

Construction and Demolition Waste management in **CZECH REPUBLIC** V2 – September 2015



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Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

In 2012, Czech Republic officially reported that 13.8 million tonnes of CDW was generated. This represents a slight increase of 1.36% when compared to 2011 (13.7 million tonnes; however this is a decrease of 11.22% from 2010 (15.6 million tonnes).

EWC	Waste	Quantity generated in 2012 (million tonnes)
17 01	Concrete, bricks, tiles and ceramics	3.4
17 03	Bituminous mixtures, tar and tar products	0.5
17 05	Soil (including excavated soil from contaminated sites)	8.9
17 06	Isolation and construction materials with asbestos	0.05
17 08	Building material gypsum-based	0.008
17 09	Other construction and demolition wastes	0.5
	Total	13.4

* Since the table above doesn't contain waste categories 17 02 and 17 04, it shows smaller total quantity (13.4 million tonnes) than the above mentioned total 13,8 million tonnes, MoE, WMIS

According to the Waste Prevention Plan of Czech Republic (WPP CR), the targets set within the previous WMP (2003) were successfully met. These targets were:

- The recovery/recycling of 50% (by weight) of CDW produced by 31/12/2005;
- The recovery/recycling of 75% (by weight) of CDW produced by 31/12/2012.

Evidence from the WPP CR demonstrates that from as early as 2005, the rate of utilisation of CDW was 85.1% of the total production, for 2012 this was 95.1%.

Period	CDW Production total (thousand tonnes)	Percentage of waste utilisation (%)
2002	8 802.5	55.9
2003	9 748.5	76.9
2004	14 489.8	77.9
2005	11 893.1	85.1
2006	11 983.1	108.9
2007	14 441.4	93.8
2008	15 421.3	100.9
2009	15 279.7	93.8
2010	15 643.1	84.8
2011	13 701.5	92.3
2012	13 888.0	95.1

N.B. Higher utilisation related to production was due to the fact that these figures also take account of the utilisation of backlog wastes in storage of and wastes from producers not required to report their waste production and handling pursuant to the Waste Act., MoE

Given the current construction activities, there is expected to be an increase in the amount of CDW generated (including excavated soil from contaminated sites). Experts are currently estimating and monitoring the development of CDW production and expect an increase of around 10% by 2020. The WPP CR should prepare sufficient measures in the period 2014-2019 for the subsequent reduction of this waste (years 2020-2025).

CDW management practices

There are 298 landfills in operation in Czech Republic and all of them are in line with legislation. Information about their total capacity is not available, but the capacity according to Ministry of Environment is sufficient. Limited publically available information has been found regarding the proportion of CDW that had been recovered (including recycling or re-use) in Czech Republic, as it is provided by waste type. However the amount of recycled CDW used as building materials in Czech Republic is estimated to be around 10% compared to raw materials used in the built environment. Treatment data shows that for selected waste types, 27% was recycled (2.96 million tonnes) and approximately 20% (2.4 million tonnes) used for landscaping in 2013.

		Selected group of waste according to the List of waste (tonnes)				Total
		17 01	17 03	17 05	17 09	
Code	Waste management of CDW, total	2,993,080	615,839	6,934,469	500,953	11,044,341
R5	Recycling/reclamation of other inorganic materials	1,470,154	360,966	1,035,937	93,996	2,961,053
D1	Deposit into or onto land	193,402	21,832	306,504	129,296	651,034
N1	Use of wastes for landscaping	458,556	5,252	1,913,950	26,767	2,404,525
N11	Use of waste for the deposit reclamation	31,956	Missing	393,635	4,893	430,484
N12	Deposit of wastes as technological material to make landfills safe	205,038	8,889	204,807	106,154	542,888

Main obstacles to sustainable CDW management

- Availability of recycling facilities
 - The recycling of CDW is financially beneficial, but only in circumstances where a recycling facility is sufficiently close to the place of waste arising. Although there are CDW recycling facilities available in or near most large cities, this is not the case for rural locations. Subsequently if there is not a facility nearby, it is more than likely that the waste will end up at a landfill.
- Lack of information

- One of the causes of inefficiencies of the secondary materials market (including CDW) are barriers surrounding information. There is a lack of information regarding the supply and demand in the market. The aim of the Raw Materials Policy Action Plan in Czech Republic is to create a catalogue of entities that come into contact with secondary materials and help to provide information about the availability within the market.
- Non-compliance
 - According to the research and interviews undertaken, it is known that CDW management can be non-compliant in terms of waste management.. Czech Inspectorate of Environment (CEI) found non-compliance during their inspections of landfill operations. The most common issues involved sites exceeding their defined active (uncovered) area of a landfill; the storage of waste containing asbestos outside designated area of the landfill; poor functionality of surface water drainage system along the landfill; and the carry-over of light waste components.
 - There is an issue with the definition of a by-product. The CEI found facilities were often performing various waste alterations (mainly construction waste), where the output was either modified waste or products from waste. The problem was in the classification of originated waste after its modification. It is believed that the legal provision is being intentionally misinterpreted in order to exclude the waste from application of provisions of the Regulation.
 - A reoccurring problem is the unauthorised terrain alterations by means of soil. Research undertaken has found that waste producers often incorrectly assume that soil is a by-product or a non-waste and use it for backfilling or surface alterations without permission. In such cases, the work of regional/local building authorities is deemed to be essential, as they currently deal with terrain alterations within the Building Act.

Main drivers to sustainable CDW management

- Financial incentives
 - The Landfill Tax (19 EUR/tonne of non-hazardous CDW) has been set to encourage the use of more environmentally friendly ways of treatment. The amount of charge should economically disadvantage landfilling and promote reuse and recycling. For this reason, until all landfills are closed, charges for landfilling will be continuously increased.
 - Czech Republic has decreed that Value Added Tax will be decreased for certain recycled materials.
- Legislation
 - The Ministry of Environment is preparing new waste management legislation. The future Decree will specify which waste types may cease to be waste, the criteria and conditions specifying when waste ceases to be waste.
- Landfill bans
 - Czech Republic will ban landfilling of recyclable, reusable and untreated mixed municipal waste after 2023.

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

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

2.1. Definition of waste

Waste is defined in the Waste Act no. 185/2001 as every mobile thing that a person discards, intends to discard, or is obliged to discard¹.

This waste definition from Waste Act no. 185/2001 complies with the definition of the Waste Framework Directive 2008/98/EC (WFD).

2.2. Definition of construction and demolition waste (CDW)

Currently there is no specific definition of CDW in Czech Legislation.

However, § 2, section v) of the Decree 294/2005 on conditions of waste in landfills and their use on the ground surface defines **recycled material from construction and demolition waste (CDW)** as “Material output from a device used for recovery and reuse of non-hazardous CDW other categories of waste and waste similar to CDW, consisting of crushing/milling and separation to different fractions in facilities for that purpose.”²

Packaging waste, municipal waste and electrical waste are not considered CDW.

Non Legislative CDW definition

The Ministry of Environment Czech released *The methodological guidance on the management of construction, demolition and refurbishment waste in 2008*. This document defines **CDW as waste generated during construction, maintenance, refurbishment and demolition of buildings**. The most common waste materials within this are soil, stones and construction products (materials used in the construction). Below is a selection of waste types from the Waste Catalogue, which are considered as CDW³.

Wastes that are considered as construction and demolition wastes suitable for treatment (recycling) according to European List of Wastes

- 17 01 01 Concrete
- 17 01 02 Bricks
- 17 01 03 Tiles and ceramics
- 17 01 07 Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
- 17 02 02 Glass
- 17 03 02 Bituminous mixtures other than those mentioned in 17 03 01
- 17 05 04 Soil and stones other than those mentioned in 17 05 03
- 17 05 08 Track ballast other than those mentioned in 17 05 07
- 17 06 04 Insulation materials other than those mentioned in 17 06 01 and 17 06 03
- 17 08 02 Building gypsum-based materials other than those mentioned in 17 08 01

¹ <http://www.zakonyprolidi.cz/cs/2001-185>

² <http://www.zakonyprolidi.cz/cs/2005-294>

³ http://www.eurochem.cz/files/texts/MP_stavebn%C3%AD_odpad.pdf

- 17 09 04 Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02, and 17 09 03

Wastes that are conditionally excluded from treatment (recycling)

- Wastes containing dangerous substances (ingredients) are conditionally excluded from recycling. Their admission to the facility is possible only if the part of the treatment is separation and removal of hazardous substances (ingredients) of these wastes.
- 17 01 06 * mixtures of concrete, bricks, tiles and ceramics containing dangerous substances
- 17 02 04 * glass, plastic and wood containing hazardous substances or contaminated by dangerous substances
- 17 03 01 * bituminous mixtures containing coal tar
- 17 05 03 * soil and stones containing dangerous substances
- 17 05 05 * dredging spoil containing dangerous substances
- 17 05 07 * track ballast containing dangerous substances
- 17 06 03 * other insulation materials consisting of or containing dangerous substances
- 17 08 01 * Building gypsum-based materials contaminated with dangerous substances
- 17 09 01 * Construction and demolition wastes containing mercury
- 17 09 02 * Construction and demolition wastes containing PCB
- 17 09 03 * other construction and demolition wastes (including mixed construction and demolition wastes) containing dangerous

Wastes that are excluded from admission to a facility for treatment (recycling)

- 17 06 01 * insulation materials containing asbestos
- 17 06 05 * construction materials containing asbestos

Uncontaminated soil and other natural material excavated during construction activities are excluded from the **Waste Act 185/2001** by the **Amendment of Waste Regulation no 169/2013**⁴. The amendment states that the Regulation does not apply to the disposal of uncontaminated soil and other natural material excavated during construction, provided that it can be ensured that the material will be used in its natural state for the purposes of construction on the site from which it was excavated.

The full Chapter 17 of the Waste Catalogue used in Czech Republic is available in Annex 1 of this document. It is in line with the Chapter 17 of the Waste Catalogue in Waste Framework Directive of EU.

2.3. End of Waste (EoW) status

The “end of waste criteria” has been specified in the **Waste Act 185** since 2001. According to § 3 para. 7 of the Waste Act, criteria for recovery operations shall be fulfilled if they are determined for specific uses of by-products referred to in paragraph 5 and waste products referred to in paragraph 6. Some waste (which can include CDW) shall cease to be waste when it has undergone a recovery operation and complies with specific criteria:

- The substance or object is commonly used for specific purposes.
- There is an existing market or demand for the substance or object.
- The use is lawful (substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to the products).
- The use will not lead to overall adverse environmental or human health impacts⁵.

⁴<http://www.zakonyprolidi.cz/cs/2013-169>

These conditions are similar to the ones defined in article 6 (1) and (2) of the WFD. However, there are no set “end of waste” criteria for CDW at the time of writing in Czech Republic.

End of waste criteria under development

The Ministry of Environment is preparing new waste management legislation in Czech Republic. The future Decree will specify which waste types may cease to be waste, the criteria and conditions specifying when waste ceases to be waste. The decree will be prepared in cooperation with the Ministry of Industry and Trade⁶.

Authorities Decision on End of Waste

A final decision whether a material is waste or not, can be made by a local/regional authority on request of the material producer, or if needed for official reasons. The evidence of fulfilling these conditions will have to be presented to the authority by the person who excluded the waste from the waste register. A final decision on whether the material is waste or a by-product or EoW, can be made by the Regional Authority, at the request of the waste producer. The Czech Environmental Inspectorate and the relevant regional authority are in full control of by-product and EoW recognition.

At the time of writing, EoW status for CDW is mainly used by recycling companies for tar products, bricks, soil and aggregates. The waste has to be analysed to comply with the relevant CSN EN for construction materials and to show non-hazardousness for the environment and people⁷.

Practical example

Within Czech Republic there have been examples where waste/by-products have been utilised as a building material. TERMIZO Liberec is one of the three municipal waste incinerators in Czech Republic. The high quality incinerator burns municipal waste for energy. The treated bottom ash is a REACH 1907/2006 certified product called SPRUK, and is used in road and dam construction, backfilling, construction and operation of landfills, overlays of waste deposited in landfills⁸. At the time of writing, there is an on-going administrative proceeding regarding the SPRUK material, as it was found being eco-toxic⁹.

2.4. Definitions of waste treatment operations

The waste management operations are defined by Waste Regulation no.185/2001¹⁰.

- **Purchase of waste** - waste collection, where the wastes are bought by a legal or private individual authorized to do so at a fixed price
- **Waste treatment** - any activity that leads to a change in the chemical, biological or physical properties of waste (including sorting) for the purpose of enabling or facilitating their transport, use, disposal or to reduce their volume, potentially reducing their hazardous properties,
- **Reuse** - procedures that allow products or components that are not waste to be used again for the same purpose for which they were originally intended.
- **Recycling of waste** – any method of reprocessing waste into products, either for their original use or alternatively for a new purpose. This includes the reprocessing of organic materials. The definition of recycling excludes backfilling, energy recovery or processing into products, materials or substances to be used as fuel.

⁶ Jan Marsak from the Ministry of Environment Jan.Marsak@mzp.cz

⁷ Novák, Marek from Skanska Marek.Novak@Skanska.CZ

⁸ <http://www.termizo.mvv.cz/produkty-a-sluzby/material-pro-stavebni-ucely/>

⁹ <http://odpady-online.cz/otazky-kolem-spruk-reakce-reditelstvi-cizp/>

¹⁰ <http://www.zakonyprolidi.cz/cs/2001-185>

- **Recovery** – any operation with result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function even in facilities not intended for waste recovery according to § 14 para. 2, or waste being prepared to fulfil that function. The non-exhaustive list of recovery operations in Annex 3 of the 185/2001 are the same as in WFD Annex 2.
- **Backfilling** is not officially defined by legislation in Czech Republic. However, the conditions for backfilling practises are explained in the relevant legislation below

Non-Hazardous waste from Category 17 05 including excavated soil, stones and minerals can used off site for re-cultivation and closure of landfills, filling the excavation pit mines, quarries and sandpits or for landscaping, reclamation and other surface modifications of land affected by human activity by Decree No. 294/2005¹¹, § 12, § 13 and § 14. Suitable excavation soil can also be used on the ground surface in facilities operated in accordance with the provisions of 185/2001¹² Waste Act, section 14, § 2, but only in the event that its use for this purpose is authorised by the building authority.

Treatment Codes

Czech Republic currently uses additional codes to R & D for waste treatment, which is different than the guidelines by Eurostat. See CDW treatment (section 5) in this document for more information.

3. Legal Framework – Waste Management Plans and Strategies

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

3.1. Legislation concerning CDW in Czech Republic

- The requirements of the European Parliament Directive 2008/98/EC are established in the **Waste Act no. 185/2001**¹¹. This Act emphasises waste prevention, the hierarchy of waste management, and promotes the fundamental principles of environmental protection and public health in waste management.
- Treated waste can be utilised in accordance with **Act no. 185/2001**, which concerns waste and its implemented regulations only in facilities intended for the use of such waste in accordance with § 14 paragraph 1 under the conditions laid down by **Regulation no. 383/2001**¹³ **on details of waste management** (as amended by Decree no. 41/2005, 294/2005, 353/2005, 341/2008 and 351/2008).
- **Decree no. 294/2005**¹⁴ **explains the criteria about landfilling and using waste on the ground surface**. This is the key piece of legislation regarding treated CDW utilisation.
- CDW can be marketed as products in accordance with **Act no. 22/1997**¹⁵ **on technical requirements for products**. These products must be assessed whether their properties fulfil the requirements of **Government Regulation 163/2002**¹⁶ **which establishes technical and safety requirements for selected construction products**. These materials and their use are then no longer covered by the Waste Regulations.

¹¹ <http://www.zakonyprolidi.cz/cs/2005-294>

¹² <http://www.zakonyprolidi.cz/cs/2001-185> & <http://www.arsm.cz/legislativa.php>

¹³ <http://www.zakonyprolidi.cz/cs/2001-383>

¹⁴ <http://www.zakonyprolidi.cz/cs/2005-294>

¹⁵ <http://www.zakonyprolidi.cz/cs/1997-22>

¹⁶ <http://www.zakonyprolidi.cz/cs/2002-163>

- Current **waste prevention** measures in Czech Republic are part of the valid **Waste Management Plan of Czech Republic**¹⁷ (Chapter 3.1), as well as the existing Waste Act no. 185/2001, and the **Act no. 477/2001**¹⁸ **regarding packaging** which contains a number of elements aimed to help promote prevention. Waste prevention in Czech Republic is also part of the practical activities in the context of sustainable development.
- **Building Act 183/2006**¹⁹ part of the Planning and Building (Building Act) requires the Regional/Local Authorities to give permission for demolition of buildings. Part of the permission is to undertake a pre-demolition audit and a CDW management plan.

Landfill ban

A landfill ban has been implemented in Legislation no. 352/2014²⁰. The Regulation will not support landfilling or energy recovery of recyclable municipal waste and ban recyclable waste from landfilling from 2024. Wastes (which could possibly be CDW) currently being banned from landfill (Decree 294/2005¹⁴), used as processing materials, or use on the ground surface are listed below:

- Wastes generated from products that are subject to the obligation to be returned to supplier (§ 38 of the Decree no. 294/2005).
- Liquid waste and waste that by sedimentation releases liquid phase, with the exception of metallic mercury, which is a waste accepted for temporary storage under the conditions of § 9a.
- Hazardous waste, having any of the following hazardous characteristics: explosiveness, high oxidation ability, the ability to produce a highly toxic or toxic gases in contact with water, air or an acid or infectivity, with the exception of metallic mercury, which is a waste taken to temporary storage under the conditions of § 9a.
- Waste which react violently on contact with water.
- Waste chemical and biological substances generated during research, development or teaching activities, whose identity has not been identified or are new and whose effects on man or the environment are not known.
- Waste with strong odour
- Waste containers and equipment containing gas being held at a different pressure to the atmosphere.

Other wastes that should not be landfilled are the ones that fall under the producer's responsibility take back schemes.

End of waste criteria under development

The Ministry of Environment is preparing new waste management legislation in Czech Republic. The future Decree will specify which waste types may cease to be waste, the criteria and conditions specifying when waste ceases to be waste. The decree will be prepared in cooperation with the Ministry of Industry and Trade²¹.

¹⁷ [http://www.mzp.cz/C1257458002F0DC7/cz/poh_cr_prislusne_dokumenty/\\$FILE/OODP-POH_CR_2015_2024_schvalena_verze_20150113.pdf](http://www.mzp.cz/C1257458002F0DC7/cz/poh_cr_prislusne_dokumenty/$FILE/OODP-POH_CR_2015_2024_schvalena_verze_20150113.pdf)

¹⁸ <http://www.zakonyprolidi.cz/cs/2001-477>

¹⁹ <http://www.zakonyprolidi.cz/cs/2006-183>

²⁰ <http://www.zakonyprolidi.cz/cs/2014-352>

²¹ Jan Marsak from the Ministry of Environment Jan.Marsak@mzp.cz

3.2. Waste management plans (WMP) and Strategies

Waste Management Plan

- Qualitative and quantitative objectives regarding waste management are defined within the second **Waste Management Plan of Czech Republic for 2015-2024 (WMP CR)**. Its implementation is reviewed annually by means of an Assessment Report, published on the website of the Ministry of the Environment. The National WMP states that each Regional and Local Authority must complete a WMP that is specific to their individual region.
- Annual reports on the progress of the WMP requirements have to be submitted to the Ministry of Environment at the regional and national level.
- The WMP CR contains a specific section for CDW in section 3.3.1.4. The principles are to regulate the CDW generation and treatment with regards to protection of human health and the environment and maximise the reuse of CDW²². More information on CDW targets is in Section 3.4.

Waste Prevention Plan

The first Waste Prevention Plan of CR (WPP CR) was adopted in 2014²³. There is a section for CDW (page 70 of the WPP), which demonstrates that the targets of 70% CDW recycling/recovery have been met. The plan also recommends the methodological guidelines for the management of CDW.

To prevent waste from building and construction sectors, the chief instruments in the area of CDW are as follows:

- fostering the re-use of building materials;
- information and awareness raising campaigns for all areas involved (producer, designer, builder, citizen);
- producing a self-contained guidance document aimed at the prevention of construction and demolition wastes;
- voluntary agreements (especially with the producers of construction materials and components);
- identifying hazardous substances contained in the building materials;
- instruments for the registration and presentation of safe building materials.

Raw Material Policy

Czech Republic has also produced a Raw Material Policy. This describes the current situation of waste material utilisation in the country as opposed to raw materials. This policy will be followed up with an Action Plan explaining how it can be successfully implemented within the industry.

Planned documents

The Ministry of Environment will be addressing the issue of CDW in the new **Operational Programme of Environment 2014 – 2020** (EU cohesion funds).

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.

²²[http://www.mzp.cz/C1257458002F0DC7/cz/poh_cr_prislusne_dokumenty/\\$FILE/OODP-POH_CR_2015_2024_schvalena_verze_20150113.pdf](http://www.mzp.cz/C1257458002F0DC7/cz/poh_cr_prislusne_dokumenty/$FILE/OODP-POH_CR_2015_2024_schvalena_verze_20150113.pdf)

²³ [http://www.mzp.cz/C1257458002F0DC7/cz/news_141027_PPVO/\\$FILE/OODP-PPVO-2014_10_27.pdf](http://www.mzp.cz/C1257458002F0DC7/cz/news_141027_PPVO/$FILE/OODP-PPVO-2014_10_27.pdf)

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> Waste Act no. 185/2001	Waste Act 185/2001, paragraph 12 sets the prohibition of mixing of hazardous waste (applies to CDW)	2001	http://www.zakonyprolidi.cz/cs/2001-185
<i>National/regional sorting obligation (on-site or in sorting facility)?</i> Waste Act no. 185/2001	Waste Act 185/2001, paragraph 16 sets out an obligation to the waste producer to collect waste sorted by types and categories (can apply to CDW)	2001	http://www.zakonyprolidi.cz/cs/2001-185
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i> Amendment of the Waste Act 229/2014	Municipalities in Czech Republic will have to ensure separate collections of metal and biodegradable waste as well as hazardous waste, paper, plastic and glass	Jan 2015	http://www.psp.cz/sqw/sbirka.sqw?cz=229&r=2014
Government Regulation no. 352/2014 about the waste management plan for CR for 2015-2024	The Regulation will not support landfilling or energy recovery of recyclable waste and ban recyclable waste from landfilling from 2024 (applies to CDW)	2014	https://www.zakonyprolidi.cz/cs/2014-352
<i>Obligation for separate collection and management of hazardous waste from C&D operations? Please specify</i> Waste Act 185/2001	Waste Act 185/2001, paragraph 12 sets prohibition of mixing hazardous waste (applies to CDW)	2001	http://www.zakonyprolidi.cz/cs/2001-185
<i>Decree no. 294/2005 from Ministry of the Environment on the conditions of landfill, and use of the ground surface amending Decree no. 383/2001</i>	Sets conditions for landfilling/management/use on the ground surface of hazardous and non-hazardous waste	2005	http://www.zakonyprolidi.cz/cs/2005-294#cast1
<i>Related Green public procurement requirements</i>	Not legally bound		

3.4. Targets

The targets regarding CDW are as follows:

- The target from the WFD requires that the Member States adopt all necessary measures toward attaining the minimum target of **70% by weight of CDW by 2020**. This includes preparations for re-

use, recycling and further utilisation, including backfills using CDW that does not exhibit any hazardous properties and can be used as substitute for other materials. **This target has been adopted in the WMP CR followed by the Directive number 352/2014²⁴.** The target includes the use of uncontaminated soil and stones for re-cultivation and landscaping.

- The WMP for Czech Republic has a target of utilising 70% of CDW by 2020. However, this is seen as insufficient by the Association for Recycling of Building Materials in Czech Republic (ARSM) because this figure has been met for number of years²⁵.

According to the Waste Prevention Plan of CR, the targets displayed within the previous WMP (2003) have been met. These targets include the utilisation of 50% by weight of the CDW produced by the end of 2005 and 75% by the end of 2012. Table 1 demonstrates that as early as 2005, the rate of utilisation of the CDW was 85.1% of the total production. In 2012, the amount of CDW produced was 13.9m tonnes, at an utilisation rate of 95.1%.

Year	CDW Production total (thousand tonnes)	Percentage of total production of waste (%)	Percentage of waste utilisation (%)
2002	8 802.5	23.2	55.9
2003	9 748.5	26.9	76.9
2004	14 489.8	37.4	77.9
2005	11 893.1	39.9	85.1
2006	11 983.1	42.7	108.9
2007	14 441.4	47.5	93.8
2008	15 421.3	50.1	100.9
2009	15 279.7	47.4	93.8
2010	15 643.1	49.2	84.8
2011	13 701.5	44.7	92.3
2012	13 888.0	46.3	95.1

N.B. Higher utilisation related to production was due to the fact that these figures also take account of the utilisation of backlog wastes in storage of and wastes from producers not required to report their waste production and handling pursuant to the Waste Act. (MoE)

Table 1 Trend in the production of construction and demolition wastes during the 2002 - 2012 period (in tonnes), Source: WPP CR, MoE

Calculation method of WFD target

The CDW target in Czech Republic excludes metals 170504 and excavated soil 170506, therefore the calculation method used complies with Article 11 of WFD. The production CFW is calculated only from other waste (according to the actual characteristics of the waste) Group 17 (list of wastes pursuant to Commission Decision 2000/532/ES) in addition to the waste catalogue number 170504 and 170506. Material recovery CDW (others) is calculated from the waste reported as other waste according to the actual characteristics of 17 (list of wastes pursuant to Commission Decision 2000/532/ES), excluding waste catalogue numbers 170504 and 170506 for which the use was reported codes except backfill (recovery without backfill). Material use of construction and demolition waste - backfill is derived from waste reported as other waste according to the actual characteristics of 17 (list of wastes pursuant to Commission Decision 2000/532/ES), excluding waste catalogue numbers 170504 and 170506 for which the use was reported code stated for backfilling.

²⁴ <http://www.zakonyprolidi.cz/cs/2014-352>

²⁵ Sbornik RECYCLING 2015 by ARSM

Regional Waste Management Plan

The Regional/Local Authorities are expected to adopt the National WMP CR targets in their specific WMP depending on their conditions and abilities. There is an example of a Regional/Local Authority from Region Vysocina WMP²⁶.

The **Methodological Guideline for the management of construction and demolition wastes** recommends that when a structure is being demolished the construction components thereof be re-used for their original purposes. The issues of prevention of construction and demolition wastes are not addressed in any great detail in the document.

4. Non legislative instruments

In this section, any instruments which specify how Czech Republic is addressing the question of sustainable CDW management are highlighted.

The table below shows sustainability standards that are used in Czech Republic for construction projects – these standards will include requirements for CDW.

Key sustainability initiatives

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>Sustainability standards that cover CDW (e.g. BREEAM)</i> BREEAM	Widely used in Czech Republic. The main incentive is to attract international customers with BREEAM certified buildings.	GBC CR	http://www.czgbc.org/certifikace/breeam
LEED	Often used in Czech Republic Same as above	GBC CR	http://www.czgbc.org/certifikace/leed

The next table explains the extended producer responsibility (EPR) for voluntary and mandatory schemes operating in Czech Republic.

²⁶ <http://www.kr-vysocina.cz/plan-odpadoveho-hospodarstvi-kraje-vysocina-poh-kv/d-1326686>

Extended producer responsibility schemes (EPR)

Material/ product type	Mandatory or Voluntary	Year established	National or regional (specify if regional)	Public sector and Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
Packaging take back	Mandatory	2001	Act No. 477/2001 Coll., on Packaging	Not found	Not found	http://www.zakonyprolidi.cz/hledani?text=477%
End of life vehicles, accumulators	Mandatory	2008	Decree no. 352/2008 national level – collective systems	Not found	Not found	http://www.zakonyprolidi.cz/cs/2008-352
WEEE	Mandatory	2005	Decree 352/2005 on the details of management of waste electrical and electronic equipment (WEEE),	Not found	Not found	http://www.zakonyprolidi.cz/cs/2005-352

There are existing “take-back” requirements for **End-of-Life Vehicles** (with necessary recovery targets for plastic and metal parts); for **Electric and Electronic Equipment** (refrigerator with CFCs are the most problematic, TV sets containing certain amounts of phosphorous and lead, and fluorescent tubes containing mercury) and for portable **accumulators** (industrials and car accumulators). A mandatory agreement based on Act 477/2001²⁷, for packaging applies to any entity that puts into circulation any **packaging or packaged products**, mainly those who produce, import or sell.

²⁷ <http://www.zakonyprolidi.cz/cs/2001-477>

Key CDW Management Guidance

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/ web-site
The Methodological Guidance on CDW management recommends performing an inspection of the buildings and its surroundings before demolition. The inspection should identify parts of buildings that contain hazardous materials. These parts of the building should be removed from the construction separately. This prevents mixing hazardous with non-hazardous wastes. Particular attention should be paid to the determination of parts containing asbestos. For refurbishment or building maintenance a similar process should take place	It's not legislation, therefore not mandatory. It depends on the individual project manager and the building size how thoroughly the audit will be done	2008	National	Ministry of Environment	High / Medium	http://www.eurochem.cz/files/texts/MP_stavebn%C3%AAD_odpad.pdf
Standards for recycled CDW are the same as for primary products Act no 22/1997 on technical requirement for products		1997	National		Not Found	http://www.zakonyprolidi.cz/cs/1997-22
Regulation number 163/2002 laying down technical requirements for selected construction products		2002	National		Not Found	http://www.zakonyprolidi.cz/cs/2002-163

CDW Initiatives

Description of initiative	Scope	Year est.	National, regional, local	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
Raw Material Policy of CR	<p>1. Priority use of domestic Mineral Resources 2. Turning waste into resources</p> <p>This policy is followed with an Action Plan which illustrates how this can be successfully implemented into the industry²⁸.</p>			Ministry of Industry and Trade		http://www.spov.org/data/files/surovinovapolitika072012.pdf
Value-Added-Tax for certain types of recycled materials	<p>Czech Republic has decreased Value Added Tax for certain types of recycled materials, for certain services, as well as for green public procurement to promote recycling</p> <p>It is not clear whether this has been implemented yet.</p>					http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/czech/Waste_Management.pdf

5. CDW management performance – CDW data

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

Waste Data collection

Data collected by the Ministry of Environment/Czech Environmental Information Agency

- **The integrated system of compliance with the reporting duties (ISPOP)**²⁹ established by Act no. 25/2008 on integrated register of environmental pollution and integrated system performance reporting obligations in the environmental field is founded by the Ministry of Environment and supported by CENIA, Czech Environmental Information Agency. The system collects data from all waste producers and waste facilities by annual reports. The reporting is the same for even and uneven years.

²⁸ <http://www.spov.org/data/files/surovinovapolitika072012.pdf>

²⁹ <https://www.ispop.cz/magnoliaPublic/cenia-project/uvod.html>

- **Public Waste Management Information System (VISOH)³⁰** is a national database information system using data from ISPOP, which provides data on the production and waste management and information on facilities for treatment, recovery and disposal of waste for public. The reason for its creation in 2001 was the need to create a system in which it would be possible to store data on waste based on the Regulation 185/2001 On waste and amending certain other acts, as amended. This requires selected originators and beneficiaries to annually report to the relevant authorities.
- The Database of Waste Management Ministry of Environment (MoE) is based on the duties of the Act no. 185/2001 Coll., On waste, as amended, and Decree no. 383/2001 Coll., On details of waste management and Decree no. 381 / 2001 Sb. establishing the Waste Catalogue, a list of hazardous wastes and lists of wastes and countries for the purpose of export, import and transit of waste and the procedure for granting permission for export, import and transit of waste (Waste Catalogue).
- Producers of waste and licensed persons (plant operators) are obliged to keep operating records of the quantities of waste and waste management methods. Waste producers and beneficiaries are required to record on waste generation and waste treatment for each year to MoE.
- Authentication process takes place in two steps. The first checks are at the level of municipal offices with extended powers and the second is an 'oversight' implemented through the Ministry of Environment (in cooperation with CENIA).
- The basic source of data is the Waste Management Information System (ISOH), in which data are obtained on the basis of Act no. 185/2001 Coll., On waste and its implementing regulations. The source for the calculation of most documents as well as indicators for WMP is "Working Database Waste Management Information System" (PDISOH). When calculating the indicator I.34 data source is a national database of packaging waste. More information on the Database Waste Management Information System can be found in the document "Development of a mathematical expression for calculating" Indicators System OH "in accordance with Decree no. 383/2001 Coll., on details of waste management "issued for the relevant assessment year.

Czech Statistical office

Czech CSO has its own source of information governed by statistical rules. Outputs are regularly reported to Eurostat by EWC and NACE ³¹.

Differences in data

The data from MoE and CSO show different values. The difference occurs from the respondents, used statistical methods, statistical calculations, etc. At the time of writing, discussions are being undertaken on how the two systems could match, to have just one type of waste data.

³⁰ <http://isoh.cenia.cz/groupisoh/>

³¹ Lucie Vacková lucie.vackova@czso.cz

4.1. CDW Generation data

A detailed overview of non-hazardous CDW generation from VISOH Ministry of Environment is shown in Table 2. It is apparent that the total production of CDW is strongly influenced by category 17 05: Soil (including excavated soil from contaminated sites), stones and dredging spoil.

Table 2 Detailed CDW generation data from Sbornik RECYCLING 2015, www.arasm.cz.

EWC	Waste	CDW production per year(tonnes)				
		2009	2010	2011	2012	2013
17 01	Concrete, bricks, tiles and ceramics	2,998,000	3,167,000	3,033,000	3,445,000	3,249,000
17 01 01	Concrete	1,132,000	1,163,000	1,127,000	1,385,000	1,292,000
17 01 02	Bricks	919,000	834,000	776,000	735,000	757,000
17 01 03	Tiles and ceramic products	15,000	18,000	11,000	14,000	12,000
17 01 07	Mixtures other than no. 17 01 06	886,000	1,130,000	1,092,000	1,250,000	1,172,000
17 03	Bituminous mixtures, tar and tar products	516,000	466,000	443,000	531,000	510,000
17 03 02	Asphalt . mixtures other than no. 17 03 01	513,000	456,000	439,000	526,000	508,000
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil	10,708,000	10,845,000	9,053,000	8,908,000	9,966,000
17 05 04	Soil and stones other than mentioned in 17 05 03	9,116,000	8,825,000	8,420,000	7,832,000	9,442,000
17 05 06	Dredging spoil other than no. 17 05 05	1,003,000	1,687,000	306,000	622,000	130,000
17 05 08	Track ballast other than those mentioned 17 05 07	54,000	47,000	60,000	64,000	80,000
17 06	Insulation and construction materials with asbestos	74,000	111,000	71,000	59,000	61,000
17 08	Building material gypsum-based	7,000	7,000	7,000	8,000	9,000
17 09	Other construction and demolition wastes	580,000	614,000	630,000	496,000	60,9000
17 09 04	Mixed CDW not mentioned in 17 09 01, 02, 03	485,000	555,000	585,000	473,000	590,000
	Total	14,883,000	15,210,000	1,323,7000	13,447,000	14,404,000

CDW generation data provided by the MoE are displayed in Table 3. Total production of CDW in Table 2 includes waste types that are listed in the Catalogue of waste in group 17, except the category 17 04 (metals), which is excluded from the CDW production and treatment figures in Sbornik RECYCLING 2015. This procedure may cause the difference data in the Tables 2 and 3.

Table 3 CDW generation data from the excel collection sheet provided by the MoE/CENIA

year	Hazardousness (tonnes)		
	HAZ	NHAZ	TOTAL
2013	369,791	14,624,044	14,993,835
2012	539,835	16,711,489	17,251,323
2011	394,109	16,914,389	17,308,497
2010	472,450	17,889,966	18,362,416
2009	690,266	17,662,221	18,352,486

Hazardous waste management

The requirements to manage hazardous waste are set by The Ministry of Environment and the Ministry of Health in Decree no. 376/2001. Only a person who meets the requirement set within § 5, para. 4 of the Decree no. 376/2001, and has received training for the evaluation of hazardous properties of wastes approved by the Ministry of the Environment or the Ministry of Health in accordance with § 7 para. 6 and 7 the Waste Act should evaluate the hazardous properties of waste. These wastes should be dealt according to their hazardous properties – landfill, incineration or biodegradation.

The main CDW waste streams treated in Czech Republic are listed below:

- 17 01 - Concrete, bricks, tiles and ceramics.
- 17 03 - Bituminous mixtures, coal tar and tarred products.
- 17 05 - Soil (including excavated soil from contaminated sites), stones and dredging spoil.
- 17 09 - Other construction and demolition wastes.

4.2. CDW treatment data

Czech Statistical Office has recently released CDW treatment data (Table 4) on request of the Association buyers and processors of secondary materials. This data is currently available for 2013 only, as the data was not collated before this date³².

Table 4 CDW treatment data in CR for 2013

Code	Waste management of CDW, total	Selected group of waste according to the List of waste (tonnes)				Total
		17 01	17 03	17 05	17 09	
	Waste management of CDW, total	2,993,080	615,839	6,934,469	500,953	11,044,341
R5	Recycling/reclamation of other inorganic materials	1,470,154	360,966	1,035,937	93,996	2,961,053
D1	Deposit into or onto land	193,402	21,832	306,504	129,296	651,034

³² Lucie Vacková lucie.vackova@czso.cz Czech Statistical Office

N1	<i>Use of wastes for landscaping</i>	458,556	5,252	1,913,950	26,767	2,404,525
N11	<i>Use of waste for the deposit reclamation</i>	31,956	Missing	393,635	4,893	430,484
N12	<i>Deposit of wastes as technological material to make landfills safe</i>	205,038	8,889	204,807	106,154	542,888

The N codes for waste management illustrated in Table 4 have been established in Decree 383/2001³³ and developed by the Ministry of the Environment. These codes concern waste management. These codes are different than the R&D codes used by the European legislation. The CZSO data is in compliance with Decree 383/2001²⁷ using waste management codes in Annex 2 (otherwise, the respondents of waste would had to keep two records - one for CZSO – R&D codes and one for Ministry of Environment - R , N and D codes).

CDW treatment data

The treatment data provided by the MoE is shown in Table 5.

Table 5 CDW treatment data provided by the MoE

Tonnes	HAZ	NHAZ	TOTAL
Total treatment	109,807	3,681,369	12,362,898
Disposal (All D codes)	31,929	299,293	331,222
Backfilling R5	4,223	98,893	103,115
Energy Recovery R1	10	424	433
Other recovery - except backfilling (R2-R11; R5 partim)	73,646	3,282,759	3,356,405

- Limited publically available information has been found regarding the proportion of CDW that had been recovered (including recycling or re-use) in Czech Republic, as it has not been broken down by waste type. However the amount of recycled CDW used as building materials in Czech Republic is about 10% compared to raw materials used in the built environment³⁴.
- On-site or off-site treatment is not specified in the waste data collection form, therefore the MoE/CENIA data doesn't contain information for on-site and off-site treatment separately.
- The majority of CDW treatments in Czech Republic consist of crushing, shredding and mechanical sorting. However, the MoE is not aware that this could lead to reclassification from LoW Chapter 17 to Chapter 19 and therefore loss of CDW streams before their final treatments

4.3. CDW exports/imports data

The legal requirements from the EC for the shipment of waste are established in the Waste Act No. 185/2001 Coll. the Decrees No. 381/2001 Coll. as amended, and No. 374/2008 Coll. The implementation of

³³ http://www.ceskestavebnictvi.cz/pdf/14/Dokumenty_%C4%8CR/ekologie%20a%20hygiena/2001_383_Sb.pdf

³⁴ Ministry of Industry and Trade (2012), Raw Material Policy – Czech Republic
<http://www.spov.org/data/files/surovinovapolitika072012.pdf>

[http://www.mzp.cz/C1257458002F0DC7/cz/indikatory_odpadoveho_hospodarstvi_2013/\\$FILE/OODP_Soustava_indikatoru_OH_2013-20141030.pdf](http://www.mzp.cz/C1257458002F0DC7/cz/indikatory_odpadoveho_hospodarstvi_2013/$FILE/OODP_Soustava_indikatoru_OH_2013-20141030.pdf)

<http://stavebni-technika.cz/clanky/systemy-recyklace-stavebnich-a-demolicnich-odpadu/>

these requirements into Czech legislation ensures that the quantity of international hazardous waste traffic is kept to a minimum. The prevention of illegal shipments is mainly controlled by Czech Inspection of Environment, who can inspect the source of waste production, while the Customs Office makes an inspection during waste transport. Table 6 shows CDW import and export data.

Table 6 Import and export data provided by the MoE

Waste Category	year	unit	Imports			Exports		
			HAZ	NHAZ	TOTAL	HAZ	NHAZ	TOTAL
TOTAL CDW	2013	T	9.614	658672	658682	3653	1161974	1165628
TOTAL CDW	2012	T	1.4	594215	594216	2743	1418613	1421356
TOTAL CDW	2011	T	99.45	635498	635597	3224	1472715	1475940
TOTAL CDW	2010	T	39	510801	510840	549	1242924	1243474
TOTAL CDW	2009	T	7.	413305	413312	227	724152	724380

The exported CDW streams from Czech Republic in 2013 to EU and non-EU countries are listed in Table 7. Information about their treatment/disposal has not been found.

Table 7 CDW Export by waste type

EWC	Hazardous waste (tonnes)	Non-Hazardous waste (tonnes)	Total (tonnes)
170202		658	658
170203		415	415
170204	3653		3653
170401		49,547	49,547
170402		31,507	31,507
170403		816	816
170404		2729	2729
170405		106,368,2	106,368,2
170406		42	42
170407		9414	9414
170411		2823	2823
170604		336	336
Grand Total	3653	1161974	1165628

4.4. CDW treatment facilities data

At the time of writing, there are 298 landfills in operation in Czech Republic. All of them are in line with the legislation³⁵. They are divided into three categories:

- landfills for hazardous waste
- landfills for inert waste
- and landfills for other waste (e.g. MSW).

Information about their total capacity is not available, but the capacity according to MoE is sufficient. The landfills are operated both by public and private entities upon approval by the regional authority. The approval to operate landfill for hazardous waste disposal is granted for a fixed period not exceeding 4 years³⁶.

At the time of writing there are 7,021 valid permissions for treatment facilities with waste from group 17 (waste catalogue) in Czech Republic for collection, sorting, recycling, waste recovery, storage, landfill, composting, use of waste for reclamation and waste utilization for landscaping. These are summarised in Table 8.

Table 8 Czech waste treatment facilities, MoE 2015

Facility	Type	Number
Landfill	Inert	<u>39</u>
Landfill	Hazardous waste/combined	<u>25</u>
Landfill	Non-hazardous waste	<u>152</u>
Co-incinerators	Cement Kilns	<u>5</u>
Incinerators	Municipal waste	<u>3</u>
	Hazardous waste	<u>25</u>

There are CDW recycling facilities available in most cities, but rural areas do not usually have a facility in their area. Therefore construction projects in rural areas often choose the option of landfills close by.

Non-compliances discovered by Czech Environmental Inspectorate

- According to Czech Environmental Inspectorate of (CEI) report, noncompliance was discovered during inspections of **landfill** operations. This included sites exceeding their defined active (uncovered) area of a landfill, detection of large areas in the slopes of dumps with poorly technically secured removed waste, storage of waste containing asbestos outside designated area of the landfill, poor functionality of surface water drainage system along the landfill, carry-over of light waste components.
- A problem with the definition of a by-product occurred during CEI inspections of facilities. Facilities were performing various waste alterations (mainly construction waste), where the output is either modified waste or products from waste. The problem lies in classification of originated waste after its modification, when the legal provision is being intentionally misinterpreted (namely Section 3,

³⁵ Jan.Marsak@mzp.cz

³⁶ <http://www.oecd.org/daf/competition/Waste-management-services-2013.pdf>

Subsections 5 and 6 of the Waste Act) in order to exclude the waste from application of provisions of the Waste Act (by means of so called by-products or products from waste)³⁷.

Storage capacities

There is sufficient storage capacity for CDW in Czech Republic. The amount of stored waste is a matter of commercial policy (CDW trading process) of each facility⁶¹.

4.5. Future projections of CDW generation and treatment

Given the current construction activities, it is expected that there will be an increase in CDW arising (including excavated soil from contaminated sites). Experts are estimating and monitoring the development of CDW production and expect an increase of around 10 % by 2020. The WPP CR should prepare sufficient measures in the period 2014-2019 for the subsequent reduction of this waste (years 2020-2025).

There are two preventative activities in the area concerned with CDW – reducing the production of construction waste, and reducing the amounts of hazardous substances (or enhancing the environment-friendly nature) thereof. This approach however is justified in as much as the EU member States have concentrated on meeting the mandatory requirements from the point of view of attaining a high rate (70 %) of material recycling from the construction waste produced. In order to meet the requirements of the second objective it is necessary in particular to ensure the involvement on the part of the producers of building materials as well as of investors and designers³⁸.

With regards to the future planning of waste management, the GBC CZ may adapt the UK's SMARTWaste system for Czech Republic.

4.6. Methodology for CDW statistics

The Integrated system of reporting obligations (**ISPOP**) is part of the MoE, and technically supported by CENIA. Economic entities have an obligation to report information about the impact of their economic activities on the environment (including waste generation/treatment data)³⁹. The methodology of data collection changed in 2009, but more details on this were not available, at the time of writing. The methodology currently used is described in section 5.1 CDW generation data of this document. The national methodology for gathering data on CDW generation and treatment is in accordance with the instructions provided by Eurostat.

5. C&D waste management in practice

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

5.1. CDW management initiatives

³⁷ http://www.cizp.cz/files/=4263/CIZP_VZ_2013_AJ_f5.pdf

³⁸ **CZECH REPUBLIC'S WASTE PREVENTION PROGRAMME 2014**

³⁹ <https://www.ispop.cz/magnoliaPublic/cenia-project/uvod/oispop.html#jump1>

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/ web-site
Environmental Product Declaration	Providing declaration by suppliers of building materials and components	2014	National	Industry lead	Not found	Czech Republic waste prevention programme 2014
The Association for Recycling of Construction Materials	A public association engaged in solving problems related to the recycling of inert construction and demolition waste. They hold an annual Conference related to CDW recycling and legislation		National	Industry lead	Not found	www.arasm.cz
Environmental technology verification	Opportunity to certify innovative processes (e.g. reprocessing of bricks)	Not found	National	Industry lead	Not found	http://www.tretiruka.cz/eu-etv/uvod/ including funding from EcoAP

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/ web-site
Waste exchanges	There are a number of waste exchange sites advertising materials as soil, stones, bricks, windows, tiles and other.		National	Varies	Not found	SBAZAR http://www.sbazar.cz/hledej/za%20odvoz/22-stavebnictvi-naradi Vse za odvoz http://vsezaodvoz.cz/inzeraty/dum-a-zahrada/stavebniny Bazos http://dum.bazos.cz/?hledat=Daruji+stavebni&hlokalita=&iddel=1 Facebook is also used to advertise unwanted CDW https://www.facebook.com/darujizaodvoz/posts/753916187965799 Nevyhazujto http://nevyhazujto.cz/index.php?mod=search-advert&advert_type_search=0&category_search=0&location_search=0&sub_category_search=70&added_last_24_hours=0&keyword=&include_photo=0&dpp=80 Annonce http://www.annonce.cz/stavebni-material-topeni-barvy-sanita.html
Green Building Council	Has a Sustainable Materials Group which holds seminars and conferences for the latest legislation and best practises regarding sustainable construction and demolition.		National	Industry lead	Not found	http://czgbc.org/list-of-actions

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/ web-site
Research of waste management within the framework of environmental protection and sustainable development (prevention and minimisation of waste production and the evaluation thereof) - Monitoring the streams of re-usable wastes and proposal for an evaluation of products'	In 2011 under the research programme 'an "Outline of mineral extraction practices" was elaborated (a study devoted to reducing the volumes of extraction of raw materials thanks to a replacement thereof by the CDW)	2011	National		Not found	WPP CR
ACT CLEAN	Czech Republic was also involved in the ACT CLEAN project. This provided SME's within Central Europe access to the technology and the training which would allow them to undertake eco-efficient production processes	2011	National			http://act-clean.enviros.cz/

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/ web-site
EVI from INISOFT	This software is used to record waste arising, pollution and packaging by waste producers and waste facilities and landfills. The software is compliant with the MoE - ISPOP reporting requirements and widely used by bigger construction companies.		National	Industry	Not found	The tool does not break down construction waste by construction phase.. The other possible improvement recommended by SKANSKA ⁴⁰ is to record by-products on the system, as they are not recorded anywhere at the moment. http://www.inisoft.cz/strana/evi-8-evidence-odpadu

⁴⁰ Novák, Marek Marek.Novak@Skanska.CZ

SKANSKA is performing best practise in CR. Novák, Marek Marek.Novak@Skanska.CZ was contacted and the following information was collected during the interview:

- Skanska has a specific landfill diversion rate target, stricter than the WMP CR target. Skanska's target is to landfill max 2% of waste (excluding inert soil and demolition waste) from each project.
- The target is not easily achieved as some projects located in rural areas are far away from a CDW recycling facility, therefore the average rate achieved on Czech Skanska projects is around 6% landfilled waste.
- One of the problematic wastes is mineral insulation and polystyrene
- There is also a constant need of reminding workers to separate the waste streams
- CDW is recorded by online software EVI- INISOFT. It would be useful to record the by-products used on site in this system as well, as they are not recorded anywhere at the moment.
- Sometimes the waste legislation makes it impossible to use waste, specific problems are in cases where a laboratory analysis shows the existence of hazardous substance in CDW over the limit by Annex 10 Regulation 294/2005, but the substance is harmful/leachable form, therefore it wouldn't affect the environment. To comply with the legislation, this CDW must be disposed at hazardous waste landfill.

5.2. Stakeholders' engagement

Stakeholder engagement is covered in previous sections.

Communication between stakeholders on CDW

Communication between CDW stakeholders is happening in the form of Seminars and Conferences by ARSM⁴¹ www.arsm.cz. The latest publication from the event is called Sbornik 2015, not available online at time of writing.

5.3. Waste legislation enforcement

The Ministry of Environment (MoE) is responsible for releasing and enforcing the waste regulations, while the Czech **Environmental Inspectorate (CEI)** supervises the enforcement of the legislation by performing inspections. Czech Republic seems to be complying with the targets surrounding the WFD (as described in section 3.4). However, it is unclear on what level they comply with the waste hierarchy.

A reoccurring problem in Czech Republic is unauthorised terrain alterations by means of soil. Waste producers often incorrectly assume that soil is a by-product or a non-waste and use it for backfilling or surface alterations without permission. In such cases, the work of regional/local building authorities is essential, as they deal with terrain alterations within the Building Act. The majority of cases brought to the attention of the CEI refer to an unauthorised use of waste trench soil or construction waste in terrain alterations, or the handling of waste on unauthorised sites⁴².

In terms of undertaking a pre-demolition audit as part of Building Act 183/2006⁴³, the quality can vary, sometimes it can be a very quick inspection done by an unqualified person and the CDW management plan may consist of very vague statements such as: "Demolition waste will be sorted and the materials obtained

⁴¹Doc. Ing. Miroslav Škopán, CSc., president ARSM tel. +420 605 720 234 arsm@arsm.cz

⁴²http://www.cizp.cz/files/=4263/CIZP_VZ_2013_AJ_f5.pdf

⁴³<http://www.zakonyprolidi.cz/cs/2006-183>

will be dealt with in a responsible manner "(quote from the decision to demolish the building of the Municipal Office in Znojmo 2014). However, there are examples of good practice, which give a more accurate description of CDW management. e.g. "Waste arising from construction or demolition works will be handled in accordance with the Act no. 185/2001 On waste and related regulations. All waste generated should be recorded within the scope of the provision. § 21 of the Decree 383/2001. The records including waste transfer notes will be presented at the final building approval" (Quote from a Building demolition report by a small Local Authority near Znojmo 2014)⁴⁴.

Inspections by CEI in 2014

- In 2014, 131 facilities were inspected conducting treatment, processing or recovery of waste and 166 controls on implementation of terrain modifications and reclamation were made. Most infringements were due to the waste management occurring in facilities not licenced for the treated waste type, or facilities operated in contradiction with the approved operational regulations or authorization given.
- The inspections were often dealing with the problem of defining the by-product or the transition to end of waste. The essential problem is a view of the controlled entity considering excavation soil and construction waste after treatment for material and not waste, without the ensuring compliance with legislation.
- A serious issue perceived by CEI experience from 2014 is an issue of demolition waste containing asbestos building elements (sewer pipes, roof covering, etc.). Often this type of inadequately sorted demolition waste is reaching the recycling line ending up in the recycled material. The only way to prevent such actions is a proper separation of demolition waste⁴⁵.
- Illegal dumping is still an on-going issue.

The Ministry of Environment is responsible for regulating exports/imports of waste. Illegal transfer of CDW is not an issue in Czech Republic.

5.4. Drivers / barriers to increase CDW recycling

The main drivers and barriers that affect (directly/indirectly) the CDW recycling rates and the overall performance within Czech Republic are listed.

⁴⁴ Sbornik RECYCLING 2015 by ARSM

⁴⁵ <http://www.cizp.cz/files/=4623/vyrocn%C3%AD%20zprava.pdf>

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Waste prevention	Circular economy is being discussed more often regarding CDW	There has been no focus on waste prevention by industry. The Waste Prevention Plan has only recently been developed and is theoretically focused; More practical guidance is required.
Awareness/education	There are annual conferences by ARSM on CDW with environmental education programs addressing the need of waste recycling in general	There is a lack of awareness of how to manage CDW and divert from landfill. Related to this is the lack of available information for CDW recycling options and related benefits
Financial	Landfill tax (19 eur/tonne of non-hazardous CDW) should economically disadvantage the waste landfilling and promote the waste reuse and recycling. For this reason, until all landfills are closed, charges for landfilling will be continuously increased.	It can be cheaper in many cases to landfill CDW rather than recycle it, especially if the distance of recycling facilities are a long way from the point of waste arising
End of Waste	The Ministry of Environment is preparing new waste management legislation in Czech Republic. The future Decree will specify which waste types may cease to be waste, the criteria and conditions specifying when waste ceases to be waste. The decree will be prepared in cooperation with the Ministry of Industry and Trade.	It may be viewed as easier to continue to classify materials as waste instead of developing end of waste criteria. Additionally, the evaluation criteria can be onerous in for using recycled CDW in terms of their pollutant potential and may be viewed as unfair against primary materials.
Administration		Some of the requirements under the Waste Regulations are viewed as being an administrative burden, without any associated positive benefit.

6. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in Czech Republic is explored. Issues covered in this section concern the CDW sector characteristics including market conditions, enabling factors, import and exports of CDW and the characteristics of recycled CDW products.

6.1. Sector characteristics

Roles of each actor involved in the management of CDW are articulated in national/regional legislation described below:

- **Ministry of the Environment MoE** is the main governmental body regulating all the activities involving waste management in Czech Republic.
- **Czech Environmental Inspectorate (CEI)** is an expert executive body within the state administration charged primarily with supervision in the area of environmental legislation

enforcement. CEI is an independent organization subordinated to the Ministry of the Environment and funded from the state budget.

- **CENIA, Czech Environmental Information Agency** is an organization of the MoE. CENIA's mission is the collection, evaluation, interpretation and distribution of environmental information.
- **Czech statistical office CSO** is the main organization which collects, analyses and disseminates statistical information for the benefit of the various parts of the local and national governments of the Czech Republic.
- **Regions** – There are 13 regions in Czech Republic + the capital city of Prague. Regional offices are regulating Municipalities with extended responsibility, § 78 a § 79 Regulation 185/2001 outlines their responsibilities.
- **Municipalities (6251)** - include environmental offices and building offices
- **Municipalities with extended Responsibility (206)** interlink the regional authorities and municipal authorities. Municipalities with extended powers are deal not only with their own basic administrative district, but usually also with other municipalities in the area.
- **Czech Green Building Council GBC CR** is a non-profit association encouraging the market, educational, and legislative conditions necessary to promote high performance construction that is both sustainable and profitable.
- **Centre for Waste Management CEHO** is providing expert activities and research in the field of waste management and also technical support to the Department of Waste of MoE.
- **Universities** – research and education.
- Within Czech Republic, there is a centre for the evaluation of technologies. The **Research Institute of Building Materials (VUSTAH)**⁴⁶ and a **Czech development and production organisation** - the Technology Centre AS ČR (mainly transfer of technologies)⁴⁷.
- **Czech Trade Inspection**
- **Customs Administration**
- **Police**
- **ECO-Management, s.r.o.** – consultancy
- **Pragotrade spol. s r.o.** – example of CDW treatment facility
- **Association for recycling of building materials in Czech Republic**
- **Research Institute of Building Materials**

Network of CDW treatment facilities

There is an adequate network of treatment facilities for CDW at the time of writing. The future planning depends on the future construction sector's demands⁴⁸.

Their capacities are approved by regional authorities and specified in the operating systems of the facility. Capacity control is carried out within the EIA process during the construction of facilities, within the framework of the Integrated Pollution Prevention and Control IPPC⁴⁹.

Requirements for application for authorisation to operate a facility for recovery, disposal, collection or purchase of waste

The requirements are set in § 1 of Decree 383/2001 On the details of waste management

The request must contain:

⁴⁶ <http://www.vustah.cz/en/>

⁴⁷ <http://www.tc.cz/home/?PHPSESSID=dcea8c9ad4b55bf5d30555aab509393d>

⁴⁸ Jan.Marsak@mzp.cz

⁴⁹ <http://www.ippc.cz/>

- business name or name, legal form and registered office, if the applicant is a legal entity; full name, company name, address and place of business, if different from the residence, if the applicant is a natural person,
- applicant's identification number, if assigned,
- identification and address of the premises where the recovery, disposal, collection or purchase of waste operated, including the legal justification for the applicant's relationship to the subject of business, it is not a mobile device.
- name, surname and place of residence or the residence of the natural person or natural persons authorized to act on behalf of the applicant,
- copy of the business license (e.g. a trade certificate) or a copy of the certificate of incorporation or a copy of the deed of the applicant,
- name, surname waste manager and evidence of his professional competence in accordance with § 15 para. 5 of the Act, if the applicant is according to § 15 of the obligation to appoint a waste manager,
- the name, purpose and technical description of the equipment, including all related equipment, description of technological progress in waste management facilities,
- the list of types of waste under the Waste Catalogue with which the equipment will be handled,
- description of the access routes to the facility in relation to individual modes of transport of waste to the facility, it is not a mobile device.
- Storage facilities
- Proposed monitoring process of the operation effects of the surrounding environment and the health of people for the type of equipment and types of waste
- plan for vocational training of employees on equipment
- draft operational rules and the proposal to of the site diary

Information about employment in CDW sector was not found.

6.2. Exports / imports of CDW

Due to lack of raw materials in Czech Republic, secondary materials (including CDW) constitute a significant part of material base for all sectors in industrial production. The Czech market of secondary materials is in terms of international trade fully integrated, often resulting in significant changes in prices. This is the primary reason that the domestic manufacturing industry is not able to absorb all the offers of domestic recyclers. The ferrous scrap market is very much export related. The domestic generation of scrap metal is almost 3.5 million tonnes, with 2 million of this being exported. Overall, the ratio of exports and imports is 3:1.

Czech export-oriented trade of secondary materials is an effective solution to the surpluses in the domestic market, but it also means exposing the market to foreign trade conditions, which often follows a boom sales slump with all the economic consequences.

Within Czech Republic **Secondary materials** are considered materials, products, wastes that after treatment have qualities of materials used for production and together with the raw materials enter the production process⁵⁰.

⁵⁰ Ministry of Industry and Trade (2012), Raw Material Policy – Czech Republic
<http://www.spov.org/data/files/surovinovapolitika072012.pdf>

6.3. CDW as landfill cover

Use of waste on the ground surface according to § 2, section j) of Regulation 294/2005 is set in Annex 3 of the regulation under the code R10, except for application on farmland - reclaiming ground surface , levelling field inequality and other landscaping, creating layers of landfill closure and reclamation of closed landfills, filling excavated pit mines, quarries, sand pits⁵¹.

CDW is used for recultivation of landfills in Czech Republic or as technological material for securing of landfills (see Decree no. 294/2005 Sb.) with 1,633,716 tonnes of Chapter 17 used in 2013.s.

Recycled CDW materials used for roads must comply with various parameters of eco - technical classification according to the decree of the Ministry of the Environment 294/2005 On conditions of waste in landfills and their use on the ground surface. The decree specifies the method for assessing the ecological appropriateness of establishing % of individual elements. The same legislation describes the use of CDW as landfill cover.

Currently, in most cases mixed brick and unbound pavement layers are often used as either a backfill material (e.g. for energy distribution) or as a stabilisation material. However, they can be quality graded recycled use on a much higher level, which show the examples listed in Section 6.5

6.4. Market conditions / costs and benefits

Landfill charge for CDW (market price + tax)

The charge for disposal in landfills consists of a compensation to the municipality in which territory the landfill is based. The charge is collected by the landfill operator who transfers the basic component to the municipality. The amount of charge is laid down in the Act on Waste. At the time of writing, the charge for landfilling mixed CDW is 19 EUR/tonne and EUR 225/tonne (in 2015) for hazardous waste.

The main goal of the charge is to encourage the use of more environmentally friendly ways of waste disposal. The amount of charge should economically disadvantage the waste landfilling and promote the waste reuse and recycling. For this reason, until all landfills are closed, charges for landfilling will be continuously increased. The typical landfill prices for certain CDW materials (per tonne) are shown in Table 9.

Table 9 Prices for various waste materials at Rožany Landfill, prices are excluding VAT, and are converted using the current conversion rate of 1 CZK = 0.037 eur (08/04/2015)⁵²

Catalogue number	Waste material	Total (Eur/tonne)
170101	Concrete fraction of up to 10 cm	5.92
170101	Concrete fractions 10-50 cm	14.8
170102	Bricks fraction of up to 10 cm	5.92
170102	Bricks fractions above 10 cm	18.5
170103	Tiles and ceramics	18.5

⁵¹ <http://www.zakonyprolidi.cz/cs/2005-294>

⁵² <http://www.mestojirikov.cz/odbor-vystavby-a-zivotniho-prostredi/odpadove-hospodarstvi/zakladni-cenik-skladky-rozany>

170107	Rubble fraction up to 10 cm	5.92
170107	Rubble fractions 10-50 cm	14.8
170504	Soil and stones up to 10 cm	5.92
170504	Soil and stones over 10 cm	7.4
170904	Mixed construction and demolition wastes up to 50 cm	29.6

The recycling of CDW is financially beneficial if there is a recycling facility near the place of waste arising. If this is not the case, it is more than likely that the waste will end up at a landfill. One of the causes of inefficiencies of the secondary materials (including CDW) is the lack of information regarding the supply and demand in the market. The aim of the Raw Materials Policy Action plan is to create a catalogue of entities that come into contact with secondary materials and help to provide information about the availability within the market. The catalogue should contain information about entities (including brokers), secondary material prices and quantities traded and specification of the market⁵³.

Requirements for construction products

The fundamental legislation in the field of building materials and products for construction is the Act No. 22/1997 Coll., on Technical requirements for products. This provides the method of formulating technical requirements for products that could pose a health or safety hazard to people, as well as the rights and responsibilities of the people who market, distribute, or install these products.

Procedures for the authorisation of conformity of building products and basic requirements for them are stipulated by the Government in its Act 163/2002 Coll. This regulation demonstrates the technical requirements for construction products.

The technical requirements for building products to be placed on the market with a CE label are included in the Regulation No. 190/2002 Coll. This regulation demonstrates the requirements for construction products wanting to bear the CE marking.

Thus the Council's Directive 89/106/EEC on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products, as amended by Council Directive 93/68/EEC (CPD) has been recast as the above mentioned legislation of Czech Republic.

6.5. Recycled materials from CDW

As specified products (materials) for conformity assessment under the Act no. 22/1997 it is possible to use:

- Aggregates for railway construction (according to Government Regulation 163/2002) Appendix 2 group of construction products no. 9 , the sequence number 16);
- Construction product used as backfilling material for disposal of major and historical mine works (according to Government Regulation 163/2002, Annex no. 2 group of construction products, no. 9 , serial number 13);
- Granules used as railway ballast and service roads for mining operations, granulate in hoppers of quarries for construction fill, granules for the rehabilitation of mine dumps (according to GR 163/2002⁵⁴).

⁵³ <http://www.spov.org/data/files/surovinovapolitika072012.pdf>

⁵⁴ <http://www.ceskestavebnictvi.cz/rubrika.html?k=13&l=2.5.6>

The regulations allow the use of recycled materials in some phases of construction, but only under conditions that meet the criteria for primary materials.

Recycled brick

Bricks treated in most crushing lines break down to three fractions 0-16 mm, 16- 32 mm and 32-80 mm, while the producers of this material are able to sort out other desired fraction. This recycled material offers significantly greater possibility of use than so far is implemented in Czech Republic.

Recycled concrete aggregates

The use of recycled concrete for bituminous mixtures for construction and repair of bituminous pavement can be performed if the requirements and working procedures prescribed in the relevant standards are met, for example Czech norm ČSN 73 6121 – Compaction of the asphalt layer.

The use of recycled concrete is relatively widespread, such as in the sub-base layers of cemented roads, protective layers of roads and track bed (as mechanically reinforced soil), and mainly as a substitute for natural aggregates in structural concrete lower classes.

Standards for the quality of recycled materials

Standards regarding the quality of recyclates do not exist in Czech Republic. The only exceptions are certain standards for road construction and for the construction of the superstructure and substructure. Specifically, these are:

- CSN 73 6121 Compaction of the asphalt layer
- CSN 73 6122 Mastic asphalt
- CSN 73 6123 Concrete road covers
- CSN 73 6124 Aggregates hydraulically bound
- CSN 73 6125 Stabilised base layers
- CSN 73 6126 Unbound layers
- OTP ČD Railway ballast (since 1996)
- OTP ARSM 01/2001 Recyclates for the construction of roads

All of the above regulations allow the use of recycled materials in some phases of construction output but only under conditions that meet the criteria that are given to raw minerals⁵⁵.

There are currently no requirements for public and private projects for construction products regarding recycled contents and recyclability applied in Czech Republic.

Recycled construction materials (RCM) – are the material outputs of non-hazardous CDW and wastes similar to CDW from facilities used for the CDW treatments based on shredding and separation of different fractions⁵⁶.

RCM are divided into:

- **Recycled concrete** - recycled aggregate obtained by crushing and sorting concrete and concrete products, the volume is determined according to EN 933-11.
- **Recycled road material** - recycled aggregates obtained by crushing and sorting concrete, asphalt or cemented layers of hydraulic binder possibly unbound layers and coarse-grained soils
- **Recycled masonry** - recycled aggregates obtained by crushing and sorting of burnt and unburnt bricks elements (e.g. Bricks, tiles, lime elements, aerated concrete blocks) and concrete
- **Mixed Recycled CDW** - recycled, obtained by crushing and sorting CDW, which is not considered aggregate according to EN 12620 + A1, EN 13043 or EN 13242 + A1. Recycled composite is used

⁵⁵ <http://www.betonserver.cz/druhy-recyklatu>

⁵⁶ Sbornik recycling 2011 from ARSM

mainly as a substitute earth for the construction of embankments and subgrade treatment of roads according to CSN 73 6133, backfilling trenches, landscaping and so on.

- **R-material** - asphalt mix, reclaimed asphalt layers by milling or grinding parts of asphalt. This material is designed mainly for use in the hot asphalt mixture, which is considered with great use in the future.
- **Recycled asphalt** - recycled from the roads. The material of the pavement, which is used in Czech Republic for unbound base courses of roads with a low traffic load, and similar⁵⁷.

The MoE is planning to increase the level of CDW recovery/recycling with the new Environmental Operational Programme 2014 – 2020⁵⁸.

6.6. Construction sector make up

Key future trends

Czech construction industry recorded a Compound Annual Growth Rate (CAGR) of -5.01% during the review period (2009–2013). The construction industry's outlook is expected to be positive over the forecast period (2014–2018), with growth supported by road, rail and energy infrastructure expansion in the country. Rising export demand and improving employment conditions are likely to attract investments in the industrial and residential construction markets. CZK 594.8 billion (EUR 21,716 billion)⁵⁹ support through the European Union (EU) structural funds program over 2014–2020 will also help grow the country's construction industry. The industry is expected to record a forecast-period nominal CAGR of 2.12%⁶⁰.

Building Market - Public and Private Procurement

In 2010, a total of 3,913 public tenders were floated, worth of CZK 122,173 million (EUR 4,463 million) in aggregate (including VAT), out of which building construction accounted for 1715 contracts (43.8% of the total number of contracts awarded) worth of CZK 46,519 million (EUR 1,7 million). (38.1% of the total value of contracts awarded) and 2198 civil engineering contracts (i.e. 56.2% of the total number of contracts awarded) worth of CZK 75,654 million (EUR 2,8 million) (61.9% of the total value of contracts awarded).

Employment in the construction industry

The average number of persons employed in the construction industry has been increasing gradually, in the 1970s it exceeded 400,000 keeping above this threshold to date. In the second half of the 1990s there was a slight decrease that was reversed later on to reach nearly 458,000 in the period between 2004 and 2005. In 2009, the number of workers reached the highest figure over the period under review - 503,500 (including cooperating self-employed persons) and since then it has been decreasing steadily.

The construction industry is regulated by the Ministry of Industry and Trade. Advisory body of the government in the construction sector is the Government Council for the construction of Czech Republic.

⁵⁷ http://staryweb.fns.uniba.sk/fileadmin/user_upload/editors/actaenvi/ActaEnvi_2012_Suppl.1/21_S_Stehlik_Adamec_Acta2012_Suppl_1.pdf

⁵⁸ Jan.Marsak@mzp.cz

⁵⁹ Conversion rate from 29/05/2015 of 1 EUR = 27.3890 CZK

⁶⁰ <https://timetric.com/research/report/cn0200mr--construction-in-the-czech-republic-key-trends-and-opportunities-to-2018/>

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The following stakeholders have been contacted but didn't participate

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- UNIVERSITY OF TECHNOLOGY
- CENIA, Czech Environmental Information Agency
- ECO-Management, s.r.o.,
- Pragotrade spol. s r.o.
- Firma Svoboda
- Research Institute of Building Materials
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Annex 1 - Waste Catalogue of Czech Republic: Category 17

EWG Code	Construction and demolition wastes, including excavated soil from contaminated sites
17 01	Concrete, bricks, tiles and ceramics
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramic products
17 01 06*	Mixtures of concrete, bricks, tiles and ceramics containing dangerous substances
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	Wood, glass and plastic
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastics
17 02 04*	Glass , plastic and wood containing hazardous substances or contaminated by hazardous substances
17 03	Bituminous mixtures , coal tar and tar products
17 03 01*	Bituminous mixtures containing coal tar
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	Coal tar and tar products
17 04	Metals (including their alloys)
17 04 01	Copper, bronze, brass
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and steel
17 04 06	Tin
17 04 07	mixed metals
17 04 09*	Metal waste contaminated with dangerous substances
17 04 10*	Cables containing oil , coal tar and other dangerous substances
17 04 11	Cables other than those mentioned in 17 04 10
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03*	Soil and stones containing dangerous substances
17 05 04	Soil and stones other than those mentioned in 17 05 03
17 05 05*	Dredging spoil containing dangerous substances
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 05 07*	Track ballast containing dangerous substances
17 05 08	Track ballast other than those mentioned in 17 05 07
17 06	Insulation materials and construction materials containing asbestos
17 06 01*	Insulation material containing asbestos

17 06 03*	Other insulation materials consisting of or containing dangerous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	Construction materials containing asbestos
17 08	Building material on the basis of plaster
17 08 01*	Building gypsum-based materials contaminated with dangerous substances
17 08 02	Building gypsum-based materials other than those mentioned in 17 08 01
17 09	Other construction and demolition wastes
17 09 01*	Construction and demolition wastes containing mercury
17 09 02*	Construction and demolition wastes containing PCB (eg. PCB-containing sealants, flooring resin-based PCB-containing sealed glazing units containing PCB, PCB-containing capacitors)
17 09 03*	Other construction and demolition wastes (including mixed construction and demolition waste) containing dangerous substances
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01 17 09 02 17 09 03

Annex 2 Codes for waste treatment and disposal

R	Waste utilization
R1	Waste recovery as fuel or other means to generate energy
R2	recovery of solvents
R3	recovery of organic substances which are not used as solvents (including composting and other biological processes)
R4	Recycling / reclamation of metals and metal compounds
R5	Recycling / reclamation of other inorganic materials
R6	Regeneration of acids or bases
R7	Recovery of substances used for pollution abatement
R8	Getting components from catalysts
R9	Refining used oil or other reuses of oil
R10	Land treatment resulting in benefit to agriculture and ecology improvements
R11	Use of waste created by the application of one of the procedures referred to under the name of R1 to R10
R12	Pre-treatment of wastes for any of the methods listed below numbered R1 to R11
R13	Storage of materials before applying any of the procedures under R1 to R12 (excluding temporary storage at the site where the waste was generated)

D	Waste disposal
D1	Storage at or below ground level (eg. Landfill etc.).
D2	Land treatment (eg. Biodegradation of liquid waste or sludge in soils, etc.)
D3	Deep injection (eg. Liquid injection of waste into wells, salt domes or other natural areas etc.).
D4	Surface impoundment (eg. Liquid or sludge discards into pits, ponds, lagoons, etc.).

D5	Saving Specially engineered landfill (eg. Store in separate, sealed, closed spaces isolated from other environment etc.).
D6	Release into a water body except seas and oceans
D7	Release into seas and oceans including the seabed
D8	Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by any of the methods listed below numbered D1 to D12
D9	Physico-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by any of the methods listed below numbered D1 to D12 (eg. Evaporation, drying, calcination)
D10	Incineration on land
D11	Incineration at sea
D12	The final or permanent disposal (eg. Storage containers in a mine)
D13	Edit composition or mixing of waste prior to submission to any of the methods listed below numbered D1 to D12
D14	Adjustment of other properties of waste (except treatment included in D13) before disposal by one of the procedures referred to under the name D1 to D13
D15	Storage of waste prior to submission to any of the methods listed below numbered D1 to D14 (excluding temporary storage of waste on site prior to collecting the necessary amount)

Z	Other uses and disposal
Z1	Sorting , packing, cuttings, etc .
Z2	Solidification, vitrification , bituminisation
Z3	Composting
Z4	Biological decontamination
Z5	Equipment specified in § 14 para . 2 of the Act
Z6	incineration of waste
Z7	processing of car wrecks
Z8	Tyre Retreading
Z9	electric waste

S	Assembly of hazardous waste sites , mobile devices for the collection of waste collection points and waste storage
S1	Store waste containing PCBs
S2	Store waste oils
S3	Storage of batteries
S4	Storage of hazardous waste
S5	Storage of non-hazardous waste
S6	Collection yard
S7	Collection point
S8	Assembly point of hazardous waste
S9	Mobile equipment for waste collection
S10	Collection point for scrap cars
S11	Storage of scrap from cars
S12	Storage electrical waste

U	Non-haz waste storage
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U1	Storage in underground spaces
U2	Single waste type landfill
N	Non-hazardous waste management
N1	Use of waste for landscaping , etc .
N2	Handover of sludge for use on agricultural land
N3	Handover to other authorised person (other than the carrier , the carrier) or other establishment
N5	Remaining waste in storage for 31.12 reporting year
N6	imports of waste
N7	exports of waste
N8	Transmission (parts, wastes) for reuse
N9	processing of car wrecks
N10	Sale of waste as raw material (" secondary raw materials ")
N11	The use of waste for landfill reclamation
N12	Depositing waste as technological material to make landfills
N13	Composting
N14	Biological decontamination
N15	Tyre Retreading
N16	Imports of waste from a non-EU member state
N17	Exports to the countries which are non-EU members
N18	WEEE treatment

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