

Construction and Demolition Waste management in Bulgaria



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Screening factsheet

1. Summary

A new legislation regarding the management of waste was introduced in Bulgaria in 2012, transposing the Waste Framework Directive (2008/98/EC) into national law. The same year a specific ordinance concerning construction and demolition waste management and the use of recycled building materials was issued, which was the first ever legislation about this category of waste. Before the introduction of the new legislation, construction companies in Bulgaria had not established any mechanisms for monitoring their quantities of waste for reporting to national authorities and therefore Bulgarian data on Construction and Demolition Waste (CDW) was not available. As no specific requirements existed beforehand, the national legislation was established according to EU recommendations. Although legal incentives exist, waste management is still taking its first steps among players and reporting seems incomplete or inconsistent in the last 5 years of reporting, especially regarding the treatment of construction and demolition waste.

Construction and Demolition Waste (CDW) management national performance

Waste category	Quantity generated in 2013 (ktons)
Soil	1 344.6
Non-hazardous CDW	198.5
Total non hazardous waste	1 543.1
Hazardous soils	0.4
Hazardous CDW	0.4
Total Hazardous waste	0.8
Total CDW including soils	1 543.9

In 2013, 1 543.9 ktons of Construction and Demolition Waste (CDW) were officially reported as generated in Bulgaria. The data published by the National Statistics Institute has been very variable since 2008: total amounts of CDW generated in 2010 and 2011 are five to ten times less than the other years. There is a 15% decrease in the total non-hazardous waste generated since 2008. This decrease is consistent with the slowdown of the construction sector in Bulgaria since 2008.

The amount of non-hazardous CDW excluding soils is 198.5 ktons in 2013. The amount of soil in comparison seems particularly high. This is partially due to the fact that there is an undergoing project of construction of a subway metro system in Sofia, the capital of Bulgaria. The figures depict the high impact of public construction projects on the data, which is consistent with the current state of the sector, almost exclusively led by public investment in infrastructure projects.

Inconsistencies and incomplete data series are identified in national statistics. The process of reporting is the following: the Executive Environmental Agency receives raw data from companies, agencies or legal persons whose activity generates, recovers, disposes, collects or treats the waste. The NSI (National Statistics Institute) is extrapolating the received data at national level, weighed by the number of employees or the revenues of the entities reporting the data. For reporting to Eurostat, the NSI processes the data and adapts it following the WFD classification recommendations. Data from the national statistics cannot be directly compared to data from the Eurostat database since the scope, treatment definitions and waste codes are different. Also the amount treated, as published by national statistics, includes soils and it exceeds the amount generated if soils are subtracted directly. Moreover, when errors are identified, corrections are only applied to Eurostat data.

CDW management practices

CDW destination (2013)	Landfilling	Recycling	Backfilling	Energy recovery	Total
Non hazardous waste – amounts in ktons	103,1	136,7	0%	0%	
Non hazardous waste – %	51,85%	68,78%	0%	0%	>100%, inconsistent
Hazardous waste – amounts in ktons	>0,1	0,4	0%	0%	
Hazardous waste – %	>0,1%	94%	0%	0%	94%

The data received from the National Statistics Institute does not allow a proper calculation of recovery rate.

Main obstacles to sustainable CDW management

- Historic practices including illegal dumping
 - Years of unsustainable practices for demolition (except for metals with high recovery profits) is a factor of generation of mixed waste, which is difficult or impossible to recycle. Illegal dumping of CDW (including hazardous waste) is also common either in unauthorized landfills (illegal or landfills not complying with requirements) for CDW or in the wild;
 - Obligations and penalties imposed to construction companies for improper treatment of CDW appear to be not a sufficient deterrent in respecting the law. Also a lack of means to stop illegal practices is evident;
 - Reporting is not reliable yet: traceability of generated wastes by construction companies as well as waste management companies is still lacking. Legislation exists with specific requirements of keeping a transportation diary for reporting CDW, however, no information is available yet on the level of application of the measure.

- Inconsistency in regulations and lack of implementation tools
 - Contradiction between national law and local implementation: municipal authorisation for special sites or recultivation areas is given locally, even if not encouraged nationally with a tax ten times lower than for recycling; This tax however is planned to increase gradually:
 - 2013 – 15 lv./t;
 - 2014 – 22 lv./t;
 - 2015 – 28 lv./t;
 - 2016 – 36 lv./t;
 - 2017 – 47 lv./t;
 - 2018 – 61 lv./t;
 - 2019 – 78 lv./t;
 - 2020 – 95 lv./t.
 - Considering the recent implementation of the CDW regulation, establishing guidelines on implementation of the legislation is still an ongoing project (to be published soon) and there are no guidelines planned to be prepared by associations of the construction sector. This represents an important barrier to proper demolition, recycling, use of recycled materials and reporting;

- Lack of coordination of private stakeholders towards the implementation of sustainable CDW management
 - Still a significant part of involved stakeholders seems not to be aware of their obligations and of the role they have to play towards sustainable CDW management. Most of them are also unaware or still not adequately convinced about the benefits of recycling;
 - Lack of experience and technical know-how makes it difficult to prove the economic benefit of recycling;
 - More generally, a lack of transparency and cooperation between private sector players does not favour a climate of initiatives and development of good practices in CDW management.

- Elaboration of Plans for CDW management for new construction is hindered by a lack of guidelines, benchmarks or technical documentation for the quantities of construction waste;

- Estimation of quantities of CDW in the planning phase of a construction or demolition project is difficult without guidelines, benchmarks or technical documentation. Courses detailing the obligations of relevant stakeholders organised by the Chamber of engineers in the investment design and other branch organisations however exist;

- Lack of benefits and levers to motivate recovery:

- Disposing waste in the special sites offered by a few municipalities which do not operate as landfills is up to ten times cheaper than engaging to the recovery process.
 - For the recyclers, the first steps of industrialisation of recycling processes and low demand of recycled materials do not allow them to scale their savings, while on the contrary, it makes their activity costly.
 - For the construction companies, the range of recycled products available on the market is limited.
- Lack of recycling capacities
 - CDW recycling is a very new activity in Bulgaria, little competition makes it difficult to sustain good quality of recycled products.
 - Recycling facilities are unevenly distributed among the country and they are developing at a slow pace which makes the European recovery rate objective to seem uncertain for Bulgaria at the moment. Moreover the low volume of CDW in several regions does not allow the development of profitable recycling facilities.

Main drivers to sustainable CDW management

- Tailored law for the purpose of reaching the EU recovery rate:
 - Recommendations from the WFD are applied in the Bulgarian law and there is a specific ordinance applying exclusively to CDW and its recycling.
 - Two kinds of reporting are required by the law from all players in the chain of construction and demolition, which could allow more precise reporting and understanding of the flows in the future.
- Adaptation of stakeholders on different levels towards reaching the goal:
 - Most construction projects are public for which requirements in terms of use of recycled products is higher than in the private sector projects. This demand might help the development of the initiatives at this early stage.
 - Recent emerging of training and awareness among the players from institutions, some branch organisations and associations.
- Development of the national recycling industry
 - Ongoing recycling infrastructure development projects (at least 7 recycling facilities in the last two years)

2. Definitions concerning construction and demolition waste (CDW) and management

In this section the definitions of waste used in Bulgaria are presented.

2.1. Definition of waste

The established definition of waste follows the definition of the WFD. *“Waste means any substance or object which the holder discards or intends to dispose of or is required to discard.”*¹

2.2. Definition of construction and demolition waste (CDW)

"Construction waste" is defined as waste from construction and demolition corresponding to the waste codes listed in Chapter 17 of Commission Decision 2000/532/EC of 3 May 2000 for replacing Decision 94/3/EC establishing a list of waste in accordance with article 1, letter "a)" of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste in accordance with article 1, paragraph 4 of Council Directive 91/689/EEC on hazardous waste and its subsequent amendments."

There is no clear distinction by definition between Construction and Demolition waste.

Uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated are excluded by the scope of the Waste Management Act. They are not included in CDW recovery targets².

2.3. End of Waste (EoW) status

In chapter four of the Ordinance on construction and demolition waste management and use of recycled building materials, specific criteria are established defining when construction and demolition waste becomes a recycled building material.

2.4. Definitions of waste treatment operations

The definitions for re-use, recycling and recovery in Bulgaria follow the WFD. There are two definitions of recovery in Bulgarian Waste Management Act - a general for all kind of waste and a specific for CDW. According to Waste Management Act:

- "Recovery means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy ."
- "Recovery of materials from construction waste" means all operations for recovery of construction and demolition waste with the exception of incineration with energy recovery and reprocessing into materials which are to be used as fuel. The recovery shall also include operations for preparing for re-use, recycling or other material recovery.
- "Re-use means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived."
- "Preparing for re-use " means operations for recovery such as checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.
- "Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes reprocessing of organic material but does not include energy recovery and reprocessing into materials that are to be used as fuels or for backfilling operations."

¹ Additional provisions, Waste Management Act

² Article 32, Waste Management Act

- “Backfilling means a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping and where the waste is a substitute for non-waste materials”³.
- “Collection means the gathering of waste, including the preliminary sorting and preliminary storage of waste for the purpose of transport to a waste treatment facility.”
- “Storage means an operation related to the storage of waste from its collection until its treatment for a period not longer than:
 - a) three years, applicable to waste destined for recovery;
 - b) one year, applicable to waste destined for disposal.”
- “Transport means the movement of waste, including the accompanying operations of loading, reloading and offloading, where carried out by the operator as a self contained activity.”
- “Disposal means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy.”
- “Waste Management” means the collection, transportation, recovery and disposal of waste, including the supervision of such operations, after-care of landfills, and including the actions taken as a dealer or broker.

3. Legal Framework – Waste Management Plans and Strategies

In this section the legal framework governing CDW management in Bulgaria is presented.

3.1. Legislation concerning CDW in Bulgaria

Initial legal framework and definitions of CDW were given in the act “Law limiting the harmful effects of waste on the environment” (1997). The Waste Management Act of 2003 brought precisions to waste management laws and it was reformulated and completed by the Waste Framework Directive (WFD) 2008/98/EC, in 2012. “Construction waste” was defined as follows: “*Wastes resulting from construction work on construction sites, as well as demolition or reconstruction of buildings and facilities*”.

The updated Waste Management Act was enforced on July 13th 2012. It addresses all kind of waste streams. Some specifications about CDW are given in the following articles: article 2, article 8, article 10, article 11, article 19, article 22, article 32, article 40, article 43, article 44,; article 64.1; article 64.4, article 112, article 133, article 136,., article 146, article 151.3.7 article 151.3.8, article 153, Supplementary provisions.

An Ordinance on construction and demolition waste management and use of recycled construction materials was put into place the same year, on November 13th 2012. The Ordinance defines more specific regulations regarding the objectives of collection and re-use of CDW and the obligations of relevant parties.

Some additional Ordinances detail some areas of waste management:

- Ordinance n°1 from June 4th 2014 on the procedures and forms for providing information about the waste treatment activity and the procedures for keeping public registers;
- Ordinance n°2 from July 27th 2014 on waste classification;
- Ordinance n°4 on conditions and requirements for the construction and operation of incineration and co-incineration plants;
- Ordinance n°6 from 27 August 2013 on the conditions and requirements for construction and operation of landfills and other facilities and installations for recovery and disposal of waste

“Extended producer responsibility” is defined in Waste Management Act as follows: “an environmental principle applied as a combination of measures aimed at reducing the overall environmental impact of a given product by introduction of obligations and responsibilities of the product producer throughout the product's whole life cycle, more specifically for limiting the content of hazardous substances, take-back, re-use, recycling, recovery and disposal of waste formed after use of the product.”

³ Additional provisions, Waste Management Act

3.2. Waste management plans (WMP) and Strategies

The National Waste Management Plan for the time period 2014 – 2020 is in place in Bulgaria, dealing with general waste management action plans. It includes a presentation of the status of waste management in Bulgaria, its opportunities, problems and objectives. Then it presents several programmes for achieving established targets and optimising waste management in Bulgaria through action plans. One of these programmes addresses CDW specifically: “Programme to achieve the targets for recycling and recovery of construction and demolition waste”. The action plans have different outcomes such as update of legal texts, use of recycled materials in specific type of constructions and creation of standards and requirements for certifications in the building sector.

Additionally, there is a specific National Strategic Plan for CDW Management for 2011-2020. More detailed than the the National Waste Management plan, it presents:

- recommendations and accordingly the legal requirements in Bulgaria
- the current situation and waste management practices and processes
- a forecast of activity and waste to be produced
- a presentation of different plans to reach the objectives
- a choice of plan with concrete actions and indicators to measure the results

Some of the actions are already being applied or are in progress, such as the reporting requirements from the planning phase of a construction project to its completion (1.5.1.)

Following those national plans, most municipalities have created their own municipal waste management programs, starting from the 2015, with specific sections focusing on CDW management.

3.3. Legal framework for sustainable management of CDW

This section aims at identifying specific legislation that would create good conditions for a sustainable management of CDW as a preliminary overview for task 3.

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>National/regional obligation for selective demolition?</i>	Yes Scope: national obligation All demolition waste has to be sorted by type and should be treated accordingly.	November 2012	Ordinance on CDW management and use of recycled building materials http://www3.moew.government.bg/files/file/Waste/cdw/NAREDBA_CDW.pdf
<i>National/regional sorting obligation (on-site or in sorting facility)?</i>	Yes Scope: national obligation Construction and demolition waste.	November 2012	Ordinance on CDW management and use of recycled building materials http://www3.moew.government.bg/files/file/Waste/cdw/NAREDBA_CDW.pdf
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i>	Yes Scope: national obligation Obligation for the separate collection of all categorised construction and demolition waste.	November 2012	Ordinance on CDW management and use of recycled materials http://www3.moew.government.bg/files/file/Waste/cdw/NAREDBA_CDW.pdf
<i>Obligation for separate collection and management of hazardous waste from C&D operations? Please specify</i>	Yes Scope: national obligation Obligation for the separate collection of hazardous waste from construction and demolition sites	November 2012	Ordinance on CDW management and use of recycled building materials http://www3.moew.government.bg/files/file/Waste/cdw/NAREDBA_CDW.pdf
<i>Related Green public procurement requirements</i>	Yes Scope: The contracting entity in public procurement for design and construction works, shall include in the criteria for selection of contractor and in the works contracts a mandatory requirement to use recycled building materials. Exemption: demolition activities	July 2012	Waste Management Act The goals per year and per type of project are specified in Ordinance for CDW management (in Annex 10)

3.4. Targets

Bulgarian legislation states that re-use, recycling and recovery of construction and demolition waste should reach 70% of the total weight of the generated waste.

“The systems for treatment of construction and demolition waste should ensure that no later than January 1, 2020 its re-use, recycling and other recovery of materials from non-hazardous construction and demolition waste, including backfilling operations by replacing other materials reaches in quantity not less than 70 percent of the total weight of waste, excluding unpolluted soil, excavated land and rock in their natural state.” (Waste Management Act).

In the Waste Management Act there are two additional intermediate targets for 2016 and 2018.

The targets for re-use, recycling and other recovery of materials, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste, with the exception

excavated soil, land and rock in their natural state which do not contain hazardous substances, shall apply, as follows:

1. no later than 1 January 2016 - as a minimum 35 per cent of the total weight of waste;
2. no later than 1 January 2018 - as a minimum 55 per cent of the total weight of waste;
3. no later than 1 January 2020 - as a minimum 70 per cent of the total weight of waste.

The calculation method used is:

$$\text{Recycling ratio waste construction and demolition in \%} = \frac{\text{Amount of recycled CDW}}{\text{Amount CDW generated as defined in Regulation (EC) № 2002/2150}}$$

Recycled waste excludes backfilling purpose materials and energy recovery.

Targets for recovery of materials from non-hazardous construction and demolition waste from 2014 to 2020 are given following the classification of the WFD. The last two lines are referring to road works and rail works⁴:

Код на отпадъка	2014 г.	2015 г.	2016 г.	2017 г.	2018 г.	2019 г.	2020 г.
17 01 01 бетон	85%	85%	85%	85%	85%	85%	85%
17 01 02 тухли	30%	37%	43%	50%	57%	63%	70%
17 01 03 керемиди, плочки, фаянсови и керамични изделия	30%	37%	43%	50%	57%	63%	70%
17 02 01 дървесен материал	60%	63%	67%	70%	73%	77%	80%
17 02 02 стъкло	27%	36%	44%	53%	62%	71%	80%
17 02 03 пластмаса	47%	52%	58%	63%	69%	74%	80%
17 04 05 желязо и стомана	90%	90%	90%	90%	90%	90%	90%
17 04 01 мед, бронз, месинг	90%	90%	90%	90%	90%	90%	90%
17 04 02 алуминий	90%	90%	90%	90%	90%	90%	90%
10 04 03 олово	90%	90%	90%	90%	90%	90%	90%
17 04 04 цинк	90%	90%	90%	90%	90%	90%	90%
17 04 06 калай	90%	90%	90%	90%	90%	90%	90%
17 04 11 кабели, различни от упоменатите в 17 04 10	90%	90%	90%	90%	90%	90%	90%
17 03 02 асфалтови смеси, съдържащи други вещества, различни от упоменатите в 17 03 01	53%	58%	62%	67%	71%	76%	80%
Пътен сектор [г.]	60%	63%	67%	70%	73%	77%	80%
ЖП сектор [г.]	60%	63%	67%	70%	73%	77%	80%

⁴ Application n°8 of Ordinance on construction and demolition waste management and use of recycled construction materials

Also, targets for use of recycled products are as follows^{5 6} :

Вид строителна дейност	2014 г.	2015 г.	2016 г.	2017 г.	2018 г.	2019 г.	2020 г.
Строителство на сгради, финансирани с публични средства	1%	1%	1%	1,5%	1,5%	1,5%	2%
Строителство на пътища с публични средства	5,0%	5,0%	8,0%	8,0%	8,0%	10,0%	10,0%
Рехабилитация, основен ремонт и реконструкция на пътища, финансирани с публични средства	2,0%	2,0%	2,0%	2,0%	3,0%	3,0%	3,0%
Строителство, реконструкция и основен ремонт на други строежи от техническата инфраструктура, финансирани с публични средства	3,0%	3,0%	5,0%	5,0%	6,0%	7,0%	8,0%
Оползотворяване на СО в обратни насипи	8,0%	9,0%	10,0%	11,0%	11,0%	11,0%	12,0%

As of today, there are two information streams of reported quantities:

- Waste generation quantities

According to the Waste Management Act, before starting the construction works and/or demolition of buildings, the contracting authority shall prepare a Plan for management of construction and demolition waste. The contracting authority is responsible for the waste management of the construction/demolition projects, either carried out by own means or assigned to a waste management contractor by means of a written contract.

The Plan for management of construction and demolition waste includes forecasts for the amounts of construction and demolition waste in the project, as well as the level of material recovery. The Plan for management of construction and demolition waste also includes a report on the implementation and final result of the planned operations.

Alongside, a transport diary is kept on construction waste by the legal responsible for the transportation of waste. It is prepared in accordance with Annex № 6 of the Ordinance on construction and demolition waste management and use of recycled building materials. It traces the quantities of waste from the construction/demolition site to the recycling facility or landfill.

Art. 11 of the Waste Management Act states that these two documents should be submitted to the authority approving the investment project and the Plan for management of construction and demolition waste should be submitted to the Regional Inspectorate of Environment and Water in whose territory the construction works or demolition are carried out.

- Waste treatment quantities

By Ordinance n°1 from June 4th 2014 on the procedures and forms for providing information about the waste treatment activities and the procedure for keeping public registers, legal persons performing transport, recovery and disposal of construction and demolition waste shall keep records of all managed waste quantities, by type. The information shall be submitted to the Executive Environment Agency annually.

⁵ Annex 10 of the Ordinance for CDW management.

⁶ Translation of first column :

Construction of building financed by public funds

Construction of roads with public funds

Rehabilitation, renovation or reconstruction of roads financed by public funds

Construction, reconstruction and renovation of other buildings with technical infrastructure financed by public funds

Recycling of construction waste for backfilling

4. Non legislative instruments

Publishing technical standards for the reuse of CDW and recycled materials for backfilling, construction, designing and rehabilitation of landfills and guidelines for construction materials procurement are objectives for 2015⁷ and a few have been done such as technical standards on crushed stone, aggregates (EN 12620, EN 13242, etc.), all been adopted as BSS (Bulgarian State Standards).

There is a research project within the Research and Design Centre at University of Architecture, Civil Engineering and Geodesy in Sofia, which accumulate data and determine the possibilities of use of recycled materials in Bulgarian construction.

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>BREAAM Sustainability standards</i>	Yes	2010	http://www.breeam.org/
<i>LEED</i>	Yes		http://www.usgbc.org/certification
<i>HQE</i>	Yes		http://assohqe.org/hqe/
<i>DGNB⁸</i>	Yes		http://www.dgnb.de/en/
<i>Extended producer responsibility scheme in operation?</i>	The "polluter pays" principle applies for CDW according to Art. 11 of the Waste Management Act.	2012	http://www.moew.government.bg/files/file/Waste/Legislation/Zakoni/English_versions/Waste_Management_Act.pdf

⁷ National Waste Management Plan 2014-2010

⁸ Out of the four standards (BREAAAM, LEED, HQE and DGNB) DGNB is the most applied in Bulgaria, but still certification of sustainable buildings is limited (about 10 project under all systems in Bulgaria). It is not compulsory for any project type, and there is no big public awareness either.

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year established	National or regional (specify if regional)	Details of Public sector and Industry enforcement/ involvement/ collaboration	Levels of performance e.g. tonnes recycled, % coverage	Further information/ website
Requirement for pre-demolition audits	Yes Plan for management of construction and demolition waste	2012	National	According to Waste Management Act, the contracting entity shall draw up a Plan for management of construction and demolition before the beginning of construction/demolition works. Article 11 of Waste Management Act.	n.a.	http://www.moew.government.bg/files/file/Waste/Legislation/Zakoni/English_versions/Waste_Management_Act.pdf
Standards for recycled CDW	Yes-Not mandatory	Depending on the standard ⁹	National	Voluntary, related to market conditions.	n.a	These standards refer to products and not to waste.
Selective demolition/ plan for large demolition sites/demolition standard	Yes- Plan for management of construction and demolition waste	2014	National	According to Bulgarian Waste Management Act the contracting entity commissioning construction and works and the contracting entity commissioning the removal of construction works shall draw up a plan for management of construction and demolition waste with the scope and contents laid down in the Ordinance on construction and demolition waste management and use of recycled construction materials.	n.a.	http://www.moew.government.bg/files/file/Waste/Legislation/Zakoni/English_versions/Waste_Management_Act.pdf

⁹ Available on Bulgarian Institute for standardisation – EN standards

The following table is used to list any key CDW management guidance or tools:

Description of guidance/ tool	Scope	Year established/ produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/ medium/low) or specify	Further information/ web-site
Guidelines for management of construction and demolition waste in Bulgaria	Construction and demolition waste management	2012	National	Ministry of Environment and Water	Unknown	http://www.moew.government.bg/files/file/Waste/cdw/SO_RUKOVODSTVO_FINAL.pdf
Instructions on the implementation of CDW management-related legislation	Construction and demolition waste management	2015	National	Ministry of Environment and Water	N/A	Will be published soon

The following table is used to list any technical guidelines/standards/ Codes of Practice for use of CDW in construction application:

Description of guidance/ tool	Scope	Year established/ produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/ medium/low) or specify	Further information/ web-site
Technical Specifications for the construction of road infrastructures : practices and materials	Road infrastructures	2014	National	Road infrastructure agency		http://www.api.bg/files/7313/9504/3959/TC_2014.pdf

Regarding hazardous waste, the main problem consists in the practical assessment whether some CDW are hazardous or not. Guidelines, related to asbestos, produced by the National Center of public health and analyses exist as well as guidelines on PCB contamination but some laboratories are reluctant to take samples of CDW, because no procedures are available and samples might be not representatives. Some test methods are not adapted to the peculiarities of CDW.

5. CDW management performance – CDW data

In this section the performance of CDW management in Bulgaria is explored. This section particularly seeks to gather all available data and information about CDW generation and treatment, exports/imports, and treatment facilities in Bulgaria.

Year	2008	2009	2010	2011	2012	2013
Soils (tonnes)	153 550	673 252	100 085	160 282	1 158 126	1 344 567
Other non-hazardous waste (tonnes)	1 674 258	347 358	-23 282	122 434	666 438	198 481
Total Generated non-hazardous CDW (tonnes)	1 827 808	1 020 610	76 803	282 716	1 824 564	1 543 048
Hazardous soils	518	1 789	1 068	2 087	-	428
Other hazardous waste	953	240	640	118	206	429
Total Generated hazardous CDW (tonnes)	1 471	2 029	1 708	2 205	206	857
Non-hazardous waste	218 533	313 143	7 947	72 939	128 935	136 312
Hazardous waste	27	97	514	75	145	405
Total Recycled CDW (tonnes)	218 560	313 240	8 461	73 014	129 080	136 717
Backfilled CDW (tonnes)	-	-	-	-	-	-
Non-hazardous waste	929 452	259 725	33 855	44 788	583 265	103 118
Hazardous waste	720	89	32	2	26	3
Landfilled CDW (tonnes)	930 172	259 814	33 887	44 790	583 291	103 121
Energy recovery if any (tonnes)	-	-	-	-	-	-
Non-hazardous waste	-	3	-	-	5 743	-
Hazardous waste	-	0,06	-	-	-	-
Exported (tonnes)	-	3,06	-	-	5 743	-

The source of information used for both the National Statistics Institute and Eurostat data is the same. Nevertheless, the categorisation of waste in the above databases is done differently and as a result the presented data are different and cannot be directly compared.

Certain inconsistencies have been observed in NSI reporting, such as very variable reported quantities from one year to the next or quantities of soils higher than the quantity of total non-hazardous CDW.

It should be noted that no data has been reported for backfilling or energy recovery even if there are such practices according to expert inputs during the consultation of the findings of this factsheet with relevant stakeholders. No data exist on imported CDW but this stream is not developed yet in Bulgaria. Moreover the large amount of soil reported in 2012 and 2013 is mainly due to the construction of Sofia's subway.

5.1. CDW generation data

Data in the Eurostat database derive from data reported by the Executive Environment Agency and the Bulgarian NSI (National Statistics Institute). The NSI publishes quantities of waste by type (including construction waste) following the WFD classification recommendations, as transposed in Bulgarian law. The data are consolidated from several sources, according to the following methodology:

- Data collected through annual surveys sent to landfill facilities with permits in regional environmental agencies keeping registers: including all mixed construction/demolition waste sent to municipal waste landfills, including excavated soils. The reporting started in 1999 and is still on-going, according to Waste Statistics Regulation (2150/2002/EC). The process is on a voluntary basis. Nevertheless, it is important to emphasise that the data only represents waste reaching the authorised landfills which is sometimes mixed with other waste and soils, though the data does not appear to be reliable. Moreover, the methods of following-up the quantities are heterogeneous as no guidelines or best practices are defined.
- Data submitted to the Executive Environmental Agency from companies, agencies or legal persons whose activity is related to recovery, disposal, collection or treatment of the waste, since the WFD induced local national obligations to report: samples are extrapolated at national level weighing on employees or revenues by NSI. It excludes the excavated soils, as recommended in the WFD and treats mainly with collection of data, see “5.2. CDW treatment data” for more details. Apart from this stream of information, another report is due by entities producing waste. The Plan for management of construction and demolition waste according to the Ordinance on CDW management and use of recycled building materials from July 2014 is now an official source of information for the CDW data generation.

The CWMP is a legal document to be filled by the defined responsible of waste generation with two major parts:

- A forecast of the :
 - quantities of generated waste and planned waste management solutions
 - quantities of recycled materials and CDW for backfilling to use in the project
- The final quantity generated CDW and results of the project: the same table as the planned phase but with actual result quantities of generated waste, used recycled building materials and used CDW for backfilling.

A transportation diary is kept with quantities transported including a breakdown by destination, receivers and purpose (preparation, recycling, landfill...).

As the ordinance was fully enforced in July 2014, no complete data is officially available yet; the Executive Environmental Agency will likely receive the first annual report at the end of 2015.

No other reliable data was found and there are no known private initiatives of reporting.

5.2. CDW treatment data

The Ordinance № 1 of 4 June 2014 states that quantitative and qualitative CDW data shall be collected annually by the companies collecting, transporting, treating and using recycled CDW by filling forms with the following main information¹⁰:

- Annual report on collecting and transporting of household and/or construction and demolition waste, to be filled by any authorized collecting and transporting entities:
 - Origin of waste
 - List of facilities to which the CDW is given
- Annual report on preparation before recovery or disposal of construction waste, and for produced recycled building materials, to be filled by any authorized treatment facility:
 - Quantities of treated CDW
 - List of entities from which the CDW are received:
 - List of entities to which the recycled materials are given:

¹⁰ Decree № 1 of 4 June 2014 on the procedures and forms for providing information on the waste and the procedure for keeping public records “Наредба № 1 от 04 юни 2014 г. за реда и образците, по които се предоставя информация за дейностите по отпадъците, както и реда за водене на публични регистри”

- List of entities to which the CDW is given for backfilling:
- Annual report of the use of recycled building materials, to be filled by any user of recycled company:
 - Quantities of used recycled materials
 - List of entities from which the recycled building materials are received
- Annual report for recovery of construction waste for a backfilling purpose, to be filled by backfilling entities:
 - List of entities from which the recycled materials are received
 - List of entities from which the CDW are received

Qualitative data can be found on the state of recycling in Bulgaria in the Waste Management Plans prepared by municipalities for 2014-2020. By analysing a number of Waste Management Plans from various size municipalities, it is observed that recycling is still very marginal, even in regions where specialised treatment facilities have been built, as in Burgas municipality or regions with various level of construction volume. A general management practice followed to date in Bulgaria was to send CDW to the landfill assigned by the municipality. Apart from the waste ending up in the municipal landfills, unauthorized dumping and practices such as filling of brownfields, holes on roads or reuse on other construction sites exist according to municipalities' plans and are not monitored.

5.3. CDW exports/imports data

Very low and variable quantities of imports/exports of CDW are reported by NSI:

Year	2008	2009	2010	2011	2012	2013
Quantities of CDW exported (ktons)	-	3	-	-	5 743	-

Reported quantities of exported CDW seem to be low and not frequent compared to generated quantities of CDW generation in the national statistics or Eurostat database. The uncertainty level of the data is unknown although experts believe that imports and exports of CDW is not developed at all in Bulgaria to this date due to a lack of:

- information of the concerned players;
- incentive to recycle;
- maturity of treatment facilities and capacities in neighbouring countries offering a cross-border service with a substantial financial benefit for the Bulgarian companies.

5.4. CDW treatment facilities data

Data as of September 2013 shows that the country counts 12 municipal landfills for construction waste, 113 municipal landfills and 32 regional landfills. Among these landfills, only the regional ones are compliant with the EU legislation. The other landfills accept all kind of CDW, such as bricks, tiles and ceramics, mixed materials, soil, stones.

The 2014-2020 plan from the Ministry of Environment and Water states that according to the actual distribution of facilities, 28 regions are targeted for the construction of mobile and fix treatment facilities:

- 14 fixed platforms with total capacity 1 040 000 tonnes per year;
- 14 mobile platforms with total capacity 790 000 tonnes per year.

In 2014, there are several fixed and mobile facilities for recycling construction waste operating in major cities such as Sofia, Rousse and Burgas.

Construction projects of facilities are ongoing, led by regional administrations.

NSI reports the following capacities of authorised landfills:

Year	2009	2010	2011	2012	2013
Capacity of authorized landfills (m ³)	18 557 893	18 132 432	13 618 234	11 391 118	15 078 576

5.5. Future projections of CDW generation and treatment

The available forecast figures done by the NSI, which are only available projections according to the interviews and research during the course of this study, are not consistent with the methodology needed for the purpose of the study and appear to be incomplete.

5.6. Methodology for CDW statistics

Statistics are available since 1999 for the landfilled waste and since 2008 for the generated and recycled waste from the Bulgarian Statistics Institute. The same database is used for the purpose of reporting to Eurostat, although the data is filtered and arranged to fit Eurostat guidelines:

- The landfills reported and their capacities consist only of the authorised ones according to the national legislation;
- Soils are included in the total generated waste in Bulgarian statistics and should be excluded for Eurostat reporting;
- There is no evidence of construction waste generated by other activities than construction (NACE F) in the Bulgarian official statistics, although some amounts are reported for other NACE activities in Eurostat database. This applies to both soils and contaminated soils;
- The soils and contaminated soils can contain non-CDW waste;
- There is no change of methodology, as the reporting was set after the recommendations of the EU;
- The person in charge for the reporting of CDW waste in National Institute is Petar Petrov (ppetrov@nsi.bg, +359 2 9857 499). The guidelines of the reported figures can be found here :
 - Landfills data : http://www.nsi.bg/sites/default/files/files/metadadata/Ecology_Method_2.pdf
 - CDW generation and recycling data : http://www.nsi.bg/sites/default/files/files/metadadata/Ecology_Method_3.pdf

The methodology follows Eurostat guidelines.

6. C&D waste management in practice

In this section the CDW management “on the ground” in Bulgaria is presented.

6.1. CDW management initiatives

Public procurements are examples of initiatives in CDW management but no information is communicated publicly.

6.2. Stakeholders' engagement

Initiatives of branch organisations for informing their members about their obligations were organised such as:

- Chamber of Engineers;
- Chamber of Architects;
- Association of consultants;
- Association of municipalities environmental experts.

A significant amount of construction companies (mostly Bulgarian) have attended the trainings organised by the regional branches of Chambers of Architects and Chambers of Engineers.

Also, some construction companies organised a training for their members on the Ordinance on CDW management:

- State Company Railway Infrastructure
- State Company Port Infrastructure
- Glavbolgarstroy AD
- Geotechmin EOOD
- Kalistratov Group OOD
- Rilagaz EAD
- Black Sea Technology Company JSC
- Stroitelno-predpriemacheski holding EOOD
- Sigma-Stroy EOOD
- Kalisto-Mati EOOD
- RUD-Varna AD

- Construction branch of Nuclear Power Plant in Kozloduy
- Construction branch of EVN
- Construction branch of Veolia
- Construction branch of Toplofikatsia (Sofia)
- Construction branch of Fraport Twin Star Airport

6.3. Waste legislation enforcement

Control is enforced on several levels. According to the Waste Management Act, the control activities are split between several actors. The mayor or an official authorised thereby shall exercise control over:

- operations relating to the generation, collection, separate storage, transport, treatment of household and construction and demolition waste;
- operations relating to landfilling of industrial and hazardous waste at municipal and/or regional landfills.

The mayor organises and controls closure, reclamation, and subsequent monitoring of landfills for household and construction waste on the territory of the Municipality.

- The Director of the Regional Inspectorate of Environment and Water (RIEW), or a person authorised instead, is responsible to exercise control compliance with the requirements for waste treatment and the conditions of the permits, respectively registration document for:
 - Activities related to the generation, collection, storage, transportation and treatment of waste
 - Facilities and installations for storage and treatment of waste

In case of violations established during an inspection the RIEW director or an official authorised thereby shall issue mandatory prescriptions and set the deadline for compliance with said prescriptions and/or draw up written statements on ascertainment of administrative violations.

The Minister of Environment and Water or an official authorised thereby shall exercise control as to:

1. compliance with the terms and conditions of the permits issued to recovery scheme operators and persons discharging individually their obligations for management of ordinary waste;
2. waste management operations;
3. compliance with the requirements of Regulation (EU) No 333/2011.

Finally regarding the export of waste, the responsibility lies with the Minister of Environment and Water, the Minister of Internal affairs, the Minister of Transport, Information Technologies and Communications and Director of "Customs" accordingly to the Act and under the Regulation (EC) № 1013/2006.

If non-compliances are notified without any measures undertaken to correct them, penalties can be given with fines scaled according to the gravity of the violation.

According to experts, the penalties are not high enough to really discourage the illegal practices as the proper management of waste is perceived as being more costly.

6.4. Drivers / barriers to increase CDW recycling

The table below presents the drivers and barriers that affect (directly/indirectly) the recycling efforts and boost/impede CDW recycling rates and overall performance in Bulgaria.

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Materials availability	<ul style="list-style-type: none"> Major construction projects are public and the requirements in terms of use of recycled building materials and proper treatment are higher than in private sector, which may help the development of the initiatives at this early stage. 	<ul style="list-style-type: none"> Lack of technical capacity induces a very reduced range of recycled products First steps of industrialisation of recycling materials production and low demand does not allow scale savings and make it costly for companies to recycle more products
Key stakeholders involvement	<ul style="list-style-type: none"> Enhancing of training and awareness among the players from institutions and associations 	<ul style="list-style-type: none"> Stakeholders are not adequately informed about their duties or the benefits of recycling Lack of experience and technical capacity makes it difficult to prove the economic benefit of recycling Lack of transparency and cooperation between private sector players
Legislation	<ul style="list-style-type: none"> Specific Ordinance regarding exclusively CDW waste and its recycling Recommendations from the WFD are applied in the Bulgarian law 	<ul style="list-style-type: none"> Obligations and penalties for builders in the treatment of CDW is not an incentive to respect the law. Gaps in legislation Contradiction between national law and local implementation: municipal authorisation for special CDW landfilling are given locally even if forbidden nationally with a tax ten times lower than for recycling Fast evolving and fragmented regulation
Incentives	<ul style="list-style-type: none"> 'Polluter pays' principle applied 	<ul style="list-style-type: none"> No financial benefits to create incentive for recycling, either for the generator or the recycler.
Recycling process	<ul style="list-style-type: none"> Ongoing recycling facilities development projects on the territory (at least 7 recycling facilities in the last two years) 	<p>CDW recycling is a very new activity in Bulgaria:</p> <ul style="list-style-type: none"> Lack of experience: first steps into recycling are difficult to take without models or guidelines Lack of competition makes it difficult to sustain a good quality of recycled products. Not enough recycling structures and uneven existing distribution among the country. Slow development of structures Low volume of CDW in several regions making it not profitable to develop recycling structures Years of bad practices for demolition (except for metals with high recovery price) which is a factor of generation of mixed and spoiled waste Years of illegal dumping of CDW (including dangerous waste) Lack of means to stop illegal practices
Tracking of CDW recycling	<ul style="list-style-type: none"> Two kinds of reporting are asked by the law. They could both be a source of information for the data to crosscheck with one another in the future. 	<p>To increase CDW recycling also means to be able to track it:</p> <ul style="list-style-type: none"> No extended practices of weighing and following-up quantities of waste or used materials. <p>Figures mainly based on estimation:</p> <ul style="list-style-type: none"> Estimation of quantities of CDW in the planning phase of a construction or demolition project is difficult without guidelines, benchmark or technical documentation.

7. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in Bulgaria are presented.

7.1. Sector characteristics

The management of CDW in Bulgaria involves a wide range of actors from the public and private spheres

The Ministry of Environment and Water of Bulgaria is responsible for setting the scope of national policy concerning the management of waste, drawing the draft legal framework for waste management and delivering the National Waste Management Plan.

A National Waste Management Plan for the time period 2014 – 2020 is in place in Bulgaria, dealing with general waste management action plans. It includes a presentation of the status of waste management in Bulgaria, its opportunities, problems and objectives. Furthermore, it presents several programmes for achieving established targets and optimising waste management in Bulgaria through action plans. One of these programmes addresses CDW specifically: “Programme to achieve the targets for recycling and recovery of construction and demolition waste”. The action plans have different outcomes such as update of legal texts, use of recycled materials in specific type of constructions and creation of standards and requirements for certifications in the building sector.

For the construction and demolitions waste the ‘polluter pays’ principle is adopted. According to the Waste Management Act, the contracting entity commissioning construction and works with the exception of regular maintenance, and the contracting entity commissioning the removal of construction works shall draw up a Plan for management of construction and demolition waste. The Plan for management of construction and demolition waste has to be drawn up with the scope and contents laid down in the Ordinance on construction and demolition waste and use of recycled building materials.

In the Waste Management Act there are three national targets for re-use, recycling and other recovery of materials, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste, with the exception excavated soil, land and rock in their natural state which do not contain hazardous substances, shall apply, as follows:

1. no later than 1 January 2016 - as a minimum 35 per cent of the total weight of waste;
2. no later than 1 January 2018 - as a minimum 55 per cent of the total weight of waste;
3. no later than 1 January 2020 - as a minimum 70 per cent of the total weight of waste.

The obligations for proper management of CDW have been introduced only recently and therefore the sector is still at a stage of implementation and development of measures to reach the required goals.

The distribution and coverage of recyclers appears to be too low:

- Quantities of available CDW: although not enough quantities are available for recycling because of a lack of adequate practices, the capacity of existing facilities would not be enough according to experts and are deemed inadequate to deal with an increase of demand;
- National coverage of recycling facilities is too low: in Bulgaria it is estimated that CDW producers would not go further than 50 km to deposit their waste. As of first quarter of 2015, 22 recycling platforms were authorized in Bulgaria of which 6 in the region of Burgas, on the coastal line as being the most active in terms of construction due to tourism infrastructure development. Projects are undergoing for development of more facilities but it seem rather slow (+7 facilities in the last two years) compared to the expected goals in the 5 years to come.
- Recycled products supply and demand do not meet to create a substantial solution for CDW recyclers and recycled material users:
 - The demand of recycled products is still very low, if non-existent, apart from the fulfilment of green procurement for public projects requirements.
 - The available recycled materials range is restricted as volumes do not create a financial advantage for the recyclers to broaden the supply.

7.2. Exports / imports of CDW

According to experts, there is not enough capacity in place yet in Bulgaria for recycling of CDW and the existing facilities only offer a limited range of recycling competencies. Neighbouring countries are not mature either.

7.3. CDW as landfill cover

CDW is used for different purposes on private initiatives. There is no known actual reporting of quantities although municipalities report use of CDW for filling of holes on roads or brownfields as substantial practice among private players.

7.4. Market conditions / costs and benefits

The building sector represents an important economic activity in Bulgaria: 8% of Bulgarian GDP in 2009.

In the early 2000's the market was growing with projects related mostly to housing, tourism infrastructure, offices and road construction. Lately the general construction market is rather stagnant.

According to the Bulgarian Chamber of Construction, 90% of construction companies have recorded a decrease of activity between 2013 and 2014, of which 15% have completely frozen their activity. The majority of ongoing construction projects are public procurements, financed by EU funds. In this context, the market of waste management cannot take off.

Additionally, the market for recycling being really new, the costs and benefits are not optimum for the CDW management players. Incentives for recycling are lacking in Bulgaria:

- The stakeholders in Bulgaria are not informed enough of the environmental/economic/social benefits of such practices. The economic aspect being the factor Bulgarian companies are the most sensitive in a context of low environmental awareness, trainings and exchanging of best practices from other countries could reinforce the incentive to recycle.
- Up-to-date, there are no financial levers for the CDW producers to send CDW for recycling, use recycled materials or for the recycling company to develop their activity.
- Penalties are defined in the legal framework but according to experts, it appears that they do not represent a major cost constraint.
- Costs are high for:
 - Disposing of CDW properly is pricier than disposing in alternative ways. Even though it is illegal to dispose of waste in such a way according to the Waste Management Act, some municipalities have authorised regional municipal landfills for CDW waste with an entry tax in average ten times lower than the cost to send it for recycling.
 - Transporters, recyclers and other players specialised in CDW which do not deal with enough amounts to be profitable.

7.5. Recycled materials from CDW

The construction market going down also affects the recycled products market. So far only three of the most common and significant materials are recycled from the 22 existing platforms: concrete, reinforced concrete and ceramics.

In practice, even if recyclers have recycling authorisations for a wider range of codes of products, in reality it appears that CDW can be refused to the transporter coming to dispose of the waste as it is considered to have too poor recoverable output, as it is been observed with ceramics for example.

7.6. Construction sector make up

Even if the activity seems to decrease as stated in section 7.4. since 2009, the construction companies seem to increase and the number of employees follows the same trend in 2014. The register counted more than 4000 companies at end of 2014.

As of 2014, according the Bulgarian National Institute for Statistics, 215 400 people were employed in the construction sector, which signifies a slight increase after a significant decrease in the economic crisis period.

Years	2014	2013	2012	2011	2010
Number of employees in construction sector in Bulgaria (NSI) ¹¹	215 400	207 000	206 000	229 000	269 000

¹¹ <http://www.nsi.bg/bg/content/4009/%D0%B7%D0%B0%D0%B5%D1%82%D0%B8-%D0%BB%D0%B8%D1%86%D0%B0-%D0%B8-%D0%BA%D0%BE%D0%B5%D1%84%D0%B8%D1%86%D0%B8%D0%B5%D0%BD%D1%82%D0%B8-%D0%BD%D0%B0-%D0%B7%D0%B0%D0%B5%D1%82%D0%BE%D1%81%D1%82-%D0%BD%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D0%BD%D0%BE-%D0%BD%D0%B8%D0%B2%D0%BE-%D1%81%D1%82%D0%B0%D1%82%D0%B8%D1%81%D1%82%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%B8-%D1%80%D0%B0%D0%B9%D0%BE%D0%BD%D0%B8-%D0%BE%D0%B1%D0%BB%D0%B0%D1%81%D1%82%D0%B8>

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- Interview with Kamen Goranov, Construction sector Expert, Bulgarian Construction Chamber, 16/04/2015
- Interview with Gyuler Alieva, Expert in department "Management of household and construction waste", Bulgarian Ministry of Environment and Water, 16/04/2015
- Interview with Petar Petrov, Head of Environment Statistics Department, National Statistics Institute, Bulgaria, 23/04/2015

Other consulted stakeholders

The following stakeholders have been contacted but did not participate:

- Bulgarian Association for Recycling
- Bulgarian Branch Chamber Roads
- АСЕКОБ – Bulgarian environmental association of Bulgarian municipalities
- Mihail Asenov – Expert on waste Management
- GBS – Construction company

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