

Construction and Demolition Waste
management in
SLOVAKIA
V2 – September 2015



Table of Contents

SCREENING FACTSHEET	3
1. Summary	3
2. Definitions concerning construction and demolition waste (CDW) and management	6
2.1. <i>Definitions concerning construction and demolition waste (CDW) and management</i>	6
2.2. <i>Definition of construction and demolition waste (CDW)</i>	6
2.3. <i>End of Waste (EoW) status</i>	7
2.4. <i>Definitions of waste treatment operations</i>	7
3. Legal Framework – Waste Management Plans and Strategies	8
3.1. <i>Legal Framework – Waste Management Plans and Strategies</i>	8
3.2. <i>Waste management plans (WMP) and Strategies</i>	10
3.3. <i>Legal framework for sustainable management of CDW</i>	11
3.4. <i>Targets</i>	13
4. Non legislative instruments	17
5. CDW management performance – CDW data	20
5.1. <i>CDW generation data</i>	20
5.2. <i>Comparison of CDW generation data from MoE SR to Eurostat data</i>	20
5.3. <i>CDW treatment data</i>	21
5.4. <i>CDW exports/imports data</i>	22
5.5. <i>CDW treatment facilities data</i>	23
5.6. <i>Future projections of CDW generation and treatment</i>	24
5.7. <i>Methodology for CDW statistics</i>	24
6. C&D waste management in practice	25
6.1. <i>CDW management initiatives</i>	25
6.2. <i>Stakeholders' engagement</i>	26
6.3. <i>Waste legislation enforcement</i>	27
6.4. <i>Drivers / barriers to increase CDW recycling</i>	28
7. CDW sector characterisation	30
7.1. <i>Sector characteristics</i>	30
7.2. <i>Exports / imports of CDW</i>	31
7.3. <i>CDW as landfill cover</i>	31
7.4. <i>Market conditions / costs and benefits</i>	31
7.5. <i>Recycled materials from CDW</i>	32
7.6. <i>Construction sector make up</i>	32
REFERENCES	34

Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

In 2012, Slovakia officially reported to Eurostat the generation of 806,184 tonnes of CDW. This represents a 55% decrease when compared to 2010 (1,786,430 tonnes), largely due to a decline in construction activity.

These figures are lower than the data received from the Ministry of Environment (MoE), with 1,617,007 tonnes of CDW generated for 2012, though this includes excavation waste. Since 2002, the production of construction waste has increased gradually with some breaks between 2003 - 2004 and 2005 - 2006, when the amount of CDW increased by nearly 100%. In 2005-2006, this was caused by the waste generated from the construction of motorways and tunnels in Sitina in Bratislava.

	CDW Generation – Slovakia			
	2006	2008	2010	2012
CDW Generation in tonnes	916,228	1,301,760	1,786,430	806,184

CDW management practises

In 2009, the majority of non-hazardous CDW was landfilled (63%)(with material recovery accounting for 27%. However, it should be noted that it is unclear whether the data from the MoE contains 17 05 04 uncontaminated soil and stones.¹

Treatment method	Non-Hazardous CDW (2009)		Hazardous CDW (2009)	
	Tonnes	%	Tonnes	%
Material Recovery	580,485	26.55	7,087	3.08
Energy Recovery	8,218	0.38	11	0.00
Other Recovery	168,684	7.72	69,455	30.17
Landfill	1,382,488	63.23	32,851	14.27
Incineration without energy recovery	895	0.04	36	0.02
Other Disposal	21,713	0.99	120,007	52.13
Other Treatment	23,816	1.09	751	0.33
Total	2,186,299	100	230,198	100

Criteria regarding the End of Waste (EoW) for CDW have not as yet been established by the MoE which may be a reason for the landfill rates; however, there are plans to establish a working group to address this following the implementation of the new Waste Act 79/2015. At the time of writing, there are no clear legislative rules for the use of CDW. . Therefore, CDW is often used for backfilling or settling terrain

¹ http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/priloha_03.pdf

unevenness. The current waste legislation 223/2001, as well as the future legislation 79/2015, does not provide a definition for backfilling. However, the MoE has introduced a new Institute of "Recovery of waste for surface modifications". This Institute will monitor use of waste for backfilling operations. This action will have a separate handling code out of the Waste Framework Directive codes.

Most of the targets set within the 2006-2010 Waste Management Plan SR were not fulfilled. To avoid repeating this failure, one of the measures proposed in the approved Waste Management Plan SR 2011 – 2015 is to submit every two years a performance evaluation report to the Slovak Government on the objectives of the current Waste Management Plan SR². The Government is waste undertaking an evaluation exercise on waste management performance from relevant available waste data.

All waste data generation and management is undertaken through the **Regional Waste Information System (RISO)**. This system has collected nationwide data in Slovakia since 1995. This data is sourced from quarterly reports submitted by obligated parties under the Waste Act through the state administration bodies in waste management (district and regional environmental offices). There are additional treatment codes used for CDW in Slovakia to R&D treatment codes in WFD:

- "Z" (Collection of waste for temporary storage before further handling at the place of origin),
- "DO" (Domestic Utilisation), mostly wood, bricks, tiles and metal are utilised by households after authorisation by the local environmental authority
- "O" code (transfer of waste to other organisation)
- Hazardous wastes shall also include a "Y" – code from Annex. 3 of the Waste Catalogue.

Main obstacles to sustainable CDW management

The conditions for using CDW are unfavourable. In order to set optimal conditions for the CDW recycling market, the following actions are necessary:

- to overcome the communication barriers between stakeholders;
- to build a joint control system of CDW recycling;
- to manage investment sources ensuring suitable technology for producing building products from recycled materials;
- to overcome the general disinterest (even disgust) to products from waste;
- to overcome the strong mineral lobby.

Lack of EoW criteria for CDW

- The lack of EoW criteria is currently slowing the advancement of improvement programmes. A Hungarian-Slovakian Cross-Border Co-Operation Programme called REPROWIS – Reducing Production Waste by Industrial Symbiosis³ is an industrial symbiosis programme conducting surveys, research and workshops with the aim of identifying potential materials for re-use from SME's. The project has been slow in Slovakia due to a lack of a valid definition of waste and legislation for 'end-of-waste' in Slovakia⁴.

Insufficient capacity of CDW recycling facilities

- There is a need to increase the capacity for the recovery of CDW in Slovakia. Currently, there are 60 recovery facilities for CDW in operation in Slovakia, of which 41 are mobile devices, but their capacity is not thought to be sufficient to cope with the current demand. High transport costs are one of the

³ http://reprowis.hu/en/home/what_we_do

⁴ <http://www.minzp.sk/files/dokumenty/vestnik-mzp/vestnik-01-2014.pdf>

barriers for utilising the existing treatment capacities. It is believed that the CDW recycling facilities within Slovakia are not optimally located across the country⁵. Furthermore, it is felt that on-site recycling of CDW in Slovakia is currently not working due to an expensive and onerous system containing licences and fees for the transportation of mobile recycling facilities.

Main drivers to sustainable CDW management

Existing legislative drivers

- Request for permission for building/demolition activities to contain a CDW management plan for transfer or disposal of CDW. This should be submitted to the relevant District/Municipal office before starting work.

Upcoming legislation

- **The new Waste Act 79/2015⁶** will come in force from January 2016. The changes will include extended producer/importer responsibility; the implementation of a clear and up-to-date information system that will monitor waste streams, including stricter rules on illegal dumping of waste. The Act will clarify the waste producer for CDW, adding natural person, legal person or entrepreneur to the definition. The new legislation will bring many changes to the waste collection system in the municipalities including a landfill ban for waste streams covered by extended responsibility of producers (packaging, WEEE, oils). The collection method of these waste streams from municipalities has not been planned yet⁷.
- The obligation to separate and recover CDW set by the Waste Act 223/2001 were limited to waste producers generating above 200 tonnes CDW per year, due to the lack of CDW recycling/recovery facilities. . This limitation is not mentioned in the new Waste Act 79/2015.
- Landfill Tax is one of the major incentives to recycle CDW.

Targets to achieve

- The current Waste Management Plan SR 2011-2015 targets to increase the level of preparation for reuse, recycling and recovery at least to 35% by weight of CDW by the end of 2015 (excluding 17 05 04 uncontaminated soil and stones).

⁵ Ing. Jančo, ZRSM janco@zrsm.eu

⁶ <http://www.zakonypreludi.sk/zz/2015-79>

⁷ Karol Koteles, obec Chorvaty obecchorvaty@centrum.sk

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

In this section the definitions of waste used in Slovakia are explored.

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

The Slovak waste definition is similar to the Waste Framework Directive (WFD) waste definition.

Slovakia: Waste is a mobile object set, which is discarded/intended to be discarded by the holder, or it is in accordance with the Waste Act 223/2001 or other Directives⁸ required to be discarded⁹

2.2. Definition of construction and demolition waste (CDW)

§ 40c of the Waste Act 223/2001 defines CDW as follows

- (1) CDW are wastes that arise as a result of construction, safety work as well as maintenance, refurbishment or demolition work.

CDW includes

- Wastes listed in Category 17 of the European Waste Catalogue – CDW including excavated soil from contaminated sites are classed as CDW. No codes are excluded from the definition of CDW¹⁰.
- **CDW (small) from households** is also included in CDW. Details on the management of small construction waste must be stated in the community statutory rules and orders. Residents can dispose of up to 1 m³/person a year of small CDW from routine maintenance work to the communal CDW collection/disposal point. Thus, if the household consists of four individuals, they may take up to 4 m³/ year of this waste to community collection¹¹. The municipality is obliged to arrange for a collection of small CDW as required.

The European Waste list (2000/532 / EC) was transposed to Slovak legislation by Decree no. 284/2001 establishing the Waste Catalogue.

CDW excludes

Under § 1 section 2 point. j) of Act no. 223/2001 on waste and its amendments, the Act does not apply to **uncontaminated soil and other naturally occurring** material excavated in the course of construction activities where it is certain that the material used for the purposes of construction is in its natural state on the site from which it was excavated. Unless the excavated soil meets those criteria, it must be treated as waste and comply with all relevant provisions of the Waste Act. Other waste generated during the

⁸ Act of the Slovak National Council no. 272/1994 Coll. on human health protection, as amended, § 43 of Act no. 140/1998 Coll. on medicines and medical devices, amending Act no. 455/1991 Coll. on Trades (Trade Act), as amended, and amending Act of the Slovak National Council no. 220/1996 Coll. on advertising, as amended by Act no. 119/2000 Coll. and the Slovak Ministry of Health of the no. 12/2001 Coll. the requirements for radiation protection.

⁹ <http://www.zakonypreludi.sk/zz/2001-223>

¹⁰ Záhorský Maroš maros.zahorsky@enviro.gov.sk Ministry of Environment, Division of Environmental Assessment and Management, Waste Management Department

¹¹ <http://www.minzp.sk/informacie/tlacovy-servis/tlacove-spravy/tlacova-sprava-stavebny-odpad-slovensku.html>

construction works (e.g. **packaging, municipal-like waste** etc.), are not included in the definition of CDW and the waste producer has the obligation to dispose of them in accordance with the provisions of the Waste Act¹².

2.3. End of Waste (EoW) status

End of Waste (EoW) criteria are set in the amendment 343/2012¹³ of the original Waste Regulation number 223/2001.

The Amendment states that:

- Certain specified waste ceases to be waste, if it undergoes any recovery, including recycling and meets specific criteria that have been established¹⁴.
- Certain specified waste ceases to be waste if it undergoes preparation for reuse or is given as waste suitable for domestic utilisation.

End of Waste (EoW) refers to specific waste that ceases to be waste when it has undergone recovery, including recycling and fulfils the following criteria described in the WFD:

- substance or object is commonly used for specific purposes ;
- for such a substance or object , there is a market or after the demand ;
- substance or object fulfils the technical requirements for the specific purposes and meets the existing regulations and standards applicable to products ;
- the substance or object will not lead to overall adverse environmental¹⁵

At the time of writing, there are no Regulations and related criteria for EoW for CDW. However, there are plans to establish a working group to follow up this issue, after the implementation of the new Waste Act 79/2015 in practice¹⁶.

2.4. Definitions of waste treatment operations

The Slovak official definitions of re-use and recycling comply with the WFD definitions. However, recovery operations are defined differently in the Slovak legislation than in WFD. The Waste Act 223/2001, § 2 define these operations as follows:

- Re-use is any activity by which a product or parts of product that are not waste, are used again for their original purpose.
- Recycling means any recovery operation by which waste is reprocessed into products, materials or substances for the original other purposes. It includes the reprocessing of organic material but does

¹² Záhorský Maroš maros.zahorsky@enviro.gov.sk Ministry of Environment, Division of Environmental Assessment and Management , Waste Management Department

¹³ <http://www.zakonypreludi.sk/zz/2012-343>

¹⁴ For example, Regulation No . 333/2011 of 31 March which establish the criteria for certain types of scrap metal ceasing to be waste under Directive of the European Parliament and Council Directive 2008 /98 / EC (Ú. V. L 94 , 8. 4. 2011) .

¹⁵ (environment or human health . European Parliament and Council Directive 2008 /98 / EC, Article 6)

¹⁶ Záhorský Maroš maros.zahorsky@enviro.gov.sk Ministry of Environment, Division of Environmental Assessment and Management , Waste Management Department

not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling¹⁷.

- Waste recovery involves activities leading toward utilisation of physical, chemical or biological properties of wastes listed in Annex 2 of this document.

The current waste legislation 223/2001, as well as the future legislation 79/2015, does not provide a definition for backfilling. However, the MoE has introduced a new Institute of “**Recovery of waste for surface modifications**”. This Institute will monitor use of waste for backfilling operations. This action will have a separate handling code out of the Waste Framework Directive codes.

3. Legal Framework – Waste Management Plans and Strategies

In this section the legal framework governing CDW management in Slovakia is explored.

3.1. Legal Framework – Waste Management Plans and Strategies

Current pieces of legislation concerning CDW

- **The Waste Act 223/2001**¹⁸ defines waste and CDW, waste treatment operations and lays down the obligations for waste producers;
- **Law no. 434/2013**¹⁹ amending and supplementing Law no. 17/2004 about fees for waste disposal as amended. This does not specifically mention CDW except for some hazardous CDW;
- **119/2010**²⁰ - **Packaging Act**;
- **Decree no. 284/2001**²¹ - **establishing the Waste Catalogue**;
- **Notice of the Ministry of Environment no. 75/2002**²² on the issue of Decree 1/2002, laying down methods for the analytical inspection of waste;
- **Act no. 582/2004**²³ on local taxes and local fees for municipal waste and minor construction waste, as amended;
- **Regulation no. 525/2003**²⁴ **on state administration of the environmental protection** requires District Offices to manage administration of environmental protection in accordance with relevant regulations;
- **Regulation no. 222/1996**²⁵ **of the National Council of Slovak Republic on the organisation of local government** sets out the rules and responsibilities of subject;
- The procedures for keeping records of waste generation and treatment is currently established in **Decree no. 283/2001**²⁶ on the implementation of certain provisions of the Waste Act, as amended;
- **Building Regulation no 50/1976**²⁷ as amended, on land and building planning;

¹⁷ <http://www.zakonypreludi.sk/zz/2001-223>

¹⁸ <http://www.zakonypreludi.sk/zz/2001-223>

¹⁹ <http://www.zakonypreludi.sk/zz/2013-434>

²⁰ <http://www.zakonypreludi.sk/zz/2010-119>

²¹ <http://www.zakonypreludi.sk/zz/2001-284>

²² <http://www.zakonypreludi.sk/zz/2002-75>

²³ <http://www.zakonypreludi.sk/zz/2004-582>

²⁴ <http://www.zakonypreludi.sk/zz/2003-525>

²⁵ <http://www.zakonypreludi.sk/zz/1996-222>

²⁶ <http://www.zakonypreludi.sk/zz/2001-283>

²⁷ <http://www.zakonypreludi.sk/zz/1976-50>

- **Regulation no. 237/2000**²⁸ as amended and supplementing Regulation no. 50/1976. Request for permission for building/demolition must contain a CDW management plan for transfer or disposal, to be submitted to the relevant District/Municipal office before starting work;
- **Act no. 17/2004**²⁹ on the charges for waste disposal, as amended, regulates the fees for depositing waste in landfills but does not particularly address CDW. Revenue from landfill fees according to Table 1, belong to the municipal budget or municipalities in the territory of which the landfill is located.

Table 1, Landfill fees EUR/tonne according to Act 434/2013 and 17/2004

Point	Waste	2014	2015	2016 and the following years*	Concerning CDW
1	Inert waste, separated construction waste, soil and stones not containing dangerous substances, waste from landfill remediation	0.33	0.33	0.33	Yes
2	Other waste other than as referred to in points 1, 3 and 5	6.64	6.64	6.64	Other non-hazardous CDW not contained in points 1, 3 and 5
3	Municipal waste	Varies	Varies	Varies	No
4	Hazardous waste other than mentioned in point 6	33.19	33.19	33.19	Other hazardous CDW than mentioned in point 6
5	Other waste listed in Annex 4 of Act 17/2004	20	25	30	170201 Wood
6	Hazardous wastes listed in Annex 5 of Act 17/2004	45	52.5	60	170301 bituminous mixtures containing coal tar 170409 metal waste contaminated with dangerous substances

*Fees will increase by a factor of average annual inflation rate for the previous calendar year

Future legislation concerning CDW

- **The new Waste Act 79/2015**³⁰ will come into force from January 2016. The changes will include extended producer/importer responsibility, the cancellation of the Recycling Fund (a non-state, purpose-bound organisation, aimed to gather funds for the collection, recovery and recycling of certain waste streams (excluding CDW) in Slovakia.); the implementation of a clear and up-to-date information system that will monitor waste streams and stricter rules on the illegal dumping of waste. Furthermore, the Act (§ 77) will clarify who the waste producer of CDW is, by introducing new classifications to the definition, such as natural person, legal person or entrepreneur. The new legislation will bring many changes to the waste collection system in the municipalities including a

²⁸ <http://www.zakonypreludi.sk/zz/2000-237>

²⁹ <http://www.zakonypreludi.sk/zz/2004-17>

³⁰ <http://www.zakonypreludi.sk/zz/2015-79>

landfill ban for waste streams covered by extended responsibility of producers (packaging, WEEE, oils). The collection method of these waste streams from municipalities has not been planned yet³¹.

Legislation concerning backfilling and landfilling

- **Regulation no. 310/2013** of the MoE implementing certain provisions of the Waste Act regulates the use of inert waste for landfilling and backfilling³²
- **Municipal Directive of Stara Lubovna**³³ on the use of inert waste from construction and demolition suitable for rehabilitation, restoration and backfilling work in the city of Stara Lubovna is within the Annex of Municipal Directive 33/2001. There were no similar documents found for other municipalities or regions.

3.2. Waste management plans (WMP) and Strategies

The system of WMP's is designed as a pyramid. The information set within the National WMP has helped to develop Regional WMP's and subsequently from these the WMP's for municipalities and waste producers have been developed.

- The existing Waste Management Plan (WMP) for 2011-2015 in Slovakia is the fourth WMP in Slovakia and is developed on three levels:
 - Nationwide - Waste Management Plan of the Slovak Republic (as "WMP SR"),
 - Regional level
 - Waste management plans for individual waste producers and municipalities.
- The current WMP SR 2011-2015 has two specific sections on CDW, section 3.1.8 *Targets for CDW* and 3.2.4.6 *Actions for achieving target on CDW*.
- The proposal of the new WMP SR 2016 – 2020 is available to download from the Enviroportal website³⁴; the document contains two CDW specific sections, one describing the current situation and one evaluating the achievements of targets from previous WMP.
- An example of **WMP for the Trenčín Region for 2011-2015**³⁵ contains regional CDW generation and treatment data; the targets are the same as in the national WMP.
- **The Waste Prevention Plan for 2014 - 2018**³⁶ is the first waste prevention plan for Slovakia. This document has a designated section for the prevention of CDW (Section 4.3.5). This section specifies the measures for diverting CDW from landfill (these are described in section 3.4 of this document)
- **The Raw material and energy policy of Slovakia** from 2003 contains a section which describes the utilisation of secondary materials (Section 11.5). The amount of recycled CDW used in construction during 1996 – 2001 was approximately 20%. However, it is recommended that this figure is taken with caution due to the waste data in this area being considered unreliable. The policy also mentions that they are aware that there is a lack of legislation in this field³⁷. With this in mind, the Ministry of Economy is currently preparing a new raw material policy for Slovakia.
- **National Regional Development Strategy Slovakia** describes the current situation of sustainable development in each region of Slovakia and sets targets to increase waste recycling and to tackle the issue of unregulated landfills. The document doesn't specifically refer to CDW.

³¹ Karol Koteles, obec Chorvaty obecchorvaty@centrum.sk

³² <http://www.zakonypreludi.sk/zz/2013-310>

³³ http://www.staralubovna.sk/resources/File/smernica_k_vzn_c_33.pdf

³⁴ http://www.enviroportal.sk/sk_SK/eia/detail/program-odpadoveho-hospodarstva-slovenskej-republiky-na-roky-2016-2020

³⁵ http://www.minv.sk/swift_data/source/verejna_sprava/obu_trencin/informacie_pre_obcanov/o_zivot/2014/odpady/Program_OH_TN_kr_aja_na_roky_2011_2015_text_na_zverejnenie.pdf

³⁶ <http://www.minzp.sk/files/sekcia-enviromentalneho-hodnotenia-riadenia/odpady-a-obaly/registre-a-zoznamy/ppvo-vlastnymaterial.pdf>

³⁷ <http://www.mhsr.sk/surovinova-politika-5672/127357s>

3.3. Legal framework for sustainable management of CDW

This section aims at identifying specific legislation that would create good conditions for the sustainable management of CDW.

- **The Waste Act 223/2001 states the obligations for separation of CDW in § 40 c) as follows:**
 - The holder of CDW is obliged to sort the waste by types (Waste Act 223/2001 Z. z § 19 paragraph 1, [b] and [c]), if the total quantity of CDW on one building, or a set of directly related buildings, exceeds the total amount of 200 tonnes per year, and to ensure their material recovery.
 - The obligation under point 1) shall not apply if there is no CDW recovery facility in the area within road access of 50 km from the location of construction and demolition work being carried out.
 - A person who performs construction, maintenance, refurbishment or demolition of roads (is the waste producer) is required to utilise the CDW resulting from this activity in the construction, reconstruction and maintenance of roads.
- **The new Waste Act 79/2015** coming into force in January 2016 states obligations for waste producers to sort and handle all waste according to the waste hierarchy, not mentioning the above limitations.
- **Green Public Procurement (GPP)** is one of the voluntary instruments of environmental policy in Slovakia (this is described further later in this document, section 4 - Non legislative instruments).
- **Recycling Fund (RF)** was a non-state, purpose-bound organisation, aimed to gather funds for the collection, recovery and recycling of certain waste streams (excluding CDW) in Slovakia. The RF was established by the Waste Act 223/2001. The main role of RF was to support projects on recycling and recovery of certain waste streams through grants and loans. For example, to support the development of recycling industry. The total sum of funding given out over 10 years is 163 mil. €. This has brought significant improvements to the recycling of certain waste streams. However, this funding stream has now been closed. Examples of initiatives developed under this fund are given in section 6.1.

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>	There is no requirement for a pre-demolition audit , however it is recommended to assess the hazardous properties of future CDW³⁸ before the commencement of maintenance, refurbishment or demolition work by sampling of materials in the building. Valuation of hazardous properties of buildings or their parts are based on the requirements for waste category classification in accordance with § 19 of the Regulation no. 283/2001 ³⁹ as amended by 310/2013 ⁴⁰ . Particular attention must be paid to the removal of materials containing asbestos.		
<i>National/regional sorting obligation (on-site or in sorting facility)?</i> The Waste Act 223/2001	Yes, the Act states the obligations for separation of CDW if the total quantity of CDW exceeds the total amount of 200 tonnes per year, and to ensure their material recovery	2001	Annexe 1. The obligation under shall not apply if in there is no CDW recovery facility in the area within road access of 50 km from the location of construction and demolition work being carried out. http://www.zakonypreludi.sk/zz/2001-223
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i> The Waste Act 79/2015	Yes, there will be a requirement to separate organic waste, plastics, glass, metals, paper, WEEE and tyres from municipal waste	Coming in force from 2016	https://www.enviroportal.sk/uploads/files/Odpady/Zak792015.pdf

³⁸ <http://stavebni-technika.cz/clanky/problemy-pri-nakladani-si-stavebnym-odpadom-2-cast>

³⁹ <http://www.zakonypreludi.sk/zz/2001-283>

⁴⁰ <http://www.zakonypreludi.sk/zz/2013-310>

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<p><i>Obligation for separate collection and management of hazardous waste from C&D operations? Please specify</i></p> <p>The Waste Act 79/2015</p>	<p>Yes, the waste producer is obliged to separate different types of waste and prevent mixing hazardous and non-hazardous waste. They are also obliged to develop a WMP only if they produce more than 10 tonnes of hazardous waste or 100 tonnes of non-hazardous waste annually⁴¹.</p>	2015	http://www.zakonypreludi.sk/zz/2015-79
<p><i>Related Green public procurement requirements</i></p> <p>Act 25/2006 on the Public Procurement as amended</p>	<p>Can relate to construction materials. The National Action Plan for Green Public Procurement in the Slovak Republic for 2011-2015 sets a strategic objective to increase the proportion of GPP used in Slovakia to 65% at the level of central government bodies and the level of self-governing regions and municipalities by 50% by 2015.</p>	2006	http://www.minzp.sk/files/dokumenty/vestnik-mzpvestnik-01-2014.pdf
Recycling Fund (RF)	<p>Funds for the collection, recovery and recycling of certain waste streams (excluding CDW) in Slovakia (now closed)</p>	2002-2012	http://www.reinnova.es/test/wp-content/ponencias2013/02.02%20-%20V.Simkovicova.pdf

3.4. Targets

The targets for CDW set in the WMP SR 2011-2015 are (in accordance with the requirements of the Waste Framework Directive) the following:

- To increase the **level of preparation for reuse, recycling and recovery at least to 35%** by weight of CDW by the end of 2015 (excluding 17 05 04 uncontaminated soil and stones).

To achieve the target of the WMP SR 2011-2015 regarding CDW the following actions listed in Table 2 are being implemented.

⁴¹ <http://www.zakonypreludi.sk/zz/2001-223>

Table 2 Measures to be implemented in Slovakia in order to achieve WMP SR Targets regarding CDW. The information is a summary of CDW related actions from section 3.2 Measures to achieve targets of WMP from the WMP SR 2011-2015

Action	Responsible enforcing and monitoring authority	Responsibility for implementation	Time of completion
Uncontaminated soil and other naturally occurring material excavated during construction works not to consider to be waste (when the material is used for construction in its natural state)	District Environmental Offices	Waste producers	On-going
Increase the control over separation of waste streams in place of generation	MoE SR	Slovak Environmental Inspection, District Environmental Offices	On-going
Promote research and development in the field of recycling, reusing or recovering materials from construction and demolition waste	MoE SR	MoE SR, Universities	On-going
Set criteria for defining end-of- waste for CDW	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic	In the time of approval of the new Waste Act 19/2015
To adapt technical standards for construction materials and their use to increase the proportion of recycled CDW and construction products containing incinerator ashes.	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic	On-going
Support the construction and operation of CDW recovery facilities	MoE	MoE	On-going
To use recycled CDW in construction financed by public funds (mostly road works), provided that they comply with functional and technical requirements; and also to include this as a requirement in the public procurement conditions	All sectors, MoE	Suppliers	On-going
To propose an amendment to the Building Act, which impose an obligation to check the management of CDW of a project at the final inspection	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic	MoE, Ministry of Transport, Construction and Regional Development of the Slovak Republic and Building Authorities	In the time of approval of the new Waste Act 19/2015

Target evaluation

- **WMP SR 2011 – 2015** contains the target evaluations of the previous WMP SR for the years 2006 - 2010. Unfortunately, most of the targets set for this period were not fulfilled. To avoid repeating this failure, one of the measures proposed in the approved WMP SR 2011 - 2015 is to submit every two years a performance evaluation report⁴² to the Slovak Government on the objectives of the current WMP SR. Evaluation of the main objectives is possible with basic indicators of waste management developed by the Slovak Environment Agency⁴³.
- A similar procedure happens with evaluating the progress towards achieving the targets in the **WPP SR**, where the MoE in cooperation with the other relevant Ministries and organisations prepare an evaluation report and submit it to the Government of SR together with an assessment of the objectives regarding waste management.

Progress towards the targets

More construction activities in Slovakia has brought increased production of CDW. Since 2002, production of construction waste has increased gradually. During certain periods (2003 - 2004 and 2005 – 2006), the amount of CDW has increased approximately by 100%.

In 2006, this was caused by excavated soil generated from the construction of motorways and tunnels in Sitina in Bratislava. Since 2006, the CDW production has decreased gradually, which is largely due to the general economic crisis that has caused the decrease in construction activities.

The majority of non-hazardous CDW (Table 3) is landfilled (39% in 2005 and 63% in 2009), the reason for the substantial rise is unclear. Material recovery represented 32% in 2005 and 27% in 2009. It is unclear whether the data from the MoE contains 17 05 04 uncontaminated soil and stones or not⁴⁴. Table 4 demonstrates the hazardous CDW treatment data for 2005 – 2009. Disposal is the most common way of treatment (66% in 2009).

Table 3 Non-hazardous CDW Treatment from 2005-2009⁴⁵

Treatment method	2005		2006		2007		2008		2009	
	Tonnes	%								
Material Recovery	732,878	32.4	559,489	12.65	665,534	19.7	541,034	21.12	580,485	26.55
Energy Recovery	1,372	0.06	1,706	0.04	7,054	0.21	11,588	0.45	8,218	0.38
Other Recovery	276,407	12.2	153,292	3.47	289,128	8.55	371,499	14.50	168,684	7.72
Landfill	873,836	38.6	3,435,341	77.68	2,218,525	65.6	1,352,844	52.80	1,382,488	63.23
Incineration without energy recovery	5,616	0.25	15,398	0.35	18,721	0.55	433	0.02	895	0.04
Other Disposal	19,186	0.85	11,062	0.25	28,161	0.83	188,485	7.36	21,713	0.99
Other Treatment	353,211	15.6	246,255	5.57	154,130	5	96,140	3.75	23,816	1.09
Total	2,262,506	100	4,422,543	100	3,381,253	100	2,562,033	100	2,186,299	100

⁴² <http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23050>

⁴³ <http://www.sazp.sk/public/index/go.php?id=2095>

⁴⁴ http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/priloha_03.pdf

⁴⁵ http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/priloha_03.pdf

Table 4 Hazardous CDW treatment in Slovakia in 2005 – 2009⁴²

Treatment method	2005		2006		2007		2008		2009	
	Tonnes	%								
Material Recovery	90,202	47.64	70,302	35.87	22,667	12.82	27,009	13.71	7,087	3.08
Energy Recovery	0	0	9	0.00	12	0.01	5	0.00	11	0.00
Other Recovery	3,331	1.76	12,858	6.56	8,294	4.69	11,968	6.07	69,455	30.17
Landfill	33,817	17.86	16,714	8.53	24,029	13.59	15,916	8.08	32,851	14.27
Incineration without energy recovery	278	0.15	206	0.11	297	0.17	14	0.01	36	0.02
Other Disposal	53,640	28.33	90,388	46.12	102,906	58.20	136,118	69.08	120,007	52.13
Other Treatment	8,081	4.27	5,491	2.80	18,622	10.53	6,020	3.06	751	0.33
Total	189,349	100	195,968	100	176,827	100	197,050	100	230,198	100

Section 3.4.5 of the WPP SR describes the target **to reduce the amount of landfilled CDW**. However, the actual target is not quantified. The measures set to achieve CDW diversion from landfill are:

- The definition of end of waste for CDW (original deadline: December, 2014). This has not been established.
- Implementing a legal obligation to separate CDW on-site to enable re-use or recycling or for particular types of construction materials, so that they can be preferentially reused. Deadline: December 2014.
- Update the waste legislation with increasing support of CDW recycling. Deadline: Continuous.
- Implementing obligations to use recycled building materials on public construction projects provided it complies with the technical requirements of the building. Deadline: December, 2014.
- Provide measures to support the CDW bazars centres or CDW reuse centres. Deadline: December 2015.

The calculation method used for the CDW target is following the Waste Framework Directive, under Article 11 (2b) of Directive 2008/98 / EC on waste based on the methodology for the calculation of the objectives of the Directive, as set out in Annex III of Decision 2011/753 / EU. This establishes the rules and calculation methods for verifying compliance with the targets set out in Article 1 paragraph 2 Directive of the European Parliament and Council Directive 2008/98 / EC. The calculation is taking into account all CDW in Chapter 17 Waste Codes except hazardous types of construction waste and 17 05 04 and 17 05 06.

4. Non legislative instruments

In this section, other instruments that specify how Slovakia is addressing CDW management are highlighted.

Description Sustainability standards	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
Environmental Management System ISO14001 and EMAS	From 1292 companies using ISO 14001 in Slovakia construction sector represents 24% (2013)		http://www.enviroportal.sk/uploads/spravy/2013-sprava-o-stave-zp.pdf
BREEAM and LEED	32 certified buildings in Slovakia - from which 27 are in one part of Bratislava – Ruzinov ⁴⁶ .	SKGBC has been established in Slovakia in 2011	http://www.teraz.sk/ekonomika/slovenska-rada-zelene-budovy-cena/120262-clanok.html

Extended producer responsibility (EPR)

Material/ product type	Mandatory or Voluntary	Year est.	National or regional (specify if regional)	Public sector and Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information
EPR for electrical and electronic equipment, batteries, packaging, vehicles, tyres, non-packaging products (made of plastics, paper and cardboard and glass)	Waste Act 79/2015 Mandatory	2016	National		Not commenced yet	The producers will have to finance the collection of their products from consumers. http://www.zakonypr.eludi.sk/zz/2015-79

⁴⁶ <http://www.teraz.sk/ekonomika/slovenska-rada-zelene-budovy-cena/120262-clanok.html>

Standards for recycled construction materials

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year est.	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
Regulation no. 133/2013 on construction products	Yes	2013	National	Requires recycled construction material to have a declaration of conformity with the relevant standards for construction products and be harmless for the environment and human health		
Standards for recycled CDW Standard STN EN 933-11	Technical assessment for classification of components of coarse recycled aggregate	Released in 2009	National	Recycled aggregates must have a declaration of conformity with the standard and be harmless for the environment and human health	Not found	http://www.unms.sk/swift_data/source/dokumenty/technicka_normalizacia/ve stniky/2010/Vestnik %20UNMS%20SR %201_2010.pdf
Standard STN EN 1744	Assessment method for chemical properties of aggregates		National	"Assessment methods for chemical properties of aggregates" consists of six parts, which assessed suitability of recycled material for the various uses and the storage conditions	Not found	http://www.saig.sk/normotvorba.php
Other CDW planning requirements § 19 of the Regulation no. 283/2001 as amended by 310/2013	Requirement to identify hazardous properties of future CDW	2001	National		Not found	http://www.zakonyp reludi.sk/zz/2013-310

CDW management guidance and tools

No CDW management guidance and tools were found.

Technical guidelines/standards/ Codes of Practice for the use of CDW in construction application

No Technical guidelines/standards/ Codes of Practice for the use of CDW in construction applications were found.

Other instruments

- **The Waste Prevention Programme 2014-2018 for Slovakia** aims to reduce the amount of landfilled CDW by applying certain measures (these are described further in Section 3.4 of this document). Plans have been made to establish a public information portal, which will allow people to access opportunities for waste prevention in Slovakia.

- **A Hungarian-Slovakian Cross-Border Co-Operation Programme called REPROWIS – Reducing Production Waste by Industrial Symbiosis**⁴⁷ is an industrial symbiosis programme conducting surveys, research and workshops in aim of identifying potential materials for re-use from SME's. The project has had a slow response in Slovakia. The reason is a lack of valid definition of waste and legislation for 'end-of- waste in Slovakia'⁴⁸.
- There are a number of **waste exchange sites** dealing with CDW, for example:
 - Bazos - <http://dom.bazos.sk/stavebny/>
 - Internetove stavebniny - <http://www.internetovestavebniny.sk/uvod/bazar-stavebneho-materialu>
 - Bazar - <http://www.internetovestavebniny.sk/uvod/bazar-stavebneho-materialu>
 - Top Bazar - <http://www.top-bazar.sk/dom-a-zahrada/stavebny-material/>
- **“EVP” is nationally used for the labelling of environmentally friendly products.** Environmental labelling, used also for sustainable construction materials, is regulated by Act no. 469/2002, the environmental labelling of products, as amended by the Act no. 587/2004 Coll. and Act no. 217/2007 and Decree no. 258/2003.
- There is also a second type of environmental labelling according to **STN ISO 14021**. This is a self-declaration formulated by manufacturers, importers, distributors, retailers or anyone who is likely to benefit from claiming environmental products. Self-declaration may be done without a third party certification. Based on the requirements of this standard, masonry blocks from porous concrete called **PORFIX** were certified in Zemianske Kostofany. The product is utilising 160,000 tonnes of inorganic waste annually that would otherwise end up in landfill.
- One of the defined sectorial priorities of environmental care is also the **promotion of environmental education, science, research and development, environmental monitoring and voluntary environmental policy instruments**. This includes mandatory environmental education in schools, sustainability competitions and festivals⁴⁹.
- The expert journals **Odpady** (Waste) and **Odpadove Hospodarstvo** (Waste Management) are issued by a private publisher on a monthly basis. The experts are also publishing their contributions to the Czech – Slovak journal **Odpadové forum** (Waste forum), issued by Czech publishing house CEMC Praha. This publishing house is also issuing internet specialised journal Waste Forum which is very popular for Slovak contributors from research and academic environment. The journals occasionally mention CDW e.g. 05/2015 Odpadove Hospodarstvo.

Hazardous waste management

According to the Waste act 223/2002 (§ 40) it is forbidden to mix different types of hazardous waste, or mix hazardous waste with non-hazardous waste. Regulation no. 310/2013 (§ 18) requires hazardous waste producers to arrange for analytical testing of waste before sending it to a facility.

⁴⁷ http://reprowis.hu/en/home/what_we_do

⁴⁸ <http://www.minzp.sk/files/dokumenty/vestnik-mzp/vestnik-01-2014.pdf>

⁴⁹ <http://www.enviroportal.sk/uploads/spravy/2013-sprava-o-stave-zp.pdf>

5. CDW management performance – CDW data

In this section the performance of CDW management in Slovakia is explored.

5.1. CDW generation data

A monitoring system for waste has been established on the basis of Government Resolution no. 442/1992, and is used as part of a combination of several systems able to monitor the state of the environment in Slovakia. The focus of this system is on the collection of waste treatment data. The system is operated by **Waste Management Centre** and **Environmental Management** of the **Slovakian Environmental Agency** (SAŽP - COHEM), which follows the waste generation and management by a number of systems:

- All waste data generation and management is undertaken by the **Regional Waste Information System RISO**. It has collected nationwide data in Slovakia since 1995 from quarterly reports submitted by obligated parties under the Waste Act through the state administration bodies in waste management (district and regional environmental offices). The RISO system is the only CDW data source in Slovakia and includes all economic activities. Data are collated from reports sent by each waste producer if complying with the limit on the obligation to report data.
 - The data are sent to Eurostat by the Statistical Office of Slovak Republic⁵⁰ based on reports from MoE.
- Packaging waste has a designated information system called **PACKAGING**
- WEEE has a designated information system called **ELECTRO**⁵¹

The obligations for keeping records and reporting of waste generation and treatment is currently established in **Decree no. 283/2001**⁵² on the implementation of certain provisions of the Waste Act, as amended. **Waste producers and waste “holders”** (compulsory subjects) keep records and report data according to § 19 par.1 point f) and g) of the 223/2001 Waste Act. **Operators of recovery/disposal facilities** keep records and report according to § 21 par. 1 point f) and g) of the 223/2001 Waste Act. These reports for individual establishments are made annually in accordance with § 10 para. 2 of Decree no. 283/2001, and are sent to the relevant Environmental District Office. Data is then collectively entered into the RISO system⁵³.

5.2. Comparison of CDW generation data from MoE SR to Eurostat data

The CDW generation data by Eurostat (Table 5) is lower than the data received from the MoE (available in sheet 'Table_Gs3' of the excel spread sheet), as the MoE has supplied data for CDW treatment only. It is assumed that the total of these data represent the CDW generation data and is also thought to include excavation waste.

Table 5 Construction waste generation data by Eurostat

	CDW Generation – Slovakia			
	2006	2008	2010	2012
CDW Generation data from EUROSTAT	916,228	1,301,760	1,786,430	806,184
CDW Generation data from MoE	4,365,151	2,424,772	2,879,010	1,612,998

⁵⁰ www.statistics.sk

⁵¹ <https://www.enviroportal.sk/environmentalne-temy/rizikove-factory-v-zp/odpady/cms-odpady>

⁵² <http://www.zakonypreludi.sk/zz/2001-283#f5818855>

⁵³ <https://www.enviroportal.sk/environmentalne-temy/rizikove-factory-v-zp/odpady/cms-odpady>

5.3. CDW treatment data

Waste generation/treatment reports are submitted annually to the District Environmental Office (as described in Section 5.1). These reports demonstrate the summary data for each waste type, treatment type and the treatment facility. The EU regulation lays down the codes for treatments:

- "R" codes (Annex no. 2 of the Waste Act)
- "D" codes (Annex no. 3 of the Waste Act)

They are supplemented by additional treatment codes used in Slovakia:

- "Z" (Collection of waste for temporary storage before further handling at the place of origin),
- "DO" (Domestic Utilisation). This is explained in more detail in Section 6.1.
- "O" code (transfer of waste to other organisation)
- Hazardous wastes shall also include a "Y" – code from Annex. 3 of the Waste Catalogue.

The main CDW types recovered in Slovakia are listed in Table 6.

Table 6 CDW recovered in Slovakia in 2012 and 2013

EWC	Waste streams	Recovery - except backfilling (R2-R11; R5 partim) tonnes	
		2012	2013
170101	Concrete	1,914	1,489
170107	Mixtures of concrete , bricks , tiles and ceramics other than in 170106	151	4,493
170201	Wood		140
170202	Glass	7,118	707
170203	Plastics	791	
170204*	Glass, plastic and wood containing hazardous substances or contaminated by dangerous substances	963	
170301*	Bituminous mixtures containing coal tar		142
170302	Bituminous mixtures other than those mentioned in 170301	4,891	192
170405	Iron and steel	487	
170504	Soil and stones other than those mentioned in 170503	178,340	6,984
170506	Dredging spoil other than those mentioned in the 170505	414,505	192,915
170904	Mixed waste from construction and demolition waste other than in 170901 , 170902 and 170903	2,465	150
Total		600,688	200,049

Regarding pre-treatment facilities for CDW, it is unclear if any exist in Slovakia. As a rule, these are devices that directly recycle CDW Category 17 under activity R5. It will be important to establish identical and clear rules for recycling facilities of construction waste to increase the level of material recovery and recycling process outputs⁵⁴.

The amount of CDW temporarily stored before further handling at the place of origin for 2013 is listed in Table 7. This data was obtained from the MoE in Slovakia.

⁵⁴ Záhorský Maroš Maros.Zahorsky@enviro.gov.sk

Table 7 Temporary storage of CDW before further handling in 2013

EWC	Waste streams	Treatment Code Z Collection of waste for temporary storage before further handling at the place of origin (tonnes)
170107	Mixtures of concrete , bricks , tiles and ceramics other than 170106	12715
170506	Dredging spoil other than those mentioned in 170505	6709
170101	Concrete	5370
170302	Bituminous mixtures other than those mentioned in 170301	4591
170405	Iron and steel	3008
170504	Soil and stones other than those mentioned in 170503	2547
170904	Mixed waste from construction and demolition waste other than 170901 , 170902 and 170903	1823
170102	Bricks	1659
170103	Tiles and ceramics	277
170204	Glass, plastic and wood containing hazardous substances or contaminated by dangerous substances	96

5.4. CDW exports/imports data

In 2013, MoE SR issued a total of 135 approvals for cross-border transport of waste which permitted the carriage of waste included in Annex III ("Green" list), Part I and Part II and Annex IV (the "amber" list), Part I and Part II Regulation of the European Parliament and Council Regulation (EC) No. 1013/2006 on shipments of waste.

The data included in the spreadsheet Table_IE2 lists the authorisations given for export/import of CDW; it does not show actual exported/imported tonnages.

Import

In 2013, 250,164 tonnes of waste was imported to Slovakia. This includes 3,314 tonnes of waste in Annex IV (the "amber" list) Part I and 550 tonnes of waste in Annex IV (the "amber" list) Part II of EP 12 Regulation (EC) No. 1013/2006, and 246,300 tonnes of waste, that were not classified under the measure. The largest supplier of the 6 importing countries was Austria, which accounted for 128,500 tonnes of waste.

Export

In 2013, 118,889 tonnes of waste was exported. This includes 20,000 tonnes of waste classified under of Annex III ("Green" list), Part I of the Regulation, 14,639.4 tonnes of waste in Annex IV (the "amber" list) Part I and 34,600 tonnes of waste in Annex IV (the "amber" list), Part II Regulation and 49,650 tonnes of waste, that were not classified according to the measure. The majority of exported CDW are metals of within EWC Chapter 17. Export of waste from Slovakia was granted to nine countries: Belgium, Bulgaria, Czech Republic, Netherlands, Hungary, Poland, Austria, Germany and Romania. Of the total authorised amount of waste destined for export, 63.7% went to the Czech Republic with a view to their recovery⁵⁵.

⁵⁵ <http://www.enviroportal.sk/uploads/spravy/2013-04-2-mt-odpady.pdf>

5.5. CDW treatment facilities data

In 2013 there were 18 functioning landfills for inert waste in Slovakia⁵⁶. The total number of landfills for non-hazardous waste was 95 and for hazardous waste 11. This is summarised by regions in Table 7. No information was found on the capacities for these landfills.

Table 6 Landfills in Slovakia in 2013 by region⁵⁷

Region	Landfills of inert waste	Landfills of non-haz. waste	of	Landfills of haz. waste	Total number of landfills
Bratislava	2	3		2	7
Trnava	1	13		1	15
Trencin	2	13		1	16
Nitra	4	14		2	20
Zilina	2	14		0	16
Banska Bystrica	2	13		1	16
Presov	1	15		1	17
Kosice	4	10		3	17
Total	18	95		11	124

Historically, illegal dumping has been a large problem in Slovakia and is in the process of resolution over the last few years. **The National Programme of environmental burden remediation (2010-2015)⁵⁸**, is addressing this issue.

Taking into account the requirements of the WFD, there is a need to increase the capacity for the recovery of CDW in Slovakia. Currently, there are 60 recovery facilities for CDW in operation in Slovakia, of which 41 are mobile devices, but their capacity is not sufficient, according to the WMP SR 2011-2015. There is no existing list of treatment facilities/capacities available in Slovakia. This is the reason that ZRSM ASSOCIATION FOR CONSTRUCTION MATERIAL RECYCLING DEVELOPMENT) have decided to produce such list with a deadline of June 2015. After this, ZRSM will be able to produce an accurate statement about the facilities availability.

- According to ZRSMI:
 - There is sufficient treatment capacity for the generated/recorded amount of CDW. This is proven by the unused capacities available by the ZRSM members;
 - High transport costs are one of the barriers for utilising the existing treatment capacities;
 - On-site recycling of CDW is made complicated by an expensive and difficult system of licences and fees for the transportation of mobile recycling facilities.
 - The CDW recycling facilities are not optimally located across Slovakia⁵⁹.
- There is also a necessity to improve the collection system of CDW within Slovakia. The majority of existing CDW recovery infrastructure is composed of mobile devices for CDW recycling. CDW is

⁵⁷ <http://www.enviroportal.sk/uploads/spravy/2013-sprava-o-stave-zp.pdf>

⁵⁸ http://www.enviroportal.sk/uploads/2011/07/page/environmentalne-temy/envi_6/Statny_porgram_sanacie.pdf

⁵⁹ Ing. Jančo, ZRSM janco@zrsm.eu

crushed in jaw shredders, impact or cone shredders followed by sorting of individual fractions.⁶⁰ The CDW data are not classified for fixed or mobile treatments.

- An incomplete list of CDW treatment facilities is available on the Friends of Earth website, but there are no capacities available⁶¹. In order to meet the requirements for waste diversion from landfill, the amount of energy recovery and fuel production from waste must significantly increase⁶².

Domestic waste Utilisation (treatment code "DO")

Municipal and Regional Authorities are able to provide authorisation to waste producers/holders for the utilisation of waste at home by the Waste Act 223/2001 (§ 7, section 1.p). This may be subject to a professional review depending on the conditions (Directive 126/2004). The waste producer/holder that received an authorisation is allowed to transfer waste suitable for domestic usage as material, fuel or other, except hazardous waste and waste under § 43 a 54a⁶³. CDW streams utilised in this way are mostly wood, concrete, bricks and soil. Exact quantities are available in the data provided by the MoE (more information is in Section 6.1).

5.6. Future projections of CDW generation and treatment

Planning the development of waste management infrastructure in the WMP SR for the years 2016-2020 builds on the approved document "Partnership Agreement on the use of European Structural Funds and investment in the years 2014-2020" and the approved "Operational program for environmental quality 2014 - 202064". The draft WMP SR 2016-2020 states that the capacities of CDW recovery facilities are oversized, and their mobility cover the whole territory of Slovakia. It is therefore not necessary to support the recovery of CDW waste for primary crushing and screening. However, it is necessary to promote technologies that increase the value of the end product.

5.7. Methodology for CDW statistics

The methodology used for gathering CDW generation and treatment data in Slovakia is described in section 5.1 and 5.2 of this document⁶⁵. In comparison to the WFD, Slovakia is using three additional treatments (Z, O and DO) codes.

In recent years there were no significant changes made in the methodology for data collection on waste generation and treatment. A **new Waste Management Information System** is to be developed which will contribute to fundamental clarifications of material flow from production to final processing.

⁶⁰ http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/priloha_03.pdf

⁶¹ <http://www.priateliazeme.sk/spz/node/7567>

⁶² <http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/poh-sr-2011-2015.pdf>

⁶³ <http://www.zakonypreludi.sk/zz/2001-223>

⁶⁴ http://www.opzp.sk/wp-content/uploads/Opera%C4%8Dn%C3%BD-program-Kvalita-%C5%BEivotn%C3%A9ho-prostredia_schv%C3%A1len%C3%BD-EK.pdf

⁶⁵ The excel documents can be sent by email, the relevant person to contact is Záhorský Maroš maros.zahorsky@enviro.gov.sk at the MoE in Slovakia

6. C&D waste management in practice

In this section the CDW management “on ground” in Slovakia is explored.

6.1. CDW management initiatives

This section lists information on any projects or specific initiatives that shows how the legal and non-legal framework is applied.

TETRA K⁶⁶ boards and panels for external and internal construction of non-load bearing walls made from Tetra Pak waste. The manufacturing company is Kuruc.

Description of initiative	Scope	Year est.	National, regional, local (specify which local area/region)	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information
European EQAR prices for recycled building materials	Financial reward for the best project is € 1,000	Not found	International	Industry lead	Not found	http://www.eqar.info/
Stered is an insulation material, which is an alternative to mineral and glass wool	Made of textile waste from end-of-life vehicles	2006	National distribution of product	Company called PR Krajné (privcte)	2,500 tonnes/year of textile waste diverted from landfill	http://www.stered.sk/stered-v-priemysle

⁶⁶ <http://www.kuruc.sk/en/profil/napisali-o-nas/>

Description of initiative	Scope	Year est.	National, regional, local (specify which local area/region)	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information
Annexe 2.TT ETRA K boards and panels for external and internal construction of non-load bearing walls	Annexe 3.T The boards are made from Tetra Pak waste	Not found	n/a Annexe 4.	Annexe 5.Kuruc (private)	Tonnages not found	http://www.kuruc.sk/vyrobky/vyroba-dosiek/
Domestic waste Utilisation (treatment code "DO")	Suitable waste can be utilised at home	2001	Waste producer/holder that received an authorisation is allowed to transfer waste suitable for domestic usage as material, fuel or other	Legislative instrument	12 000 tonnes of CDW has been diverted from landfill	http://www.zakonypreludi.sk/zz/2001-223

In Slovakia there are several companies that even in the current situation are successfully achieving collection, recovery and re-use of recycled building materials. PROSPECT <http://prospectnz.sk/> is a construction company in Nove Zamky with two stationary recycling facilities and a mobile recycling facility. The company has obtained on the EQAR Congress on 8. 5. 2015 EQAR Award (awarded 4 awards) for its activities.

6.2. Stakeholders' engagement

This subsection has details on the contacted parties during the stakeholder consultation in order to incorporate their views, insights and hands-on experience on CDW management initiatives already in place in Slovakia.

The views on CDW recycling/recovery situation of Ing. Ludvik Jančo at ZRSM janco@zrsm.eu.

- The situation for the collection and recycling of CDW is weak and needs to be addressed. Initiatives to improve the CDW situation occur only occasionally and unsystematically. Not even the annual conference *Environmental Protection Techniques*⁶⁷ pay attention to CDW. This was one of the reasons for establishing the **Association for development of CDW recycling (ZRSM)**.⁶⁸
- An essential step of resolving the situation is communication among the entities involved in CDW management. ZRSM therefore has decided to become the coordinator of their CDW activities. ZRSM is periodically organising joint meetings (congresses, conferences, seminars).

Description of initiative	Scope, year established, actors involved	Advantages/ Enabling factors	Disadvantages/ Obstacles	Further information/ web-site
Meetings organised by ZRSM	2011	Enable stakeholders within CDW management to communicate and share best practise	Not enough people involved	www.zrsm.eu

6.3. Waste legislation enforcement

The waste legislation in Slovakia is regulated by the following bodies:

- **The Ministry of Environment MoE** - Department of Waste Management is responsible for preparation and implementation of waste legislation.
- **Slovak Environmental Inspectorate SIŽP** is a part of MoE, who provides environmental inspection activities.
- **Slovak Environmental Agency SAŽP, founded by the MoE** is a professional organization with nationwide coverage based in Banska Bystrica, whose activities are aimed at the protection of environment on the principles of sustainable development. They provide support to the MoE including data analysis and preparation of the Waste Management Plan for SR.
- **Regional Environmental Offices** – prepare Waste Management Plans for regions, second-level authorisation.
- **District Environmental Offices** - issue permits to waste management operations and activities, approve Waste Management Plans of municipalities and waste producers, control activities
- **Local municipalities**
- **The building departments** give out planning permissions for building and demolition.

There are 52 non-governmental ecological/environmental protection orientated organisations in Slovakia, however none of these, at the time of writing are addressing CDW⁶⁹.

⁶⁷ <http://top.sjf.stuba.sk/>

⁶⁸ www.zrsm.eu

⁶⁹ http://www.sazp.sk/slovak/periodika/sprava/kraje/zilina/starostl_strukt.html

Infringements

- The Slovak Environment Agency performs regular inspections to ensure compliance with legislation. From 718 inspections in 2014 regarding waste management activities, 193 cases were found non-compliant. The larger ones concerning CDW wereL.
 - TSR Slovakia, sro, Bratislava, the waste holder handed over construction waste and excavated earth of 3,758 tonnes to an unauthorised person, for which they were fined 4000 Euros.
 - A part of the National Park in Murán plateau was damaged by temporary storage of construction waste.
- There is an initiative for individuals to report illegal dumping and flytipping to the municipality. As a result of this, a report in SME⁷⁰ states that 109 illegal dump sites in the area of Bardejov were discovered, many of these contained construction waste, including asbestos.
- No Infringements on backfilling were found.

6.4. Drivers / barriers to increase CDW recycling

The main drivers and barriers that affect (directly/indirectly) the recycling efforts and boost/impede CDW recycling rates and overall performance in Slovakia are summarised below.

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Financial characteristics		The low cost of landfill, the Moe plans to change this in the future ⁷¹ .
Legislative implementation in practise		<ul style="list-style-type: none"> • The poor implementation of the waste hierarchy • Poor control of waste producers in the field of construction waste • General "official" passivity, lack of control and lack of sanctions against the offenders by the competent authorities, often with justified suspicion of their corrupt and unlawful conduct,
Legislation	<ul style="list-style-type: none"> • Request for permission for building/demolition activities to include a CDW management plan for transfer or disposal of CDW to be submitted to the relevant District/Municipal office before starting work • Stricter rules on illegal dumping of waste in the new Waste Act 	Lack of EoW criteria for CDW I Ignorance of the law and applicable regulations, <ul style="list-style-type: none"> • •

⁷⁰ <http://starinsky.blog.sme.sk/c/374165/vysledky-monitoringu-nelegalnych-skladok-odpadov-v-meste-bardejov.html>

⁷¹ Záhorský Maroš Maros.Zahorsky@enviro.gov.sk

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
	<ul style="list-style-type: none"> The limitations for CDW recycling/recovery in 223/2001 has not been implemented in the new Waste Act 	
Environmental awareness		<ul style="list-style-type: none"> Still insufficient perception of construction waste as an economic category - valuable raw materials General civil ignorance, General disinterest (even disgust) to products from waste;
WMP SR	Waste Management Plan SR 2011-2015 targets	
Market conditions		<ul style="list-style-type: none"> Strong position of companies extracting primary raw materials⁷² and a strong mineral lobby Lack of joint control system of CDW recycling Need to manage investment sources ensuring suitable technology for producing building products from recycled materials; High transport costs
Communication	Few seminars and conferences	<ul style="list-style-type: none"> Communication barriers between stakeholders;
Treatment capacities		<ul style="list-style-type: none"> Insufficient capacity of CDW recycling facilities and their location On-site recycling of CDW in Slovakia is limited due to an expensive and onerous system containing licences and fees for the transportation of mobile recycling facilities
Lack of control from Building Authorities		<p>According to the Processor of construction waste, Rudolph Klokner :</p> <ul style="list-style-type: none"> There are no significant changes required to the current Waste Act, but more importance should be given to comply with the law. Building authorities do not control compliance with the conditions in the statement issued by the competent environmental authority. That's the reason why the construction waste does not end at the collection and recovery facilities⁷³.

⁷² Ing. Jančo, ZRSM janco@zrsm.eu

⁷³ www.odpady-portal.sk The latest issue of magazine Odpadove Hospodarstvo 05/2015

7. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in Slovakia are explored.

7.1. Sector characteristics

The regulators of CDW management in Slovakia are listed in Section 6.3. Other actors involved in CDW management are:

- **CDW producer** - producing CDW from servicing, cleaning, maintenance, and construction or demolition work carried out at the place of business, organisation or other place of activity of natural person, legal person or entrepreneur, for who the work is being carried out. If similar work is being carried out for a natural person, the CDW producer is the person carrying out the work - contractor⁷⁴.
- **Waste producer** - obliged to separate different types of waste and prevent mixing hazardous and non-hazardous waste. They are obliged to develop a WMP only if they produce more than 10 tonnes of hazardous waste or 100 tonnes of non-hazardous waste annually⁷⁵. According to the new Waste Act 79/2015, waste producers are obliged to prevent waste arising, and hazardousness from their activities. However, the responsibilities of CDW producers are not specified except CDW arising from infrastructure works.
- **Waste holders** e.g. waste contractors and re-processors are obliged to:
 - Recover waste from their activities or offer unused waste for recovery to someone else.
 - Arrange the disposal of waste if it is not possible to recover it.
 - Transfer waste only to an authorised person by the Waste Act 223/2001 for waste disposal.
- **Association for development of CDW recycling ZRSM**⁷⁶ is a non-profit organisation focusing on sharing knowledge about best available techniques, supporting research and finding solutions for problematic areas of CDW recycling. There are currently 17 members including construction, research and recycling companies.
- **A.P.O.H. Association of entrepreneurs in the waste industry**⁷⁷ is another membership based organisation providing information about waste in general. No information about CDW was found on their website.
- **Universities performing research on CDW:**
 - Technical University in Bratislava – Faculty of Civil Engineering
 - Technical University in Kosice - Faculty of Civil Engineering and Faculty of Mining, Ecology, Process Control and Geotechnology.
- **Organisation involved in waste awareness campaigns** (SK Priatel'ia Zeme - SPZ Interview 2012) are currently not addressing CDW.
- **Informal sector** - participating in the collection of metal and other waste with a certain market value in Slovakia include Roma population and also people from lower social groups who depend on that activity as a source of income.

Setting up new CDW facilities

Conditions for opening a new facility for the recovery of CDW are defined by The Waste Act 223/2001 and Decree 310/2013 Implementing certain provisions of the Waste Act. The conditions are so general that they

⁷⁴ <http://www.zakonypreludi.sk/zz/2015-79>

⁷⁵ <http://www.zakonypreludi.sk/zz/2001-223>

⁷⁶ <http://www.zrsm.eu/stanovy-zrsm>

⁷⁷ <http://en.apoh.sk/>

are not perceived to be a barrier for the development of recycling. If a planned recovery facility by its parameters is a subject to assessment of environmental impact, it must be before commissioning. However, neither the process of assessing the environmental impacts is a major obstacle to the establishment of similar devices. Moreover, the MoE offers special management in the national regime for mobile device; allowing the approval throughout Slovakia⁷⁸.

Employment in CDW sector

No information was found.

7.2. Exports / imports of CDW

The Slovak Environmental Inspection is responsible for the control of trans-boundary shipments of waste. The MoE issues permits and specifies the conditions for the import, export and transit of waste by Part 4 of the Waste Act.

7.3. CDW as landfill cover

CDW in roadworks

The new Waste Act 79/2015 continues with the obligation for road workers to recover the CDW from roads in the construction, reconstruction and maintenance of roads.

CDW used on the surface

There are no clear legislative rules for CDW to be used. Therefore, the use of construction waste is randomly used for backfilling or settling terrain unevenness, although it would be possible to use it after more efficiently processing.

CDW used for landfill cover

No information was found regarding landfill cover.

7.4. Market conditions / costs and benefits

Financial incentives in Slovakia are limited not only in the form of landfill or treatment fees, but also in the form of fundings for development or penalties. For information, prices from the Recycling Centre ENVIRONCENTRUM, s.r.o. Rastislavova 58, Košice for accepting mixed CDW and selling recycled CDW are summarised in Table 8.

Table 8 CDW Prices for Accepting and Recycling CDW

Price for accepting CDW	€/tonne	€/tonne
	exc VAT	inc VAT
A: CDW max 500mm, contaminated concrete, mixed CDW, excavation	6.58	7.90
B: CDW max 500mm, max contamination 5%	8.42	10.10
C: CDW max 1000mm, no contamination	8.42	10.10
D: CDW max 1000mm, max contamination 5%	11.50	13.80
Price for selling recycled CDW		

⁷⁸ Záhorský Maroš Maros.Zahorsky@enviro.gov.sk

Unsorted soil from excavation for terrain modification and backfilling	0.13	0.15
Separated soil fraction 0-32mm for terrain modification and finish use	3.36	4.00
Separated soil fraction 0-10mm for finishing terrain usage	3.36	4.00
Sand		
Recycled bricks 0-6mm, use in concrete for bricklaying	1.58	1.90
Aggregates		
Recycled bricks 0-32mm	0.58	0.70
Recycled bricks 10-32mm	0.58	0.70
Recycled concrete 0-32mm	2.25	2.70
Recycled concrete 10-32mm	2.25	2.70
Recycled bitumen material 10-32mm	1.08	1.30
Stone		
Recycled brick 32-64mm	0.58	0.70
Recycled brick over 64mm	0.58	0.70
Recycled concrete 32-64mm	2.25	2.70
Recycled concrete over 64mm	2.25	2.70
Recycled bitumen 32-64mm	1.08	1.30
Recycled bitumen over 64mm	1.08	1.30

The financial benefits of CDW recycling/recovery are mentioned on the websites of recycling companies⁷⁹. The magazine 'Construction and Home' is promoting the environmental and financial benefits of recycling⁸⁰.

7.5. Recycled materials from CDW

There are existing standards for recycled aggregates, **STN EN 933-11**, where recycled aggregates must have a declaration of conformity with the standard and be harmless for the environment and human health⁸¹. **Standard STN EN 1744** is used for assessment methods for the chemical properties of aggregates.

No environmental product declarations (EPDs) for construction products including recycled material were found. No information was found on other incentives to use recycled material in construction products in Slovakia.

7.6. Construction sector make up

Construction value is forecast to rise in 2015 for the first time since 2008 compared to the previous years by an average of 2.4%. For large companies, revenue is forecast to increase by 9.5%. Engineering construction companies are forecasted to increase their revenue by 7.1 %. This prediction is according to a new analysis of the Quarterly Slovak construction Q1 / 2015^{th 82}.

⁷⁹ <http://prospectnz.sk/recyklacia/>

⁸⁰ <http://www.stavebnictvoabyvanie.sk/ekobyvanie-energeticke-alternativy/525-povedzme-ano-recyklacii-stavebneho-odpadu>

⁸¹ http://www.unms.sk/swift_data/source/dokumenty/technicka_normalizacia/vestniky/2010/Vestnik%20UNMS%20SR%201_2010.pdf

⁸² <http://www.infoma.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-1-2015.pdf>

The construction production value in 2007 was 5,84bn eur; in 2010 it was 6,001bn eur; in 2013 this reduced to 4,624bn eur⁸³.

Regarding the structural breakdown of the construction sector, in 2013 the following construction works were realised:

- New construction and refurbishment 68%
- Maintenance and service 25.7%
- Other construction works 1.2%
- Abroad works 5.2%

There are currently 184,384 employees in the construction sector.

⁸³ <http://www.telecom.gov.sk/index/index.php?ids=84674>

References

Interview sources

- Interview with Záhorský Maroš, Ministry of Environment, Division of Environmental Assessment and Management, Waste Management Department, Záhorský Maroš Maros.Zahorsky@enviro.gov.sk 08/04/2015, 20/04/2015, 04/05/2015, 29/05/2015
- Interview with Ing Jančo, ZRSM, Ing. Jančo, ZRSM janco@zrsm.eu 18/05/2015, 25/05/2015
- Interview with Karol Koteles, Mayor of obec Chorvaty obecchorvaty@centrum.sk, 22/04/2015, 06/06/2015

Other contacted stakeholders

The following stakeholders have been contacted but didn't participate:

- Betonarka ERPOS, spol. s r.o.
- FIRMA STAV-VET s.r.o.
- A.P.O.H. Association of entrepreneurs in the waste industry
- Technical University in Košice, Faculty of Building

Literature and online sources

- Evaluation of WMP SR Targets, Annex 3 to the WMP SR 2006-201, http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/priloha_03.pdf accessed 08/06/2015
- Raw material policy of SR, Ministry of Economy, <http://www.mhsr.sk/surovinova-politika-5672/127357s>, accessed 08/06/2015
- National Programme of environmental burden remediation (2010-2015) http://www.enviroportal.sk/uploads/2011/07/page/environmentalne-temy/envi_6/Statny_porgram_sanacie.pdf assessed on 08/06/2015
- Kuruc company profile, <http://www.kuruc.sk/en/profil/napisali-o-nas/>, assessed on 09/05/2015
- Faculty of Mechanical Engineering, Technical University Bratislava <http://top.sjf.stuba.sk/> assessed 10/05/2015
- Yearly Construction Report 2014, Ministry of Transport construction and regional development, <http://www.telecom.gov.sk/index/index.php?lang=en>, accessed 22/05/2015
- Association of entrepreneurs in the Waste management <http://en.apoh.sk/> accessed 22/05/2015
- European Parliament and Council Directive 2008/98/EC, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>, accessed 20/05/2015.
- Ministry of Environment Slovakia (2014), Journal ISSN 1335-1567, <http://www.minzp.sk/files/dokumenty/vestnik-mzp/vestnik-01-2014.pdf>, accessed 20/05/2015.
- Ministry of Environment: Press release for building waste in Slovakia, <http://www.minzp.sk/informacie/tlacovy-servis/tlacove-spravy/tlacova-sprava-stavebny-odpad-slovensku.html>, accessed 20/05/2015.
- Regulation no. 119/2010 Coll. Act on packaging, <http://www.zakonypreludi.sk/zz/2010-119>, accessed 20/05/2015.
- Regulation no. 17/2004 Coll. Act on charges for waste disposal, <http://www.zakonypreludi.sk/zz/2004-17>, accessed 20/05/2015.
- Regulation no. 222/1996 Coll. National Council of the Slovak Republic on the organization of local government and on amendments to certain laws, <http://www.zakonypreludi.sk/zz/1996-222>, accessed 20/05/2015.
- Regulation no. 223/2001 Coll. Waste Act, <http://www.zakonypreludi.sk/zz/2001-223>, accessed 20/05/2015.
- Regulation no. 237/2000 Coll., <http://www.zakonypreludi.sk/zz/2000-237>, accessed 20/05/2015.
- Regulation no. 283/2001 Coll. Ministry of Environment of the Slovak Republic on the implementation of certain provisions of the Waste Act, <http://www.zakonypreludi.sk/zz/2001-283>, accessed 20/05/2015.
- Regulation no. 284/2001 Coll. Ministry of Environment of the Slovak Republic establishing a Waste Catalogue, <http://www.zakonypreludi.sk/zz/2001-284>, accessed 20/05/2015.
- Regulation no. 343/2012 Coll., <http://www.zakonypreludi.sk/zz/2012-343>, accessed 20/05/2015.
- Regulation no. 434/2013 Coll. The law amending and supplementing Law no. 17/2004 Coll. Fees for waste disposal, as amended, <http://www.zakonypreludi.sk/zz/2013-434>, accessed 20/05/2015.

- Regulation no. 50/1976. The Law on Territorial Planning and Building Code (Building Act), <http://www.zakonypreludi.sk/zz/1976-50>, accessed 20/05/2015.
- Regulation no. 525/2003 Coll. The law on state administration of the environment and on amendments to certain laws, <http://www.zakonypreludi.sk/zz/2003-525>, accessed 20/05/2015.
- Regulation no. 582/2004 Coll. The law on local taxes and local fees for municipal waste and minor construction waste, <http://www.zakonypreludi.sk/zz/2004-582>, accessed 20/05/2015.
- Regulation no. 75/2002 Coll. Notification of the Ministry of Environment of the Slovak Republic to issue a decree laying down uniform methods for the analytical inspection of waste, <http://www.zakonypreludi.sk/zz/2002-75>, accessed 20/05/2015.
- Regulation no. 79/2015 Coll. Waste Act (2015), <http://www.zakonypreludi.sk/zz/2015-79>, accessed 20/05/2015.
- REPROWIS Project – What we do, http://reprowis.hu/en/home/what_we_do, accessed 29/05/15.
- Regulation no. 310/2013 Coll. Ministry of Environment of the Slovak Republic, <http://www.zakonypreludi.sk/zz/2013-310>, accessed 20/05/2015.
- Directive for the use of inert waste from construction and demolition suitable for rehabilitation, restoration and filling work in the city of Stara Lubovna, Annex to VZN no. 33/2001, http://www.staralubovna.sk/resources/File/smernica_k_vzn_c_33.pdf, accessed: 20/05/2015.
- Regional Environmental Office in Trenčín - Waste Management Program for TRENČIANSKA Region 2011 – 2015, http://www.minv.sk/swift_data/source/verejna_sprava/obu_trencin/informacie_pre_obcanov/o_zivot/2014/odpady/Program_OH_TN_kraja_na_roky_2011_2015___text___na_zverejnenie.pdf, accessed 20/05/2015.
- The Ministry of Environment of the Slovak Republic - Program waste prevention SR for the years 2014 – 2018, <http://www.minzp.sk/files/sekcia-enviromentalneho-hodnotenia-riadenia/odpady-a-obaly/registre-a-zoznamy/ppvo-vlastnymaterial.pdf>, accessed 20/05/2015.
- Ministry of Environment Slovak Republic (2013), Status report environment Slovak Republic 2013, <http://www.enviroportal.sk/uploads/spravy/2013-sprava-o-stave-zp.pdf>.
- Slovak Green Building Council commended the greenest part of Slovakia, <http://www.teraz.sk/ekonomika/slovenska-rada-zelene-budovy-cena/120262-clanok.html>, accessed 20/05/2015.
- Problems in the management of construction waste - Part 2, <http://stavebnitechnika.cz/clanky/problemy-pri-nakladani-si-stavebnym-odpadom-2-cast>, accessed 20/05/2015.
- Regulation no. 310/2013 Coll., <http://www.zakonypreludi.sk/zz/2013-310>, accessed 20/05/2015.
- Waste utilization, recycled materials in the building industry - Possibilities of repeated use of construction materials, http://www.udrzitelnavystavba.cz/WP3_papers/10_Grunner.pdf, accessed 20/05/2015.
- Enviro-portal - CMS Waste, <https://www.enviroportal.sk/environmentalne-temy/rizikove-factory-v-zp/odpady/cms-odpady>, accessed 20/05/2015.
- The Ministry of Environment of the Slovak Republic (undated), Waste Management Program Slovak Republic for the period 2011- 2015, <http://www.minzp.sk/files/oblasti/odpady-a-obaly/poh/poh2011-2015/poh-sr-2011-2015.pdf>.
- Friends of the Earth - Building waste, <http://www.priateliazeme.sk/spz/node/8559>, accessed 20/05/2015.
- European Quality Association for Recycling, <http://www.eqar.info/>, accessed 20/05/2015.
- The discovery of the world ... the world STERED thermal and acoustic insulation solutions, <http://www.stered.sk/uvod?lang=en>, accessed 20/05/2015.
- Building Materials - Construction waste and demolition waste, <http://www.zrsm.eu/>, accessed 20/05/2015.
- Environmental Care – Care structures for the environment, http://www.sazp.sk/slovak/periodika/sprava/kraje/zilina/starostl_strukt.html, accessed 20/05/2015.
- Regulation no. 79/2015 Coll., <http://www.zakonypreludi.sk/zz/2015-79>, accessed 20/05/2015.
- Articles of association for development - Building material recycling, <http://www.zrsm.eu/stanovy-zrsm>, accessed 20/05/2015.
- Prospect Construction Company – Recycling, <http://prospectnz.sk/recyklacia/>, accessed 20/05/2015.
- Say yes, to recycling construction waste, <http://www.stavebnictvoabyvanie.sk/ekobyvanie-energeticke-alternativy/525-povedzme-ano-recyklacii-stavebneho-odpadu>, accessed 20/05/2015.
- CEEC Research (2015), Quarterly analysis of the Slovak construction Q1 / 2015, <http://www.infoma.sk/plochy/galeria/ceec-research/kvartalna-analyza-slovenskeho-stavebnictva-1-2015.pdf>.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.nl/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte has in the region of 200,000 professionals, all committed to becoming the standard of excellence.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the "Deloitte Network") is, by means of this publication, rendering professional advice or services. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.