ▪ The data collected with this form are used for the completion of UNSD-questionnaire table R1 3. Survey on generation, use and disposal of toxic waste (administrative form) ▪ The NBS collects annually data on toxic waste (on toxic waste only, and thus not on all types of hazardous waste), using the administrative form "F-1-*Toxic waste* "*Generation, utilisation and neutralisation of toxic waste*". ▪ The data are grouped according to the Toxic Waste Classifier approved by the Order of the Ministry of Health no.92 of 02.07.1992 and the methodical guidance also indicates the completion of the toxic waste report. The Ministry of Agricultural, Regional Development and Environment (MARDE) is currently elaborating the Waste List, in accordance with the European

Theme & topics	Explanations and examples
	Waste List. ▪ The data collected with this form are used for the completion of UNSD-questionnaire tables R1a and R2. The production and toxic waste data are collected using administrative forms, and are thus not considered as official statistics, but as administrative data. The surveys on production and on toxic waste were formerly statistical surveys, but were turned into administrative surveys. This has been done to allow for the involvement of the State Ecological Inspectorate (SEI), which are specialists and which are well placed to validate the reported data, and to allow the SEI to use the data for its monitoring and enforcement purposes. If the surveys would have remained statistical, the data reported by an individual enterprise could not be used for confidentiality reasons.
Institutions involved	<u>National Bureau of Statistics (NBS):</u> ▪ The NBS has a central office in Chisinau and 35 territorial statistical offices (TSO) that are located in the 32 districts (raions) of the country, in the municipalities of Chisinau and Balti, and in the Autonomous Administrative Territorial Unit of Gagauzia. The NBS controls and supervises the work of its territorial statistical offices (TSO). ▪ The NBS defines the methodology, develops the instructions and tools for all three data collection surveys, processes and validates the data and produces and publishes statistics and indicators. ▪ The NBS, Social Statistics Unit carries out the Municipal Waste Survey. ▪ The NBS, Agricultural and Environmental Statistics unit carries out the other two surveys, on production waste and on toxic waste. <u>Ministry of Agriculture, Regional Development and Environment (MARDE)</u> ▪ The MARDE has overall responsibility for the development and implementation of waste policy within the country, and is therefore the main user of the waste data. ▪ The territorial subdivisions of the MARDE are the State Ecological Inspectorates (SEIs), which are monitoring and enforcing the implementation of environmental legislation, including waste legislation. ▪ The MARDE is part of the National Statistical System and this for several areas, in particular air quality, however not for waste. The MoE is thus officially responsible for the production and dissemination of official statistics in a number of areas, but not in the waste are, where it has only a supportive role. *Relationship between both the NBS and the MARDE:* ▪ The relationship between both institutions is formalised through different regulations. To formalise cooperation for the endorsement of the SEIS principles between the EEA and the MARDE, a letter of intent was signed in September 2014. ▪ The production waste and toxic waste surveys:

Theme & topics	Explanations and examples
	○ The MARDE and the NBS issue each year a joint order, approving environmental reporting forms, including among other the forms for the production waste and toxic waste survey. The joint order also specifies how the data will be collected and processed and the tasks of both MARDE and the NBS. ○ The NBS refers to the surveys as joint data collection scheme from the NBS and the MARDE, but the NBS leads and has the final responsibility for processing and publishing the data, and for reporting to international organisations. ○ Role of the territorial subdivisions of the State Ecological Inspectorates (SEIs) of the MARDE: ▪ Establishment and update of the list of companies that must report, based on authorisations granted by the MARDE to economic agents for waste management activities. The conditions for issuing the authorization are set by Order of the Minister of Ecology and Natural Resources no. 20 of March 14, 2005 "On authorization of activities related to the use of natural resources and prevention of environmental pollution" Authorizations are issued free of charge for a period of 5 years. ▪ Collection of the forms from the respondents. ▪ Initial validation, approval and sealing of the forms. ○ Furthermore in the process, the MoE is not interfering anymore. The NBS, the former Ministry of Environment the former Ministry for Regional Development and Regia Autosalubritate, a municipal solid waste management company wholly owned by the City of Chisinau, have established a working group that discussed new statistical form for collection of municipal waste data and the production of municipal waste statistics and indicators.
Classifications used	1. **Classifier of Activities in Moldova Economy** (CAEM - Clasificatorul Activităţilor Economice a Moldovei), harmonized with NACE ver.1, approved via Moldova-Standard Decision no. 694-ST dated 09.02.2000, including the modification no. 1 approved via Decision no. 1444-ST dated 04.01. 2004; in force since 01.02.2004; edition 2005. Starting with the data for 2015, the survey results are classified according to the Classification of Economic Activities of Moldova, Rev.2 (CAEM Rev.2), harmonized with NACE ver.2, approved by the Decision of the College of the National Bureau of Statistics no. 20 from 29.12.2009. In force from 01.01.2014. 2. **Classifier of Ownership Forms in the Republic of Moldova** (CFP **-** Clasificatorul formelor de proprietate din Republica Moldova): approved via the Decision of the Standards, Metrology, and Technical Supervision Department No. 276-st dated 04.02.1997; 3. **Classifier of Organizational-Legal Forms** (CFOJ – Clasificatorul formelor organizatorico-juridice din Republica Moldova), approved via the Moldova-Standard Decision No. 1607-ST dated 09.11.2004, in force since 01.01.2005 4. **Classifier of Administrative-Territorial Units of the Republic of Moldova** (CUATM - Clasificatorul unităţilor administrativ-teritoriale al Republicii Moldova), approved via the Moldova-Standard Decision No. 1398-ST dated 03.09.2003; in force since

Theme & topics	Explanations and examples
	03.09.2003. 5. **Statistical Classification of Waste**: The data are grouped according to the Statistical Classification of Waste (SCWM) approved by the decision of the collegial council of the Statistics Department no.21 from 26.11.1996. The new Waste Law, which will enter into force on 23 December 2017 provides for the introduction of the European List of Waste, which is thus replacing the Statistical Waste Classifier, and which will be used in the waste surveys. 6. **Toxic waste classification**: The data are grouped according to the Toxic Waste Classifier approved by the Order of the Ministry of Health no.92 of 02.07.1992. This Toxic Waste Classifier will be replaced by the European List of Waste, once the new Waste Law has entered into force. Waste treatment: The various waste treatment operations are defined by the waste legislation. It could be clarified whether the new Waste Law is introducing the EU R & D codes, and if yes, whether these, will be used *for statistical purposes.*
Waste indicators	Part II of this CFS on Municipal Waste Statistics includes on overview of *'Data / information collected'*, i.e. of the variables for which data are collected. Aggregated data on the generation, use (neutralization) of wastes (including toxic) are elaborated and presented: ▪ For the whole country ▪ For the development regions (Chisinau, North, Central, South, ATU Gagauzia); ▪ For the rayons; ▪ By type of economic activity; ▪ By forms of ownership; ▪ For the different types of waste, ▪ By toxicity class (for toxic waste).

Theme & topics	Explanations and examples
Part II: Municipal Waste (MW) statistics	
Municipal waste	

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<tr><th>Theme & topics</th><th>Explanations and examples</th></tr>
<tr><td>management</td><td></td></tr>
<tr><td>Municipal waste management</td><td>

The local governments are responsible for the organization of MW collection and disposal.
The MW situation should be significantly improved, according to the National Waste Management Strategy for 2013-2027.
Financing: The system is underfinanced, as the user fee rates that are paid by the households are too low and are not covering the costs of the services that are provided, and would definitely not be sufficient to finance an improved MW management system.
There are different MW collection methods, including collection from door-to-door and/or from centrally located containers, to which the households can bring their waste.
Waste collection coverage:

Urban areas: Waste collection organisations (Municipal sanitation departments or companies; or private companies) conclude contracts with individual generators for the collection and disposal of their waste. However, while this system covers all district centres, overall only 60 – 90% of the MW generators in urban areas are covered.
Rural areas: waste management services exist in some or the rural areas, but are not frequently used by the waste generators, to avoid having to pay for the services. Waste services are not provided in most settlements. Individual generators will therefore transport personally their waste to dumpsites. Waste which is not covered by an official collection service will be transported to unauthorised dump sites and will not be reported on.

Since 2014, the NBS is asking transport companies to report on the number of households and persons that they service. According to the information of the NBS, the collection system covers approximately 30% of the population. A more detailed overview of waste collection service coverage (i.e. % of population covered by waste collection service) is given in the following table:

Waste Collection service coverage (% of population covered)
<table>
<tr><th>Area</th><th>2014</th><th>2015</th><th>2016</th></tr>
<tr><td>Total</td><td>27,8</td><td>28,3</td><td>29,8</td></tr>
<tr><td>Urban</td><td>61</td><td>60,7</td><td>61,7</td></tr>
<tr><td>Rural</td><td>3,7</td><td>4,3</td><td>6</td></tr>
</table>

It can thus be concluded that the officially reported waste generation actually represent waste generated by only 30% of the total population of the Republic of Moldova. The information on collection of waste therefore thus not equal the amount of waste generated.
The areas that are covered by collection service may differ from year to year, as in a given year a local authority may have sufficient budget for waste collection, while in the next year, the necessary funds may be lacking. If no collection service is provided, the citizens start bringing their waste to open dumps.

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Theme & topics	Explanations and examples
	▪ Nearly all household waste is sent to dumpsites, which are a major source of nuisance, soil and groundwater pollution, because they are not properly constructed and operated. Due to the underdeveloped waste management sector, smaller enterprises will use MSW disposal sites (while larger enterprises will dispose of waste on their own site). ▪ Source separated collection or post-collection sorting is not practiced. Recycling is very limited, which represents a major loss of valuable materials.
Purpose and use of the data	The ambitious National Strategy often refers to the lack of information for knowledge based policy making, and uses waste generation factors from other countries. It the implementation of the Strategy to be monitored, more information on the various types of waste that are covered by the Strategy will have to be made available. It is not clear to what extent the waste data and statistics are currently used for evidence-based policy making and implementation.
Scope	
Scope of data collection: Waste types	▪ The data cover solid and liquid waste transported (i.e. collected) by specialized vehicles from residential buildings and public companies of urban sub-districts (waste of industries, construction waste and snow are not covered by this indicator). (UNSD-Questionnaire 2016; footnote to table R3). The ▪ The reporting form distinguishes between solid and liquid MW so that the amounts can be reported separately. In the UNSD questionnaire, MD first reported the total MW including liquid MW but corrected the data following the clarification request. ▪ MW types on which the current statistical system does not provide information include: o Construction and demolition waste o Household hazardous waste , such as batteries, waste oil or electric and electronic equipment. ▪ As for statistics on expert, only export of domestic mixed waste is considered.
Scope of data collection : Origin of waste	The reporting form does not ask to break down municipal waste by sources of generation (households, tertiary sector, etc.).
Data / information collected	▪ The MW quantities that are reported are estimated volumes, as waste is not being weighed. None of the landfills/dumpsites is equipped with weighbridges. ▪ The NBS is not applying volume-to-weight conversion factors and is publishing the data volume (1000 m^3), and not by weight. ▪ Extrapolation: The NBS is not extrapolating the existing data to provide for a more comprehensive figure, however would like to. This would require sample surveys of households at different times of the year, to establish a set of waste generation factors for the areas which are not covered by collection.

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<tr><th>Theme & topics</th><th>Explanations and examples</th></tr>
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To define more precisely the scope of the data collection and on the type of information collected , the variables for which information is collected, as defined in the reporting form"No.2 - gc Sanitation of urban localities", are listed in the following table:

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<tr><th>▪ Moldova: MW variables</th></tr>
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Column 1 – the total volume of municipal waste transported during the year. (i.e. the waste covered by Columns 2,5 and 6)
Column 2 – total volume of solid municipal waste transported with various types of specialized vehicles from population, institutions/establishments, economic units, social-cultural premises/establishments and public space.
The reporting instructions specify that waste of manufacturing enterprises and construction waste is not included in this column.
Column 3 – total volume of solid municipal waste transported from individual houses and premises with flats;
Column 4 – total volume of solid municipal waste transported from various institutions/establishments, economic units, social-cultural premises/establishments and public space.
Column 5 – total volume of street waste, snow and other stuff (anti-slipping material and garbage under snow) carried by companies providing sanitation services to localities.
Column 6 – total volume of liquid waste transported with specialized vehicles from households, social-cultural premises/establishments, parks, squares, markets, and entertainment and leisure spaces, with no connection to centralized sewerage system.
Liquid waste – any waste in liquid form, including used waters, but, excluding sludge.
Column 7 – number of persons benefiting of services of solid waste collection based on a service contract with the undertaking providing this kind of services;
Column 8 – number of individual houses and flats benefiting of services of solid waste collection, based on the service contracts signed with the undertakings providing cleaning/sanitation services.

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Information is collected on the coverage of the MW collection system (i.e. Column 7 & 8).

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<tr><td>Time schedule of survey</td><td>

Distribution of the forms to the reporting units: by the end of the year
Submission of the completed forms by the reporting units to the TSOs: by 16th of March

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Theme & topics	Explanations and examples
	▪ Submission of the forms by the TSOs to the NBS: by 25th March ▪ Preparation of a summary information note (for publication on its website) and of a comprehensive report by the NBS: by 5th May.
Documentation on survey methodology	▪ The MW form contains 2 pages of guidance on completion of the form. ▪ The survey methodology is not documented in writing. However, the NBS is considering documenting the methodology in writing.
Data collection	
Data sources(s) / reporting unit	▪ The form "*No.2 - gc Sanitation of urban localities*" is completed by all companies (irrespective of their ownership), which provide street sanitation and cleaning services, and transport waste. (UNSD-Questionnaire 2016; footnote to table R3). o 'Transport' equals collection, as all companies collect and transport. There are no companies that could report waste they transport, that is being reported by another company as collected. There is thus no risk of double-counting. o The register of waste transport companies is revised and updated by the TSO on a continued basis, based on the information that they get from the local councils, whom they ask which transport companies provide services on their territory. Information may also come from the Ministry of Regional Development. In 2016, there were approximately 90 transport companies that reported (i.e. all transport companies are legally obliged to report and thus report). ▪ There are different forms of ownership of the transport companies, and when reporting, they must indicate their form of ownership. Waste can be transported by municipal services, municipal sanitation companies, public-private companies and private companies. Most of the waste is collected by municipal companies. In principle, NBS could provide an overview of the market-share of the companies by form of ownership. o A transport company can work in different localities. When reporting, a company must list all localities in which it collects (by listing the codes, according to the classification of localities) and provide information per locality (and this since 2014). ▪ According to the NBS, it is more efficient and effective to survey the collectors/transporters than to survey the local authorities. The latter do not always know which companies are collecting waste on their territory, despite the fact that they are legally responsible for MSW management.
Data collection methods	▪ Exhaustive survey, as all companies that transport waste and that are known to the NBS are given each year the reporting form and are legally obliged, to report. ▪ The amount of household and liquid waste collected and the amount of other cargoes transported is defined by the companies on the basis of waybills or documents that are confirmed by their clients (from whom they collect).
Frequency	Annual
Data collection	▪ The information is collected through the paper form"*No.2 - gc Sanitation of urban localities*".

Theme & topics	Explanations and examples
tools	▪ There is no electronic reporting (through electronic submission of completed forms or online reporting). However, as part of improving the waste statistical reporting system, the NBS would like to introduce electronic reporting.
Data collection process	▪ The NBS sends the statistical paper forms to its Territorial Statistical offices (TSO). ▪ Territorial Statistical offices (TSO) send to and collect from the waste transport companies the statistical form. ▪ The TSO conduct a first validation of the data, and subsequently submit all paper forms to the NBS. ▪ The NBS enters the data in a data management system (CIS2), which since 2016 is internet-based. ▪ When entering the data, the NBS is conducting a second validation. This may entail contacting the TSO, which may in turn have to contact the respondents, to get clarification.
Data processing	
Data entry	The NBS (i.e. the central office) enters the data in a data management system (CIS2), which since 2016 is internet-based.
Data validation	▪ A first check is done by the TSOs, and a second by the NBS upon entering the data in the data management system. ▪ The data validation procedure is not documented. ▪ The following types of manual and computerised validation checks are applied: o Formal checks, include for example ▪ checks the technical integrity of the data set, e.g. valid data type, field length, characters. ▪ checks for completeness (data reported: yes/no) o Logical checks, include for example: ▪ checks relations between different cell in the data set (e.g. cell 1 =,>, < cell 2; IF-THEN relations ; total = sum of breakdown) ▪ checks for correct classification o Arithmetical checks, may aim at logical relation or at data consistency and are based on numerical calculation. Such checks include for example comparison with previous years.
Data compilation	After data are validated at the central level, aggregated regional statistics are produced and published by the NBS.
Data quality	
General aspects	NBS is not following a defined quality policy, which encompasses all measures aiming at a high data quality during the whole production chain, i.e. starting with the planning of data collection and ending with dissemination of data and related meta-information.
Relevance	NBS is consulting the Ministry of Environment and the Ministry of Regional Development on the approach to and the scope of waste data collection. They thus get in any case the opportunity to convey their needs and requirements to the NBS. However,

Theme & topics	Explanations and examples
	given the poor MWS management situation, the capacity of the Ministries for evidence-based policy making should probably be strengthened.
Completeness	▪ For all the variables that are covered by the survey, the NBS is able to produce data. The NBS is not producing a complete data set on MSW management, but that is because the scope of the survey is limited to the areas that are covered by a waste collection service. ▪ The NBS is very interested to review the set of variables for which information is collected, but would like to get international support this review.
Accuracy	Sampling errors: not applicable, given that the MW survey is exhaustive
	Coverage errors: ▪ The survey is designed to cover 100% of the collected waste, given that in principle all collecting companies are surveyed. However, the list of collecting companies is updated every year, based on the information that the TSOs get from the local authorities, and it may thus be that a relatively small number of companies is not reporting in a given year, i.e. before they have been included in the list of companies that must report. However, the NBS and it its TSO thus make an effort to keep the list as complete as possible. ▪ As outlined above in this CFS, only 30% of the population of MD is covered by a collection system, and thus the NBS only reports on the waste from this 30%. The NBS does not produce an estimate to cover MW that is not collected by the reporting units. However, the NBS is interested in receiving guidance on how to produce such estimates and would also like to get TA to undertake the necessary surveys for the collection of the data that are needed to produce waste generation factors, that would allow producing such estimates. ▪ The NBS does not collect information about: o Household hazardous waste. Under the existing waste management system, this would also be impossible, given that there is no source separated collection of waste. Hazardous waste is thus mixed with the other household waste (and thus also ends up at the dumpsites). o Construction and demolition waste. o Waste treatment, as for the moment this would be irrelevant information, given that all waste goes to dumpsites (because lack of a recycling system and of incinerators).
	Measurement errors: ▪ The MSW quantities that are reported are estimated volumes, as waste is not being weighed. None of the landfills is equipped with weighbridges. ▪ Each respondent makes his own assumption, using his own criteria, which may have a significant impact on the quality of the data. ▪ All waste data are thus collected and published by volume (1000 m^3), and not by weight. There are no agreed or approved

Theme & topics	Explanations and examples
	volume-to-weight conversion factors and the NBS is thus not applying any such factors. ▪ There are no incentives for the stakeholders for under-reporting.
	Processing errors : When completing the reporting form, the reporting unit may make mistakes. To detect such mistakes, logical and arithmetical linkages in the report and the electronic program are created.
	Non-response errors: ▪ A high response rate is achieved, also because there is only a relatively limited number of companies that transport/collect waste and that thus must report. ▪ Reporting is obligatory, but there are no fines for non-response. Until 2010, the criminal code contained a provision on fines for companies that did not meet their legal reporting obligations, however this provision was annulled and is under revision. The NBS hopes that as of 2017 it will be given the competence again to fine companies for lack of reporting.
Timeliness and punctuality	▪ The timeliness of the results seems to be sufficient for the data users. In any case, the MoE is consulted on the process, and jointly with the NBS approves annually the orders on the surveys on production waste and toxic waste. If the timeliness would not be sufficient, the MoE is given ample opportunity to request the NBS to change the planning. ▪ The NBS seems to comply with its own schedule and with the deadlines of international reporting obligations.
Comparability and coherence	▪ Comparability over time: It seems that there have been no changes in definitions, in data coverage or in methodology that have a significant impact on the time series of the produced data. ▪ Regional comparability: The produced data are comparable across the whole country, and there are thus no regional particularities.
Accessibility and clarity; dissemination	▪ The data are made available to the users/to the public through regular or ad-hoc publications, which are all posted on the NBS website, and an on-line database: ▪ Statistical Yearbook of the Republic of Moldova - published annually and available on the web-site for the years 2002 to 2016 - contains one data table (with aggregated data) from each of the three surveys (pdf and Excel) ▪ Resursele naturale şi mediul în Republica Moldova - annual publication of data on natural resources and the environment; only in Romanian and Russian - available from 2010 to 2016 ▪ the "Statistical Databank", which is an On-line database ▪ Furthermore, the NBS produces a report on regional statistics and contributes to the State of the Environment Report (SoER), produced by the Ministry responsible for environment. The latest SoER was produced in 2011 for the period 2007 to 2010, although according to the Law on Environment from 1993 a SoER has to be produced annually. According to the national environmental strategy, a SoER should be produced every 4 years. The latest SoER had to be prepared in 2016, to feed into the

Theme & topics	Explanations and examples
	pan-European assessment; however has not been prepared. ▪ The methodologies have not been documented in writing, and can thus not be made available. ▪ The NBS is not documenting and publishing information on data quality (e.g. quality reports).
Cost and burden	The administrative burden on the reporting units is not perceived as being an issue, and thus no actions to minimise the burden have been considered.
Confidentiality	Statistical data are confidential; and therefore only aggregated data are published.
Data management and storage	
Data storage	The NBS enters the data in a central data management system (CIS2), which since 2016 is internet-based. Data from various years can be easily compared.
Data management	▪ The coding of the enterprise is checked manually; all other data are automatically checked by the programme. ▪ The data of the reporting units (company name, address, contact data, identification number(s), economic activity, etc.) are regularly updated by the Territorial offices of the NBS. These data stored and updated centrally within a database system.
Main areas for improvement	
	– Review and improvement of the existing list of variables, and of the definitions – Revision of the reporting form – Development of waste generation factors, allowing estimates of the amounts of waste generated in areas not covered by the collection system – Development of volume-to-weight conversion factors and of guidance as to how to apply them. – Documentation of the statistical processes used (i.e. of the data collection and treatment process, including the validation. – Loss of know-how and problems to build capacity because of high staff turnover at the TSOs.
Recommended actions	
	The following actions are proposed by the NBS: – A comprehensive audit of the system, with identification of all short-comings and all areas for improvement – Technical assistance to address the above mentioned areas for improvement – Guidance on the use of the European Waste List – Training of staff in both the central and the territorial offices *Development of an electronic reporting system is not considered as a priority by the NBS. First the variables and the reporting forms should be improved.*

Part III: Administrative surveys on: 1. Waste generation and use of waste 2. Generation, use and disposal of toxic waste	
Scope	
Scope of data collection: waste types	Waste generation and use of waste (in some documents translated as "*Waste Generation and Utilization")* ▪ The only information on the type of wastes covered by the survey are the types of waste shown in the publications (see NBS Online database, Table 'Generation and use of waste in enterprises and organisations by type of waste, 2015'). ▪ The list contains 8 main waste types: 1. Waste of quarrying enterprises 2. Waste of forestry industry 3. Waste of livestock production 4. Waste of plant growing 5. Waste of food processing and beverage industries (this is by far the most important waste stream in terms of volume) 6. Waste of communal service 7. Secondary raw material for ferrous metallurgy 8. Secondary raw material for non-ferrous metallurgy Generation, use and disposal of toxic waste (in some documents translated as "*Toxic Waste Generation, Utilization and Neutralization")* ▪ The survey collects data on toxic waste which is a sub-set of the hazardous waste, which explains the low hazardous waste values reported in the UNSD questionnaire. ▪ "The data about toxic waste are collected using the Toxic Waste Classifier and Methodological Recommendations for Defining Toxicity Class of Waste approved by the order of the Ministry of Health of the Republic of Moldova No. 92 of 02.07.1992." [11]
Scope of data collection: economic activities	Waste generation and use of waste ▪ This survey is the source for the data reported in UNSD table R1. The survey covers all economic activities. Survey on Generation, use and disposal of toxic waste ▪ This survey is the source for the data reported in UNSD tables R1a and R2. The survey covers all economic activities.
Data / information collected	Waste generation and use of waste ▪ . The reporting form "Waste generation and use of waste" includes the following information: - Name of production and consumption waste, - Code in accordance with Statistical Waste Classifier, - Existing at the beginning of the year,

	- Generation of waste, - Incoming waste (purchased), - Recycled, - Transmitted to other organizations, total and exported, - Liquidated or stored at landfill, - Existing at the end of the year. ▪ From the NBS Online-database additional information on the collected data can be obtained. Apparently, the survey data are presented in two tables with four dimensions : - Table "Generation and use of waste in enterprises and organisations by type of waste, 2015" shows the data by "waste type" and by "movement of waste". o The list of waste types has already been mentioned above under the heading "Scope of data collection". o The dimension "movement of waste" contains some variables that are not self-explanatory and should be clarified in the meeting. This concerns at least the variables "Inputs" and "Supplied" - Table "Generation of production and consumption waste, in territorial aspect, 2008-2015" shows the data by "Districts/Region/Rayon" and by "Year". Data on the volumes of waste that are being recycled, are not collected. <u>Generation, use and disposal of toxic waste</u> ▪ The reporting form "Generation, use and disposal of toxic waste" includes the following information: - Code of group and type of toxic waste, - Name of toxic waste, - Technological process that has generated toxic waste, - Chemical composition, %, - Aggregate status, - Class of toxicity, - Existing at the beginning of the year, - Generation, - Incoming from other enterprises, total and imported, - Recycled (used), - Neutralised (liquidated), - Transmitted to other organizations, total and exported, - Existing at end of the year. ▪ Additional information can be obtained from the data published in the NBS Online-database. The survey data are presented in

	two tables with three dimensions: - Table "Toxic waste by movement of waste, 2001-2014"shows the data by "movement of waste" and by "Year". o The variable "movement of waste" includes the variables "waste generated", "waste used", "waste neutralized", "transported to domestic waste area" and "existing waste (end-year)" - Table "Existence of toxic waste (end of the year), in territorial aspect, 2008-2015" shows the data by "Districts/Region/Rayon" and by "Year".
Time schedule of survey	▪ Sending of questionnaires to reporting units: by the end of the year. ▪ Submission of the primary reports by the economic agents to the territorial body of the State Ecological Inspectorate: by February 26th. ▪ Submission of the primary reports by the State Ecological Inspectorate to the territorial statistical bodies for data entry and processing: by 16 March. ▪ Editing of the data and presentation of final data to the users by the NSB: by July 18.
Documentation on survey methodology	The NSB website contains meta data, which is a form of documenting the process.
Purpose and use of the data	The purpose of collecting data on generation and treatment, by treatment method is to inform the public at large, to allow for evidence-based policy making and to meet national and international reporting obligations.
Data collection	
Data sources(s) / reporting unit	▪ The Form *'Waste Generation and Utilization'* is filled in by enterprises and organizations, irrespective of their legal organizational forms and forms of ownership, which generate, store and utilize waste. ▪ The list of companies has originally been compiled by the SEI and is reconfirmed each year by the SEI, on the basis of the authorisations that each economic operator must apply for, and is submitted by the SEI to the NBS. Authorisations for economic agents for waste management activities are issued by the MARDE. The conditions for issuing the authorization are set by Order of the Minister of Ecology and Natural Resources no. 20 of March 14, 2005 "On authorization of activities related to the use of natural resources and prevention of environmental pollution" Authorizations are issued free of charge for a period of 5 years. ▪ All economic operators on the list are surveyed; the waste survey is thus not a sample survey, but an exhaustive survey.
Data collection methods	Administrative reports
Frequency	Annual
Data collection tools	▪ Data are collected using the administrative forms *'Toxic Waste Generation, Utilization and Neutralization'* and *'Waste Generation and Utilization'* which are approved by the MARDE and NBS on an annual basis by a joint order issued since 2009 and approved annually.

	▪ In paper form.
Data collection process	▪ The MARDE provides the NBS with the list of economic actors, that should be surveyed and that should receive the three forms. ▪ NBS prints out the required number of forms. ▪ The TSOs send forms to the economic actors, together with forms on air pollution and expenditures for environmental protection, by the end of the year. All forms are sent together, even though they have different deadlines for submission to the TSOs. ▪ The economic actors complete the form, with information based on receipts and proofs of payment (such as receipts, certificates of materials acceptance, toxic waste release notes, inventory control records, documents for transportation of waste from enterprise, etc). If such documents would not be available, the forms must be filled in based on calculations; however this should be the exception. ▪ Once completed, the economic actors bring the form to the territorial office of the MARDE, i.e. the State Ecological Inspectorates (SEIs). ▪ The SEI will perform an initial validation of the data, sign and seal the forms. Subsequently, the SEI will bring a copy of all forms (from the raion) to the TSO. The SEI is retaining one copy of each form, for monitoring and enforcement purposes. ▪ As of 2017, the TSO can enter the data from all forms in an internet application. Upon entering the data, the data are checked (in particular arithmetical checks, which are built in the application). ▪ A final validation is done by the NBS. The responsible official can either discuss with the TSO or with the enterprises directly, if some of the reported data would need to be clarified. The economic actors must also complete forms on air pollution and on environmental expenditure. These two forms and the two waste forms have different due-dates for submission. However, the respondent can decide to present all forms at once to the SEI. The form on environmental expenditure must not be checked, signed and sealed by the SEI, which can simply hand over the form to the TSO.
Data processing	
Data entry	The data are entered manually by the TSOs in the electronic database of the NBS.
Data validation	▪ The received information is firstly validated by the SEI's specialists, subsequently by the TSO upon entering the data, and finally by the NBS, when preparing the report. ▪ However, there is no validation procedure that has been documented in writing.
Data compilation	The NBS prepares a report, in which the data are presented per regions/raions, by form of ownership, by economic activity etc. This report is the responsibility of the NBS, and therefore thus not have to be approved by the MARDE. It is being signed by the General Director of the NBS.
Data quality	

General aspects	▪ The NBS aims to produce high quality statistics. ▪ The NBS has not defined an overall quality policy, which encompasses all measures aiming at a high data quality during the whole production chain, i.e. starting with the planning of data collection and ending with dissemination of data and related meta-information. ▪ The quality of statistical data is assured by respecting the fundamental principles of official statistics approved by the UN Economic Commission for Europe in 1992, as well as those set forth in the Law on Official Statistics of the Republic of Moldova No.93 from 26.05.2017. ▪ The NBS is carrying out a number of measures for quality assurance at every stage of the statistical process: organization of surveys, data collection, processing, and elaboration of generalized information. Errors, inconsistencies, and suspicious data are revealed for verification and correction. The primary data are verified and analyzed from internal coherence point of view (within the questionnaire), temporal coherence (with data from previous periods), with data of other similar units and administrative data sources.
Relevance	The data should meet the requirements of at least the MARDE, which is being consulted on the scope of and the approach to data collection and statistics productions.
Completeness	The survey on toxic waste covers only a subset of the hazardous waste.
Accuracy	Coverage errors : ▪ The survey will not cover 100% of the collected and treated municipal waste, as some of the waste will be sent to non-licensed and/or illegal landfills, and will not be reported. ▪ Some types of waste are not covered, such as construction and demolition waste, and household hazardous waste. ▪ The list of reporting units is kept up-to-date by the MARDE. ▪ The NBS does not produce an estimate to cover waste that is not reported.
	Non-response errors: ▪ Non-responses include: a mere lack of response from a reporting unit in the sample; an explicit refusal from enterprises to report; poorly completed forms, which lack data or data that can be used. ▪ The non-response rate is generally insignificant and does not influence the outcome of the survey as a whole. In some cases of non-response, the NBS is imputing data, based on reports from the previous year.
	Processing errors : ▪ The NBS is not making processing errors, but economic agents that report, make errors, which are detected by the NBS. ▪ Common errors made by the economic agents include errors in the coding of the waste, in the determination of the class of toxicity (for toxic waste), in the use of units of measurement and in the determination of the type of waste. ▪ Validation: o The first stage of data validation is carried out by the specialists of the State Ecological Inspectorate which verifies the quality (i. truthfulness) of the figures presented in the report. o The second stage of validation is carried out by the specialists of the territorial statistical bodies, which check and

	analyse the quality of the reported data. Validation comprises in particular checking the internal, temporal and other types of coherence of the data.
Timeliness and punctuality	▪ NBS is complying with its own schedule. ▪ The timeliness of the results is sufficient for the data users.
Comparability and coherence	▪ Produced data are comparable across the time ▪ Produced data are comparable across the whole country.
Accessibility and clarity; dissemination	▪ See section on Municipal Waste. ▪ The NBS produces and publishes statistics, based on the data that are being reported. However, the statistics are published without a health warning for their users, such as a clarification on the types or amounts of waste that may not have been reported on. Guidance for the users of the statistics is important though, to help them to correctly use the statistics.
Cost and burden	Cost and burden for reporting units is not perceived as an issue.
Data management and storage	
Data management	
Data storage	Data are reported on paper, and the reports are stored. The data are also stored in electronic databases.

○ Part IV: Key potential activities

Theme & topics	Activities for improving data availability and quality
Methodologies	▪ No specific activities identified, but a thorough audit of the existing data collection and processing methodologies and targeted improvements, would be appropriate. ▪ Staff should be trained in the application of the improvement methodologies.
Tools	The NBS has the intention to elaborate a single form, for the collection of data on all types of waste, including hazardous waste.

Annex 1: List of publications

The following publications have been reviewed for the preparation of the country mission and the completion of the Country Factsheet:

1. EU, EEA (2014) European Neighborhood and Partnership Instrument – Shared Environmental Information System: How existing municipal solid waste data in ENPI East countries can be used for the development of waste indicators, Final Report. European Environment Agency, Denmark
2. UN, UNECE (2015) Advancing the production and sharing of an extended set of 14 environmental indicators in the countries of the Eastern European Neighbourhood. European Environment Agency, Denmark
3. EU, EEA (2015) ENPI-SEIS East Region Synthesis Report - Building a Shared Environmental Information System with the Eastern Neighbourhood - Outcome of cooperation, 2010–2014. Luxembourg: Publications Office of the European Union, 2015
4. UN, UNECE (2012) Conference of European Statisticians: Review of Waste Classification Procedures and Identification of Alternative Approaches
5. UN, UNECE (2012) Desk Study: Assessment of the capacity of countries of EECCA to produce statistics on sustainable development and environmental sustainability – Topic 1 – waste statistics (under the UN Development Account project.)
6. UN, UNECE (2015) Progress in the production and sharing of core environmental indicators in countries of South-Eastern and Eastern Europe, Caucasus and Central Asia. Geneva: United Nations Economic Commission for Europe
7. EU, EEA (2013) Republic of Moldova Country Report – Towards a Shared Environmental Information System in the European Neighbourhood; ENPI-SEIS implementation of priority data flows, May 2014, Chisinau, Moldova
8. EU, EEA (2012) Republic of Moldova Country Report - European Neighbourhood and Partnership Instrument, Shared Environmental Information System. January 2012, Chisinau, Republic of Moldova
9. EUROSTAT, EFTA, UNECE (2011) Adapted Global Assessment of the National Statistical System of Moldova. Final version 26 April 2013
10. Orlova, E., Lopotenko, V. (2016): On Organisation of Waste Statistics in the Republic of Moldova. Presentation held at the 1. Regional SEIS East workshop, 6./7. June 2016.
11. UNSD-Q2016: UNSD/UNEP Questionnaire 2016 on Environment Statistics, Section Waste.
12. UNECE Environmental Performance Reviews, Republic of Moldova, Third Review, UN, New York and Geneva, 2014.
13. The National Waste Management Strategy of the Republic of Moldova 2013-2027.

Annex 2: List of officials met during the country mission (20-23 May 2017)

National Bureau of Statistics:

- Elena Orlova, Head of Agriculture and Environment Statistics Division
- Ludmila Lungu, Head of Environment Statistics Service
- Svetlana Andrienco, adviser of Environment Statistics Service
- Liubovi Stoianov, Head of Social Services and Living Conditions Statistics Division
- Natalia Coroi, Education, Science and Culture Statistics Section