

# Construction and Demolition Waste management in Poland

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# Screening factsheet

## 1. Summary

### Construction and Demolition Waste (CDW) management national performance

Waste category	Quantity generated in 2012 (tonnes)
Soil	N/A
Other inert waste	N/A
<b>Total non-hazardous</b>	29 215
<b>Hazardous waste</b>	3 481 085
<b>Total CDW*</b>	<b>3 510 000</b>

\*mineral waste from construction and demolition

In 2012, Poland officially reported a generated total quantity of 3 510 000 tonnes of mineral waste from construction and demolition<sup>1</sup>. Out of that volume, mineral waste from construction and demolition generated by Construction sector (NACE code F) was 2 599 774 tonnes in 2012.

Official statistics show a total of 2 778 966 tonnes of recycled waste and 733 703 tonnes used for backfilling in 2012.

In 2012, Poland adopted the Act on Waste that implements the EU Waste Framework Directive as well as 12 other EU Directives mainly focusing on waste management and different waste streams and industrial emissions. No specific legislation was developed concerning the construction and demolition waste.

Poland implements National Waste Management Plans at national and regional levels. These plans include analysis of CDW management situation, forecasted change in waste management, objectives of waste management and lines of action in respect of preventing waste generation and developing waste management system.

### CDW management practices

#### Treatment of mineral waste from construction and demolition in 2012 (in tonnes)

Mineral waste from construction and demolition		Treatment						
		TOTAL	Energy recovery	Incineration	Recovery other than energy recovery		Landfilling	Other forms of disposal
					Recycling	Backfilling		
Hazardous	3 558	0	2 381	827	0	350	0	
Non-hazardous	3 012 801	2 749	32	2 043 436	733 703	232 881	0	

Source: Study "Environment 2014" of Central Statistical Office based on data provided by the Ministry of Environment, Eurostat

<sup>1</sup> Central Statistical Office, Eurostat

CDW management is under responsibility of construction companies that generate the waste. The waste management is handled by entities specialised in waste collection and transport.

CDW management varies considerably from one site to another and many factors may affect the practices, such as company type, site size, proximity to recovery and storage facilities, demand for materials for reuse, importance of this issue for the investor, ethics and importance of the issue for the construction company.

Some construction companies reuse directly on-site waste resulted from construction activities.

Official statistics show high rate of CDW recycling. However, according to interviewed stakeholders from the waste management sector, these statistics may not be completely reliable as some actors may have difficulties in tracking the requested data and/or reporting them to the authorities. Monitoring of amounts of CDW generation and treatment may be challenging. Techniques for on-site reuse or recovery of construction materials exist and are used by individuals, without any contractor: the corresponding quantities are not estimated.

Record of cases of illegal storage and abandoning of waste that occurred in different regions are kept by the authorities. Currently cases of abandoning waste represent 142 thousand tonnes of waste at national scale, but it is not determined which cases concern the CDW. Regarding the CDW illegal landfilling practices, no other information is available, however they are estimated as important by some stakeholders.

In addition, the awareness of main actors (investors, construction companies, individuals) regarding CDW issues is still low, but growing. For many, proper CDW management represents a cost that they are not always willing to bear, except cases when investor is applying for a “green” certification. Even if there is a general obligation to sort waste that may applies to any activity, the obligation to sort CDW on site is not clearly defined, except for hazardous waste or waste mixed with hazardous waste.

#### **Main obstacles to sustainable CDW management**

- Not a priority for construction companies:
  - Many companies do not plan CDW management prior to the start of the projects, and budget for CDW management is often not included in the investment;
  - Companies consider CDW management as costly and many prefer to manage waste at lowest possible cost;
  - In some cases, the final destination of CDW is not tracked.
- Low awareness of the construction sector of CDW issues;
- Regulatory obligations:
  - No clear obligation for investors/construction companies for recycling of CDW;
  - No obligation to use recycled materials;
- Law enforcement and monitoring:
  - Insufficient controls;
  - Insufficient financial penalties for non-compliance.

#### **Main drivers to sustainable CDW management**

- Dedicate more resources on legislation enforcement
  - Fight against illegal landfilling, encourage efficient CDW management planning at local level, all these aspects need a strong reinforcement of financial and human resources in order to ensure their enforcement.
- Binding regulatory framework:
  - Waste recycling targets
  - National legislation on waste treatment
- Standards as incentives to sorting on site:
  - Investors are interested in certified buildings (such as BREEAM, LEED), construction companies can increase their competitiveness by preventing and sorting waste at the construction site
- Enhance awareness raising among stakeholders, in particular companies
- Demand for some materials:
  - Demand for rubble for backfilling or road construction, railway infrastructure, land levelling and rehabilitation of excavation sites.

The analysis of obstacles and drivers presented in the factsheet is based on all available sources identified. However, it also reflects individual opinions of stakeholders and therefore may not be demonstrated by the official data on CDW management.

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

### 2.1. Definition of waste

According to the Act on Waste of 14 December 2012, (hereafter called the Act on Waste), 'waste' means any substance or object which the holder discards or intends or is required to discard. It follows the definition of waste in the Waste Framework Directive 2008/98/EC (WFD).

### 2.2. Definition of construction and demolition waste (CDW)

The definition of CDW is not provided in the Act on Waste. However, the National Waste Management Plan 2014<sup>2</sup> specifies in chapter 2.3.2 that the construction and demolition waste from buildings and road infrastructure is generated in residential and industrial construction, as well as in railway industry and road industry, at the construction development and modernisation stage and at the dismantling stage.

According to the Act on Waste, the Minister of the Environment shall define a catalogue of waste (with indication of hazardous waste, depending on source of waste generation and its properties) following the annex 3 of the Act. The Ministry of Environment Decree of 29 December 2014 specifies the catalogue of waste with breakdown in groups, sub-groups and types with indication of hazardous waste. The Decree ensures implementation of the Commission Decision of 3 May 2000 (2000/532/EC, as amended) to establish the harmonised list of wastes.

The group 17 of 20 groups of waste defined in the Decree concerns waste from construction, renovation and demolition of buildings and road infrastructure, including excavated soil from contaminated sites. It corresponds to chapter 17 of the abovementioned Commission Decision - Construction and demolition wastes (including excavated soil from contaminated sites). The following types of waste are included:

- 17 01 Materials and construction elements of road infrastructure (concrete, bricks, tiles and ceramics)
- 17 02 Wood, glass and plastic
- 17 03 Bituminous mixtures, coal tar and tarred products
- 17 04 Metals (including their alloys)
- 17 05 Soil (including excavated soil from contaminated sites)
- 17 06 Insulation materials and asbestos-containing construction materials
- 17 08 Gypsum-based construction material
- 17 09 Other construction and demolition wastes

### 2.3. End of Waste (EoW) status

Chapter 5 of the Act on Waste defines End of Waste status and criteria. Specific type of waste no longer qualify as waste if after its recovery (including recycling) all the following criteria are met:

- The object or substance are used for a specific purpose
- A demand or market for them exists
- The object or substance satisfies technical and legal requirements for its use for a specific purpose
- Use of the object or substance does not have negative impact on human life or health and the environment
- The waste fulfils requirements defined by European Union legal provisions.

Poland did not establish their own technical rules that determine the criteria of losing the status of waste in relation to any types of waste including waste construction and demolition.

### 2.4. Definitions of waste treatment operations

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<sup>2</sup> Resolution no 217 of the Council of Ministers of 24 December 2010 on the "National Waste Management Plan 2014"

The Act on Waste provides the definitions of waste treatment operations that are compliant with the WFD definitions:

- Preparation for reuse: recovery involving checking, cleaning or repairing, within which products or parts of products that have become waste are prepared to be reused without any other pre-processing operations;
- Reuse: action involving the use of products or parts of products that are not waste again for the same purpose for which they were intended;
- Recycling: recovery by which waste are reprocessed into products, materials or substances whether for the original or other purposes; this includes the reprocessing of organic material (organic recycling), but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling;
- Recovery: any operation that principal result is waste serves a useful purpose as substitute to other substances, materials or products which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function in a given facility or in the economy in general. including by the waste producer
- Treatment: recovery or disposal operations, including preparation prior to recovery or disposal.

Article 17, Part II, chapter 2 of the Act on Waste introduces a hierarchy of waste management:

- prevention of waste generation,
- preparation for reuse,
- recycling,
- other recovery operations, and
- disposal.

Anyone who can cause waste generation, should plan his actions for preventing from the waste generation in the first place. Waste that could not have been prevented should be recovered by its owner. Recovery means in the first place preparing for reuse or recycling, and if recycling is not possible for technological reasons or is not justified ecologically or economically, the waste should be recovered through other process. Recycling here can also include organic recycling (for example composting). Waste disposal cannot be considered as organic recycling. If waste recovery is not possible for reasons mentioned, the owner of waste is obliged to dispose waste. The new Act on Waste introduced obligation of separate collection; waste can be only disposed if recoverable waste was separated from it.

Backfilling means a recovery operation where waste is used in excavated areas (such as underground mines, gravel pits) for the purpose of slope reclamation or safety or for engineering purposes in landscaping and where the waste is substituting other non-waste the materials which would have had to be used for the purpose. This includes the use of waste for stowage of mines and quarries; recultivation, land rehabilitation or landscaping<sup>3</sup>. The definition of backfilling in use in Poland is laid down in the EU legislation.

Backfilling is excluded from the definition of recycling in CDW reporting.

### **3. Legal Framework – Waste Management Plans and Strategies**

#### **3.1. Legislation concerning CDW in Poland**

The Act on Waste implements the EU WFD as well as 12 other EU Directives mainly on waste management and different waste streams and industrial emissions.

The Act on Waste defines (art 3.1 paragraph 32) the producer of the waste as anyone whose activity generates waste (primary producer) and anyone who carries out pre-processing, mixing or other activity resulting in change of properties or composition of the waste. The producer of waste generated from provision of services for construction, demolition and renovation of buildings, cleaning of tanks and equipment as well as cleaning, maintenance and repair, is an entity that provides a service, unless otherwise

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<sup>3</sup> Central Statistical Office (2014) Study "Environment 2014"

specified in a contract for provision of services. The owner of waste shall mean the producer of waste or natural person legal entity or organisation without legal entity in possession of waste; it is presumed that a landowner is the owner of the waste in that property.

Art. 22 of the Act on Waste states that costs of waste management shall be paid by the primary waste producer or by the current or past holder of waste. Art. 23 states that the waste is collected selectively. According to Art. 27 waste producer is obliged to manage waste that he generated. The waste producer or other holder of waste may transfer the obligation of waste management to another entity that have permits for waste collection or waste treatment. In such case, the responsibility for waste management is transferred to the next holder of waste. The transfer of responsibility must be documented by recovery or disposal confirmation. The owner of waste or entity who is in charge of the waste generated is obliged to systematically keep records of the amount and quality of waste generated. Part V chapter 1 of the Act on Waste regulates the inventory and reporting of waste in general that applies to the CDW.

In 2015, the Ministry of Environment issued a decree that sets out conditions on recovery of waste outside of installation and equipment<sup>4</sup>. It defines types of waste and conditions of recovery in operations R3, R5, R11 and R12 listed in the Act on Waste<sup>5</sup> and many applies to CDW.

Since 2006, a decree that defines a list of types of waste that waste owners may transfer to individuals or organisations other than companies, and on permitted methods of waste recovery has been enforced<sup>6</sup>.

Act on maintaining cleanliness and order in municipalities of 13 September 1996 (as amended, status on 3 February 2015) addressed management of CDW that are municipal waste i.e. generated by households. According to this Act, municipalities are responsible for:

- ensuring easily accessible points of selective collection of municipal waste, including CDW that are municipal waste;
- ensuring that the targets of recycling and preparing for reuse or recovery of CDW that are municipal waste are achieved (the obligation of the level of at least 70% by weight);
- monitoring municipal waste management;
- conducting information and education activities on the proper management of municipal waste, in particular in terms of selective collection;
- making information available regarding entities collecting waste from property owners, etc.

The landfill fees applicable in 2015 are defined by the Decree of the Minister for the Environment of 11 August 2014 on level of fees for use of the environment in 2015. The Decree specify rates for each waste code; fees for CDW landfilling range from 11.67 PLN to 165.54 PLN (about 2.7 EUR to 38.7 EUR) for tonne of waste.

The Chief Inspectorate for Environment Protection is responsible for issues related to exports/imports of CDW.

### **3.2. Waste management plans (WMP) and Strategies**

According to the Act on waste, national and regional waste management plans are elaborated in order to achieve the objectives of environmental policy. Their aim is to decouple the trend of waste generation and their impact on the environment from the economic growth trends, to implement the hierarchy of waste management and the principles of self-sufficiency and proximity, as well as to create integrated and adequate network of waste management installation that meet environmental protection requirements.

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<sup>4</sup> Ministry of Environment (2015)

<sup>5</sup> Recovery operations are defined in Appendix 1 to the Act on Waste (according to the EU WFD):

R 3 – recycling or recovery of organic substances not used as solvents

R 5 – recycling or recovery of other inorganic materials (includes soil cleaning resulting in soil recovery and recycling of inorganic construction materials)

R 11 – Use of waste obtained from any of the operations numbered R 1 to R 10

R 12 – Exchange of waste for submission to any of the operations numbered R 1 to R 11

<sup>6</sup> Ministry of Environment (2006)

The National Waste Management Plans are elaborated by the Ministry of Environment in agreement with the Ministry responsible for water management, and adopted by the Council of Ministers. Regional plans are elaborated by the management board of each Voivodship (region) and adopted by the regional assembly. The waste management plans should be updated at least every 6 years. The first National Waste Management Plan was introduced in 2002 with update planned for 2006, as required by the previous Act on Waste of 27 April 2001. Consequently, the following Plans were introduced every 4 years, i.e. in 2006 and in 2010.

Currently in force, the National Waste Management Plan 2014 (NWMP 2014) was adopted by the resolution 217 of the Council of Ministers on 24 December 2010.

According to the previous plan, National Waste Management Plan 2010, established in 2006, Regional Waste Management Plans indicated municipal waste management areas to be supported by Municipal Waste Management Plans (MWMP). All regions adopted Regional Waste Management plans that have delineated 123 municipal waste management areas.

Construction and demolition waste from buildings and road infrastructure are analysed in the NWMP 2014. Hazardous waste such as waste containing asbestos has also been also addressed in this Plan. The Plan includes analysis of waste management situation, forecasted change in waste management, objectives of waste management and lines of action in respect of preventing waste generation and developing waste management system.

The National Waste Prevention Plan (NWPP) published by the Ministry of Environment in 2014 details waste prevention measures at national and regional level. Waste from the construction, renovation and demolition of buildings and road infrastructure are addressed in the NWPP.

The Act on Waste defines waste prevention as measures applied to a product, material or substance before they become waste that decrease:

- the amount of waste, also by means of reuse or extending the operational use of a product,
- the negative impact of generated waste on human health and the environment
- the content of harmful substances in products and materials.

The NWPP has been developed using the EU guidance document concerning the preparation of waste prevention programmes<sup>7</sup>. The NWPP analyses waste prevention measures indicated in the Act on Waste in the context of the NWPP objectives. With regard to the CDW, it gives one example of a possible measure that concerns waste prevention by obliging materials' suppliers to accept returns of surplus materials within a specified period at the price of purchase. It does not mention any specific action as part of the proposed measure that has been undertaken regarding CDW. The NWPP states that due to the fact that this type of waste is generated at different stages of renovation and construction works, its prevention capacities are closely related to the applied technology. The following principles are recommended as waste prevention measures during renovation and construction works:

- optimisation of use of construction materials;
- use of modern equipment that apply zero-waste or low-waste technologies;
- compliance with the parameters of technological processes;
- analysis and verification of applied technologies and standards of material use in terms of waste reduction.

The regions shall report to the regional assembly and the Ministry of Environment about realisation of the regional waste management plans covering three years as on 31 December of the last year of the reporting period<sup>8</sup>.

### **3.3. Legal framework for sustainable management of CDW**

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<sup>7</sup> European Commission, Directorate-General Environment, Preparing Waste Prevention Programme, Guidance document, October 2012

<sup>8</sup> Act on waste, art. 39

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>	No		
<i>National/regional sorting obligation (on-site or in sorting facility)?</i>	Yes General provision on waste stating that waste is collected separately.	2012, <a href="#">Act on waste</a>	Article 23 on Act on Waste. It does not specifically mention CDW.
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i>	Yes Mandatory separate collection of CDW that are municipal waste In addition, see above.	2013, Act on maintaining cleanliness and order in municipalities of 13 September 1996 as amended	There are no specific provisions regarding the CDW (except for the removal of asbestos-containing products).
<i>Obligation for separate collection and management of hazardous waste from C&amp;D operations? Please specify</i>	Yes Separate collection of hazardous waste from construction and demolition activities	2012, Act on Waste of 14 December 2012	<a href="http://isap.sejm.gov.pl/DetailsServlet?id=W DU20130000021">http://isap.sejm.gov.pl/DetailsServlet?id=W DU20130000021</a>
	Yes Abatement of asbestos  Waste containing asbestos is disposed of by landfilling in hazardous waste landfills or in isolated parts of landfills for non-hazardous or inert waste. Disposal in underground waste disposal facilities is also permitted. In 2014, there were 33 landfills receiving asbestos waste.	Currently the Programme for Asbestos Abatement in Poland for 2009-2032	<a href="http://www.mq.gov.pl/Bezpieczenstwo+gos podarcze/Program+Oczyszczania+Kraju+z +Azbestu/Skladowanie+odpadow+azbesto wych">http://www.mq.gov.pl/Bezpieczenstwo+gos podarcze/Program+Oczyszczania+Kraju+z +Azbestu/Skladowanie+odpadow+azbesto wych</a>  In 1997, Poland adopted a resolution on the withdrawal of asbestos from the economy where the Council of Ministers was called to develop a programme that aims at withdrawal of asbestos and products containing asbestos used in Poland. In addition, a law that banned the use of products containing asbestos <sup>9</sup> was implemented. As a result, previous Programme for Abatement of asbestos and products containing asbestos used in Poland was adopted on 14 May 2002 by the Council of Ministers.
<i>Related Green public procurement requirements</i>	Yes  1. Public entities shall use criteria of reuse or preparing for reuse of waste in public	1. 2012 Act on Waste  2. 2013 Public Procurement Law	Regarding 2. <a href="http://www.uzp.gov.pl/cmsws/page/?D:3096">http://www.uzp.gov.pl/cmsws/page/?D:3096</a> The Public Procurement Office issued the best practice for the preparation of contracts for the execution of public

<sup>9</sup> Act prohibiting products containing asbestos of 19 June 1997

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
	<p>procurement, provided that it is possible.</p> <p>2. Including certain criteria in contracts for the execution of public construction works (regarding CDW management)</p>		<p>construction works. It consists of including certain criteria in the contract for public construction works. With regard to waste management, the contractor is responsible for preparing the information on waste generated and submit it to the Inspectorate of investment supervision. The contractor is obliged to dispose of waste generated at the construction site according to the provisions of Act on Waste of 14 December 2012. The contractor is required to submit the information on the waste generated and methods how the generated waste was managed. The contractor is liable for payment of any fees, penalties or fines as provided in the regulations concerning protection of the environment and waste management. For any breach of the obligation of waste management or submitting information on waste generation and management, the Purchasing entity is entitled to impose a financial penalty specified in the contract.</p>

### 3.4. Targets

The WFD targets concerning the reuse, recycling and recovery have been transposed to the Polish legislation. By 2020, preparation for re-use, recycling and other forms of recovery of construction and demolition materials should achieve the level of at least 70% by weight. At national level, it is defined in the NWMP 2014. At regional level, targets have been defined in the Act on maintaining cleanliness and order in municipalities of 13 September 1996 as amended.

The calculation method for the CDW target in WFD used in Poland has been described in the quality report attached to the report on WFD realisation.

## 4. Non legislative instruments

Non-legislative instruments are not very developed in Poland. However, this section addresses some instruments in place that promote conditions for a sustainable management of CDW.

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<p><i>Sustainability standards that cover CDW:</i> BREEAM (Building Research Establishment Environmental Assessment Methodology) is a voluntary assessment and certification for sustainability of buildings</p>	<p>As on 2015 over 400 buildings being certified (in number of buildings under assessment Poland ranks 4<sup>th</sup> in Europe, 1<sup>st</sup> among countries without national certification scheme). Mostly applied for office buildings, hotels, commercial</p>	<p>BREEAM: Since 1990 (first version of assessing new buildings), since around 2006 in Poland</p>	<p>Interview with PLGBC</p>

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
LEED (Leadership in Energy and Environmental Design) DGNB (Certificate for sustainable and green building)	centres, starting to be applied for public use buildings such as universities, schools. BREEAM sets the standard for best practice in sustainable building design, construction and operation. Among others it verifies sustainable management of waste from construction sites during construction and use of building.		
<i>Extended producer responsibility scheme in operation?</i>	No EPR scheme related to construction materials is implemented in Poland.		

Although there are not many non-legislative instruments for sustainable management of CDW, official data show that waste management performances are good.

#### CDW management guidance and tools

Description of guidance/tool	Scope	Year established / produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/medium/low) or specify	Further information/web-site
Guidelines for municipalities regarding implementation of municipal waste management	Municipal waste, including CD waste generated by households	2011	National	Public sector	Number of webpage views: 9183	<a href="http://www.mos.gov.pl/g2/big/2012_03/3bb87d6c93ac178e2271e8143ed65f5c.pdf">http://www.mos.gov.pl/g2/big/2012_03/3bb87d6c93ac178e2271e8143ed65f5c.pdf</a>
Guidance on waste management for households	Municipal waste, including CD waste generated by households	2009	National	Public sector	Number of webpage views: 9749	<a href="http://www.mos.gov.pl/artyku/4229_poradniki/11975_poradnik_z_zakresu_gospodarki_odpadami_dla_kazdego_gospodarstwa_do_mowego.html">http://www.mos.gov.pl/artyku/4229_poradniki/11975_poradnik_z_zakresu_gospodarki_odpadami_dla_kazdego_gospodarstwa_do_mowego.html</a>

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

Description of guidance/ tool	Scope	Year established/ produced	National or regional (specify if regional)	Public sector and/or Industry lead organisation	Levels of use (high/ medium/low ) or specify	Further information/ web-site
Guidelines on backfilling operations	Technical guidelines that provide instructions for designers, construction companies and authorities to facilitate proper conducting of rehabilitation and macrolevelling operations using waste	2008	National	Both Public sector and industry lead organisations	Number of webpage views: 14463	<a href="https://www.mos.gov.pl/g2/big/2009_07/ab8b4cae508b9d2ee9154227a8f7ec5a.pdf">https://www.mos.gov.pl/g2/big/2009_07/ab8b4cae508b9d2ee9154227a8f7ec5a.pdf</a>

No information was found regarding other non-legislative requirements or standards for CDW.

### **Hazardous CDW management**

Hazardous waste management, including waste containing PCB, asbestos from construction and demolition are addressed in the National Waste Management Plan (NWMP).

#### **PCB**

In the previous Act on Waste of 27 April 2001, asbestos, PCB and other substances particularly harmful for the environment that could be defined by the Minister of Environment were already forbidden and ordered to be progressively eliminated.

By the end of 2010, all devices containing more than 5dm<sup>3</sup> of PCB should have been decontaminated or disposed of. Not all devices were disposed of by required date. According to the NWMP, at the end of 2009, about 1 million tonnes of PCB were still used in transformers and condensers. There is no facility in Poland adapted to destroy condensers containing, which must be disposed of abroad. Waste collection and transportation service is provided by specialised companies. Due to the progressively decreasing number of condensers containing PCB it was considered not necessary to build facilities for their disposal in Poland. Since 2011, waste, containing PCB with density lower than 50 ppm, continued to be disposed.

#### **Asbestos**

As of 31 December 2008, the estimated quantity of waste containing asbestos for disposal by 2032 is 14.5 million tonnes. These are primarily asbestos and cement products, including *Eternit* (asbestos-cement construction materials). By 2008, 29.6 thousand tonnes of waste containing asbestos has been disposed.

Commonly used and most accessible method of disposal of waste containing asbestos is landfilling in appropriate facilities for hazardous waste. At the end of 2009, there were 29 landfills where waste containing asbestos could be disposed and 4 under preparation. In 2010, the total storage capacity of landfills for waste containing asbestos was estimated at about 1.2 million tonnes for the coming years. According to the NWMP, this capacity was sufficient for the quantity of such waste produced annually so far.

The NWMP identified the following problems in asbestos waste management:

- incomplete number of site plans where products containing asbestos are deployed, and of complete registers of buildings containing asbestos and sites exposed to asbestos in the municipalities;
- lack of a full inventory of products containing asbestos in use and insufficient number of inspections of facilities and equipment carried out by the majority of owners, managers or users of sites where asbestos or asbestos containing products have been or will be used;
- incomplete information about the number of removed asbestos containing products;
- insufficient landfilling capacity in case of speeding up the process of removing asbestos.

On 14 July 2009 the Council of Ministers adopted a resolution establishing a multiannual Programme for Asbestos Abatement in Poland for 2009-2032. The main objectives of the Programme are:

- removal and disposal of asbestos containing products;
- minimization of negative health effects caused by the presence of asbestos across the territory;
- elimination of harmful effects of asbestos on the environment.

The Programme objectives will be implemented progressively until 2032 when the country is expected to be free of asbestos. Of the 14.5 million tonnes of asbestos containing waste estimated as in 2008, it was planned to dispose:

- about 28%, i.e. 4 million tonnes, by the end of 2012
- about 35% of waste, i.e. 5.1 million tonnes, between 2013-2022
- about 37% of waste, i.e. 5.4 million tonnes between 2023-2032

Asbestos waste generated should come exclusively from products already in use.

The Programme permitted:

- storage of asbestos waste in underground storage,
- implementation of new technologies for the elimination of asbestos fibers,
- leaving in the ground - in cases permitted by law - of asbestos products withdrawn from use.

The Programme implementation monitoring was launched in the form of database on products and waste containing asbestos. Asbestos Database<sup>10</sup> is a free and mandatory IT tool for all local authorities for the inventory of asbestos-containing products, also available for all interested in the subject of safe decommissioning of asbestos products.

Poland was the first country in the European Union undertaking the efforts to withdraw the use of products containing asbestos. The European Parliament in the Resolution of 14 March 2013 on asbestos related occupational health threats and prospects for abolishing all existing asbestos, invited the EU to follow the example of Poland and perform an impact assessment and cost-benefit analysis with regard to the possibility of establishing by 2028 an "action plan for the safe removal of asbestos from public buildings and buildings where services rendered involve regular access by clients, and to provide information and guidance to encourage private land owners to conduct effective control of the presence of asbestos-containing products in their properties". The document highlighted that "Poland is the only country that has adopted an action plan for the country free of asbestos"<sup>11</sup>.

## 5. CDW management performance – CDW data

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

The table below presents data on generation and recovery of mineral waste from construction and demolition as reported by official statistics to Eurostat (in tonnes).

Year	2008	2009	2010 <sup>12</sup>	2011	2012 <sup>13</sup>	2013
Generated CDW (tonnes)	N/A	N/A	3 705 576	N/A	3 510 300	N/A
Recycled CDW (tonnes)	N/A	N/A	2 223 727	N/A	2 044 263	N/A
Backfilled CDW	N/A	N/A	712 175	N/A	733 703	N/A

<sup>10</sup> <http://www.bazaazbestowa.gov.pl/>

<sup>11</sup> The European Parliament in the Resolution of 14 March 2013 on asbestos related occupational health threats and prospects for abolishing all existing asbestos

<sup>12</sup> Central Statistical Office (2013) Study "Environment 2012"

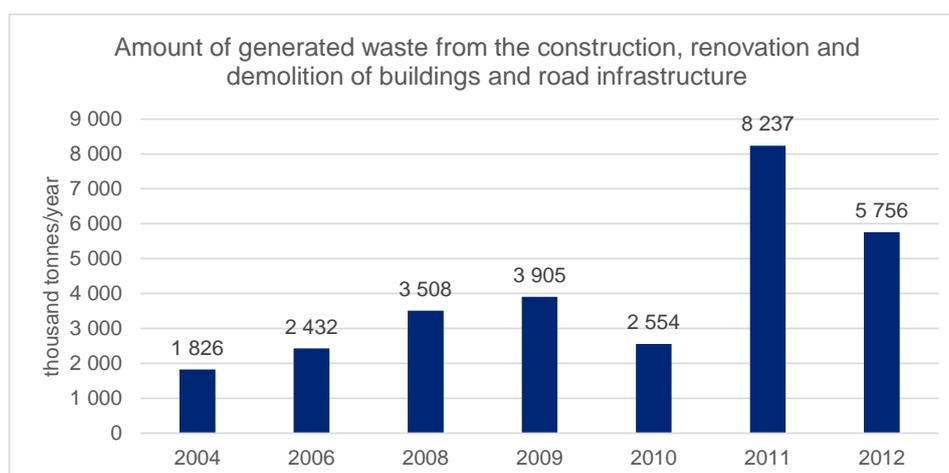
<sup>13</sup> Central Statistical Office (2014) Study "Environment 2014"

Year	2008	2009	2010 <sup>12</sup>	2011	2012 <sup>13</sup>	2013
(tonnes)						
Landfilled CDW (tonnes)	N/A	N/A	235 273	N/A	233 231	N/A
Energy recovery if any (tonnes)	N/A	N/A	967	N/A	2 749	N/A

Data for mineral waste from construction and demolition; Central Statistical Office data consistent with data reported to Eurostat

## 5.1. CDW generation data

Waste from the construction, renovation and demolition of buildings and road infrastructure is generated in residential housing and industrial construction industry, as well as in the rail and road industry. This type of waste is generated at the stage of construction, renovation and demolition works. It is assigned to group 17 – waste from the construction, renovation and demolition of buildings and road infrastructure (including the soil and earth from polluted areas). Figure below presents the amounts of generated waste from group 17 in 2004–2012.



Amounts of generated waste from ELoW code 17, thousand tonnes/year (data published in the National Waste Prevention Plan, source: Central Statistical Office)

The CDW are reported on a yearly basis by waste code (17 01 01 etc.) at regional level and then gathered by the Ministry of Environment, as presented above. They are also gathered by economic activity. The table below presents data on different types of waste generated by NACE code F (Construction).

### Amount of waste generated in 2012 by economic activity NACE code F (in tonnes)

		NACE code F	Total all categories
Spent solvents	Hazardous	15	7 896
	Non-hazardous	–	–
Acid, alkaline or saline wastes	Hazardous	3 664	234 526
	Non-hazardous	0	7 940
Used oils	Hazardous	2 315	119 999
	Non-hazardous	–	–
Chemical wastes	Hazardous	7 822	301 551
	Non-hazardous	341	1 221 320
Industrial effluent sludges	Hazardous	18	99 831
	Non-hazardous	228	249 788
Sludges and liquid wastes from waste treatm.	Hazardous	9	9 465
	Non-hazardous	19 589	212 373
Health care and biological wastes	Hazardous	2	41 315
	Non-hazardous	0	4 997
Metallic wastes, ferrous*	Hazardous	–	–
	Non-hazardous	571 052	5 179 937
Metallic wastes, non-ferrous*	Hazardous	–	–

		NACE code F	Total all categories
	Non-hazardous	5 419	224 399
Metallic wastes, mixed*	Hazardous	–	–
	Non-hazardous	5 375	77 490
Glass wastes*	Hazardous	0	0
	Non-hazardous	1 013	939 948
Paper and cardboard wastes	Hazardous	–	–
	Non-hazardous	4 266	1 134 822
Rubber wastes	Hazardous	–	–
	Non-hazardous	774	61 643
Plastic wastes*	Hazardous	–	–
	Non-hazardous	174 506	969 653
Wood wastes*	Hazardous	2	1 982
	Non-hazardous	28 082	3 947 318
Textile wastes	Hazardous	–	–
	Non-hazardous	3	93 798
Waste containing PCB	Hazardous	34	408
	Non-hazardous	–	–
Discarded equipment	Hazardous	1 434	39 731
	Non-hazardous	561	51 393
Discarded vehicles	Hazardous	32	51 306
	Non-hazardous	23	40 644
Batteries and accumulators	Hazardous	106	34 287
	Non-hazardous	49	2 237
Animal and mixed food waste	Hazardous	–	–
	Non-hazardous	333	3 028 046
Vegetal waste	Hazardous	–	–
	Non-hazardous	45 635	2 535 520
Animal faeces, urine and manure	Hazardous	–	–
	Non-hazardous	5 261	365 990
Household and similar waste	Hazardous	–	–
	Non-hazardous	1 309	8 774 311
Mixed and undifferentiated materials	Hazardous	98	22 081
	Non-hazardous	5 387	3 609 263
Sorting residues	Hazardous	0	53 643
	Non-hazardous	7 839	5 597 542
Common sludges	Hazardous	–	–
	Non-hazardous	659	586 411
<b>Mineral waste from construction and demolition</b>	Hazardous	<b>15 715</b>	<b>29 215</b>
	Non-hazardous	<b>2 584 059</b>	<b>3 481 085</b>
Other mineral waste (excluding construction and demolition waste, combustion wastes, soils, dredging spoils, waste from waste treatment)	Hazardous	87 146	173 404
	Non-hazardous	797 703	76 312 986
Combustion waste	Hazardous	13	340 531
	Non-hazardous	175 027	29 695 229
Soils	Hazardous	15 770	149 984
	Non-hazardous	10 056 045	10 808 696
Dredging spoils	Hazardous	315	318
	Non-hazardous	726 399	744 166
Mineral waste from waste treatment and stabilized waste	Hazardous	0	25 551
	Non-hazardous	16 548	1 681 980
<b>TOTAL</b>	Hazardous	134 510	1 737 024
	Non-hazardous	15 233 485	161 640 925
		<b>15 367 995</b>	<b>163 377 949</b>

\* waste types that are included in the definition of CDW according to The WStatR

Source: Study "Environment 2014" of Central Statistical Office based on data provided by the Ministry of Environment

The above data is consistent with data reported to Eurostat in 2012. The amount of mineral waste from construction and demolition generated by all sectors has been reported to Eurostat.

The mineral waste from construction and demolition are reported on a yearly basis at aggregated level by the Ministry of Environment, as presented below.

**Amount of mineral waste from construction and demolition generated in 2012 (in tonnes)**

Mineral waste from construction and demolition	hazardous waste	29 215
	non-hazardous waste	3 481 085
	Total	3 510 300

Source: Study "Environment 2014" of Central Statistical Office based on data provided by the Ministry of Environment

The above data is consistent with data reported to Eurostat in 2012.

**Amount of waste generated by Construction (NACE code F) in tonnes**

Year	Hazardous waste	Non-hazardous waste	Total
2012	134 510	15 233 485	15 367 995
2010	66 466	20 751 768	20 818 234
2008	66 134	6 863 376	6 929 510
2006	37 786	14 103 245	14 141 031

Source: Eurostat

According to the NWMP 2014, in 2008 the largest share in the structure of generated waste was represented by: scrap metal 40%, soil 30.7% and construction waste 26.9%.

**5.2. CDW treatment data**

**Amount of mineral waste from construction and demolition generated and treated in 2012 (in tonnes)**

	Generation	Treatment						
		TOTAL	Energy recovery	Incineration	Recovery other than energy recovery		Landfilling	Other forms of disposal
					Recycling	Backfilling		
Hazardous	29 215	3 558	0	2 381	827	0	350	0
Non-hazardous	3 481 085	3 012 801	2 749	32	2 043 436	733 703	232 881	0

Source: Study "Environment 2014" of Central Statistical Office based on data provided by the Ministry of Environment

The figures presented in the above table are extracted from the Central Statistical Office (CSO) in "Environment 2014"<sup>14</sup>, in correspondent to the data reported to Eurostat in 2012.

The CSO specifies that the data on waste in 2002-2012 have been elaborated on the basis of the Act on waste of 27 April 2001 (as amended, Journal of Laws 2010, No. 185 item 1243), whereas data for 2013 have been elaborated on the basis of the Act on waste on 14 December 2012 (as amended, Journal of Laws 2013, item 21).

The above data is consistent with data reported to Eurostat in 2012.

**Treatment of mineral waste from construction and demolition**

Total		Hazardous waste		Non-hazardous waste	
2010	2012	2010	2012	2010	2012

<sup>14</sup> A study published annually since 1972. The main source of the data presented in the table part of the 2014 volume are materials based on the CSO surveys and reports, the accessible Ministries reports, internal information systems and administrative data.

	Total		Hazardous waste		Non-hazardous waste	
	2010	2012	2010	2012	2010	2012
Total waste treatment	<b>3 173 454</b>	<b>3 016 359</b>	<b>6 139</b>	<b>3 558</b>	<b>3 167 315</b>	<b>3 012 801</b>
Landfill / disposal (D1-D7, D12)	235 273	233 231	929	350	234 344	232 881
Deposit onto or into land	235 273	233 231	929	350	234 344	232 881
Land treatment and release into water bodies	0	0	0	0	0	0
Incineration / disposal (D10)	1 312	2 413	1 233	2 381	79	32
Incineration / energy recovery (R1)	967	2 749	0	0	967	2 749
Recovery other than energy recovery	2 935 902	2 777 966	3 977	827	2 931 925	2 777 139
Recovery other than energy recovery - Backfilling	712 175	733 703	0	0	712 175	733 703
Recovery other than energy recovery - Except backfilling	2 223 727	2 044 263	3 977	827	2 219 750	2 043 436

Source: Eurostat

As confirmed by the interviewed recycling company, waste collection companies are obliged to have a contract for collection and a permit for collection from the Marshall Office according to the list of waste. The developer shall issue a document indicating the amount of waste collected by the waste collection company (Waste transfer declaration - Karta Przekazania Odpadu) for each month. At the end of the year, the developer reports the justification to the Marshall Office. This reporting obligation concerns all construction sites. If a construction site generates less than 5 tonnes of non-hazardous waste or 100kg of hazardous waste per year<sup>15</sup>, it is obliged to prepare only a simplified inventory of waste (waste transfer declaration). Small construction or renovation sites in practice do not report, they are obliged only to have a contract with a waste collection company in order to dispose the generated waste.

### 5.3. CDW exports/imports data

The following data are officially available concerning imports and exports of CDW.

#### Imports and exports of waste from group 17 in 2013

	Imports from the EU	Imports from outside the EU	Exports
Number of proceedings	1	1	2
Quantity of waste in tonnes based on issued permissions	1 000	1 000	2 000

Source: Study "Environment 2014" of Central Statistical Office based on data of Chief Inspectorate of Environmental Protection

#### Imports and exports of waste in 2013

	Imports from the EU	Imports from outside the EU	Exports
Number of proceedings	97	28	37

<sup>15</sup> According to Art 71 of Act on Waste

Quantity of waste in tonnes based on issued permissions	260 180	103 970	187 425
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Source: Study "Environment 2014" of Central Statistical Office based on data of Chief Inspectorate of Environmental Protection

No information regarding treatment operations and waste types was identified during the factsheet preparation.

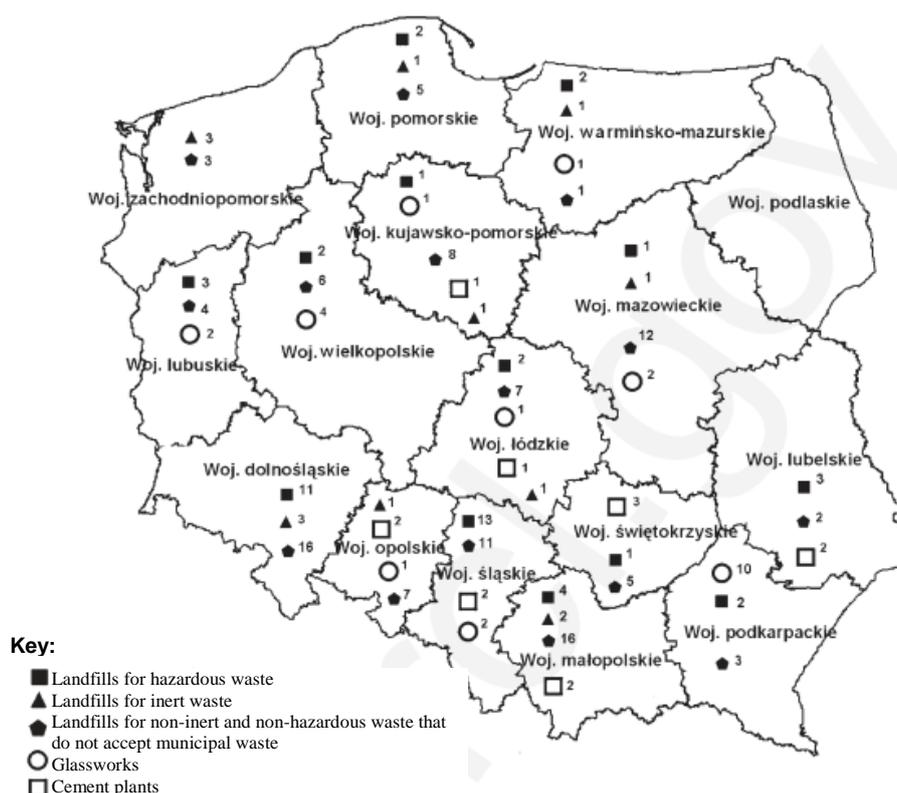
#### 5.4. CDW treatment facilities data

As confirmed by the interviewed recycling company, waste recovery companies have to obtain permits for waste treatment that determine their capacity according to type and mass of waste. Usually, the entity that orders the waste collection service does not know if the waste recovery facility has the required capacity. The environmental inspection authority (Inspectorate for Environmental Protection) has the responsibility to verify the capacity of waste treatment companies. The company that orders the service has a right to conduct an audit to verify how the waste is managed after collection.

Construction companies have generally no problem to dispose the waste, as there are many waste collection companies in the country. Among the waste collected, rubble is in general reused for backfilling or road construction. The interviewed company indicates that there was not enough facilities that recover energy from waste. The NWMP states that achieving the targets for CDW management requires the development of technical infrastructure for separate waste collection and treatment including reuse, recovery and recycling.

According to the NWMP, most of CDW waste is recovered, used for example for road construction and railway infrastructure. It is also used for land levelling and rehabilitation of excavation sites. In order to prepare CDW for recovery, crushers are widely used. The main method of disposing construction and demolition waste is landfilling. Some of these waste types are also disposed thermally.

The Marshall Offices are the authority responsible for issuing administrative decisions regarding CDW treatment facilities, hence, they keep track of the facilities. The data on CDW treatment facilities was not available during the factsheet preparation. The NWMP provides data on existing waste management facilities. In particular, the figure below illustrates the number of landfills for hazardous and inert waste and non-hazardous and non-inert waste where no municipal waste is deposited, as well as the number of glassworks and cement plants in each region as on 31 December 2009. No more recent or more detailed data was identified in order to illustrate the capacity of facilities and its evolution.



Source: National Waste Management Plan 2014

## Illegal dumping

The Regional Inspectorates for Environmental Protection keep record of cases of illegal storage and abandoning of waste that occurred in different regions. This information was provided to the Ministry of Environment. Currently, at national scale there are 41 cases of abandoning waste, which represents 142 thousand tonnes of waste, and 61 cases of illegal storage or disposal of waste. Based on this information, it is not possible to determine which cases concern the CDW storage or abandoning and the quantity that they represent.

Although no detailed statistical data is available in this matter, interviewed stakeholders consider the illegal landfilling practices of CDW an important issue at national level.

### **5.5. Future projections of CDW generation and treatment**

In 2010, an increase in CDW generation was clearly forecasted due to major road infrastructure and other construction investment in the country. The NWMP 2014 foresees that after the economic crisis the construction of residential and industrial buildings will increase. Also in highly urbanised areas old buildings would be demolished due to modernisation of roads, change of spatial development and construction of new buildings. In consequence, the CDW generation is expected to increase as presented in below table.

After the period of crisis and stagnation, an improvement in the economic situation of the construction industry is projected, which entails a rising trend in the generation of group 17 waste. The projection included in NWMP 2014 provides for an increase to 5,600,000 tonnes by the year 2022.

**Table Forecast for generation of construction and demolition waste**

Year	2011	2014	2015	2016	2018	2019	2022
Mass of waste generated from construction, maintenance and demolition of buildings (thousand tonnes)	3,680,0	4,260,0	4,400,0	4,520,0	4,890,0	5,060,0	5,600.0

Source: National Waste Management Plan 2014

At the same time, increase in the reuse of these types of waste for infrastructural projects is expected but the forecast is not estimated.

### **5.6. Methodology for CDW statistics**

Currently functioning since the entry into force of the Act on Waste, integrated waste system consists of central waste system in the Ministry of Environment and sixteen regional waste systems in Marshall Offices in all the sixteen regions. These databases collect information on waste generated, on management of different types of waste specifying methods of recovery and disposal, on permits for collection, transport, recovery or disposal of waste and waste management plans and reporting. Information is based on aggregated data submitted by waste holders, including businesses, to the Marshall Offices, and then transmitted as summary reports to the Ministry of Environment<sup>16</sup>.

According to Art. 39 of the 2012 Act on waste, each Marshal Office shall prepare a reporting of realisation of the regional waste management plans covering three years as on 31 December of the last year of the reporting period. The regional government shall prepare and submit the reporting to the regional assembly and the Minister for the Environment within 12 months after the end of the reporting period. Considering this,

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<sup>16</sup> Based on Reply of Undersecretary of State in the Ministry of Environment (2014) on ensuring proper collection and functioning of regional [waste] databases

the reporting for 2011-2013 should be prepared as on 31 December 2013 and submitted before 31 December 2014<sup>17</sup>.

In 2013, the Ministry of Environment elaborated and published guidelines for reporting on realisation of regional waste management plans. It defined scope of required information and content of the report<sup>18</sup>. Regarding the CDW, the report published before the end of 2014 should present data on mass of CDW generated, recovered, recycled and disposed of for 2011, 2012 and 2013, according to the waste code (17 01 01, etc.). It should also indicate information about installations for CDW recovery in the region including their recovery capacity (in tonnes per year) and waste recovered in each reporting period.

The Ministry provides templates for the report, including format of tables presenting data on mass and types of generated and treated waste. An example of a table for reporting on CDW at regional level is presented below:

*Table: Mass of generated, recovered, recycled and disposed waste from construction, renovation and demolition of buildings and road infrastructure in the region as on 31 December 2013*

Mass of waste from construction, renovation and demolition of buildings and road infrastructure [Mg]												
Waste code	Generated			Recycled			Recovered other than recycled			Disposed		
	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
17 01 01												
17 01 02												
Etc.												
Total												

Source: Guidelines for reporting on realisation of Regional Waste Management Plans

Data on waste generation and treatment presented in the reports from realisation of regional waste management plans comes from the regional reports that are prepared on a yearly basis. The information comes from declarations that every entity generating or treating waste is reporting to the Regional Waste System according to waste code.

Nine of sixteen regions have published their reports for 2011-2013 on the Marshall Offices websites. For remaining regions, information about realisation of waste management plans can be found for years 2009-2010 or earlier<sup>19</sup>. The latest report on realisation of national waste management plan was published by the Ministry of Environment in 2011 for the reporting periods 2009 and 2010<sup>20</sup>.

The methodology used for gathering data on CDW generation and treatment in Poland follows Eurostat guidelines on waste statistics.

Regions collect and report data on CDW following the ELoW codes. This data is then collected and compiled by the Ministry of Environment and communicated to the Central Statistical Office which actively participates in verification of data gathered by the Ministry. There was no information identified about any potential errors or inconsistencies and it was not detected if any methodological reporting issues occurred. Moreover, a

<sup>17</sup> Ministry of Environment (2013) Position of the Ministry of Environment regarding reporting on Regional Waste Management Plans 2011-2013

<sup>18</sup> Ministry of Environment (2013) Guidelines for reporting on realisation of Regional Waste Management Plans

<sup>19</sup> As identified during the factsheet preparation.

<sup>20</sup> Ministry of Environment (2011) Realisation of national waste management plan for the reporting periods 2009 and 2010 is the newest report identified during preparation of the factsheet

quality report is part of reporting to Eurostat: it describes data gathering and analysis methodology, identification of possible errors and corrections applied. It is to be noted that the legislation related to waste has changed recently (into force since mid-2013); it is difficult to assess the monitoring methodology. In addition, monitoring of amounts of CDW generation and treatment may be challenging. As it was pointed out by a stakeholder, some entities and individuals do not report the waste produced and often reuse it at individual level.

## 6. C&D waste management in practice

### 6.1. CDW management initiatives

No specific project or initiative on legal and non-legal framework was identified during the factsheet preparation.

### 6.2. Stakeholders' engagement

This subsection is addressed to all contacted parties during the stakeholder consultation of the screening phase in order to incorporate their views, insights and hands-on experience on CDW management initiatives already in place in Poland. The table below aims to gather information on the existing initiatives – identified above – or other initiatives identified by the stakeholders themselves, together with a preliminary assessment of the enabling factors/obstacles, advantages/drawbacks, and other relevant comments.

Description of initiative	Scope, year established, actors involved	Advantages/ Enabling factors	Disadvantages/ Obstacles	Further information/ web-site
Polish Green Building Council: promotion of building certifications (BREEAM, LEED, DGNB)	Non-profit organisation established in 2006, bringing together entities in construction and real estate fields. Its aim is to promote actions in these fields based on sustainable development principle. It functions as Polish branch of the World Green Building Council.	<p>Promote the voluntary certification schemes.</p> <p>The certification scheme requires the investor to develop a sustainable waste management plan. A point awarding system is established that rewards best actors.</p> <p>Construction companies can increase their competitiveness by obtaining certificates.</p>	Additional cost for investor to provide containers for separate collection, to train personnel to manage waste properly.	<p>Interview with PLGBC</p> <p><a href="http://plgbc.org.pl/">http://plgbc.org.pl/</a></p>
Programme established by Xella (producer of construction materials, for example concrete and calcium silicate blocks) that aimed at better management of packaging waste of construction materials	From 2009 to 2014	The company proposed to collect any plastic film packaging waste generated during the works directly from the construction site or to indicate the nearest collection point	As indicated by the company, the initiative was not very effective in Poland, much less than in Germany where the company operates as well.	<p>Email from the company representative</p> <p><a href="http://www.media.xella.pl/pr/250484/fo lia-z-budowy-zgodnie-z-ustawa-smieciowa">http://www.media.xella.pl/pr/250484/fo lia-z-budowy-zgodnie-z-ustawa-smieciowa</a></p>

As indicated by the interviewed company, there are two different types of behaviour of companies cooperating with recovery companies in practice. Vast majority of construction companies ask to deliver waste containers for construction waste and to take care of them. Some companies cooperate with recovery

companies and certification organisms in order to obtain BREEAM, LEED or other certification. About 20 years ago, the separate collection of CDW practically did not exist. Over the years, awareness started to grow but according to some stakeholders it is still a problem to make investors or construction sites managers realise that the CDW management incurs certain cost that they are not always willing to include in the investment. In a situation where an investor applies for a certification, they are obliged to sort waste on site and take into account the cost of its proper recovery. Otherwise, there are not clear obligation to sort waste on site, except for hazardous waste or waste mixed with hazardous waste, which is then considered as hazardous.

An example described by the interviewed company: Rockwool, mineral wool producer was interested to recover offcuts from construction sites but resigned from developing this idea. There was a risk for example that the offcuts were not clean, so the company ultimately did not pursue this initiative.

According to the interviewed company, it is important to convince the companies that produce construction materials that they can recover some materials from construction sites. Recycling companies are able to recover them to obtain clean materials, but construction companies are not always convinced that recovered materials are clean to use.

### 6.3. Responsibilities and sanctions

The Minister of Environment issues regulations related to the Act on Waste.

Chief Inspectorate for Environmental Protection is responsible for monitoring the implementation of the Act on maintaining cleanliness and order in municipalities as well as monitoring of regularity of international waste shipment and imported hazardous waste treatment.

The Regional Inspectorates for Environmental Protection are responsible for control of compliance with legislation related to waste management and carrying out tasks defined in provisions on the international movements of waste. They verify the capacity of waste treatment and disposal companies and control if on the construction sites the waste is managed properly; if the waste is collected and if hazardous waste is separately collected and transported by the authorised entity. The responsibilities of the environmental inspection authority are outlined in the Act on environmental protection inspection of 20 July 1991.

The Marshall Office is responsible for enforcing compliance of waste regulation requirements by the municipalities and for monitoring their achievements of waste treatment targets.

Non-compliance with the provisions outlined in the Act on Waste can be punished with arrest or a fine or an administrative fine. Administrative fines shall be not less than 1 000 PLN and up to 1 000 000 PLN (about 250 to 250 000 EUR) and can be imposed for example for:

- Change in classification of hazardous waste to non-hazardous waste;
- Mixing different types of hazardous waste, mixing hazardous waste with non-hazardous waste, mixing hazardous waste with substances, materials or objects;
- Waste collection or treatment without required permit, waste management not in accordance with permit issued for collection and/or treatment of waste, etc.

The Regional Inspectorate for Environmental Protection competent in the place of waste generation or treatment imposes an administrative penalty by way of decision.

### 6.4. Drivers / barriers to increase CDW recycling

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Legislation	The WFD implemented to the Polish legislation Waste recycling targets National legislation on waste treatment	No regulatory obligation for investors/construction companies for selective collection and recycling of CDW No incentive to use recycled materials No financial incentive to collect separately to recycle No regulation specifically applied to CDW

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
		<p>Lack of resources dedicated to law enforcement</p> <p>Some stakeholders find controls insufficient</p> <p>Some stakeholders find financial penalties for failing the requirements insufficient.</p> <p>Financial penalties can be imposed by the Inspectorate of Environment Protection if no waste management is put in place. If the construction company has containers on site, they are considered compliant</p>
Standards	<p>Building certifications: more and more investors are interested in certified buildings (such as BREEAM, LEED), construction companies can increase their competitiveness by preventing and sorting waste at the construction site</p>	
Key stakeholders involvement and awareness	<p>Enhance awareness raising among stakeholders, in particular companies</p>	<p>For many companies and households waste management is still less important issue, the lowest possible cost of disposal prevails. Sorting waste on site is seen as unnecessary cost.</p> <p>Many companies do not see the full picture of CDW recycling, they need to be better informed in order to take onto account the full costs of recycling or recovery. The Act on Waste made it impossible to open new landfills, but alternatives are not well developed yet, although new dispositions have been issued by the Ministry of Environment.</p> <p>In this context, it might be difficult to achieve the EU requirements (70% by 2020).</p>
Recycling process		<p>Illegal landfill important issue according to some stakeholders</p>
Material reuse	<p>High potential and demand in the society for material reuse</p> <p>Demand for rubble for backfilling or road construction, railway infrastructure, land levelling and rehabilitation of excavation sites</p>	<p>Lack of reuse material facilities management</p>

## 7. CDW sector characterisation

### 7.1. Sector characteristics

Construction industry was in 2010 fourth top waste generator sector in Poland<sup>21</sup>. It generated 13% of total quantity of waste generated in Poland.

The main actors involved in the sector are:

- Municipalities
- Marshall Offices
- Ministry of Environment
- Construction companies/investors
- Waste collection companies
- Recycling/recovery companies
- Households
- Research institutes

Many construction companies, developers and construction materials manufacturers are associated within the Polish Association of Construction Industry (more than 80 companies).

In 2014, waste collection, treatment and disposal activities as well as materials recovery sector represented in average 52 000 of employees (50 000 in 2013)<sup>22</sup>. The level of employment related specifically to the CDW management is not specified in the official statistics and could not have been estimated for this study.

As confirmed by the interviewed green building association, the CDW sector is diverse, there are many small companies (waste collectors) implemented at local level. Smaller firms may have less knowledge about the requirements than big companies.

According to the interviewed company, recycling/recovery facilities in Poland have appropriate capacity to recover waste. Some type of waste as rubble or greenfield (soil), are reused as such in backfilling. The cost of transport and recovery of such waste is very high, so it is economically justified to reuse as such. Other types of waste such as plastic film, carton, tar paper, are most often recovered in the country. Such waste is collected from different sites and transported to paper mills, metal scrap collection points and plastic recycling facilities. Construction companies can sign contracts with different collection companies for managing different types of waste.

### 7.2. Exports / imports of CDW

According to the official statistics, amount of CDW exported and imported is not significant in Poland. In 2013, 1 Mt of waste of group 17 were imported from the EU, 1 Mt imported from outside the EU and 2 Mt exported. There are no details identified about its type and treatment that they were transported for.

### 7.3. CDW as landfill cover

The CDW in Poland are used as material in road construction and railway infrastructure. It is also used for land levelling and rehabilitation of excavation sites.

### 7.4. Market conditions / costs and benefits

No information on this subject was identified during the factsheet preparation.

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<sup>21</sup> National Waste Prevention Plan, source Eurostat

<sup>22</sup> Central Statistical Office (2015) Statistical bulletin March 2015

## 7.5. Recycled materials from CDW

The main recycled materials from CDW are aggregates, used for backfilling and road building.

It exists also recycling of different types of waste directly on construction site, such as<sup>23</sup>:

- Polystyrene (most popular insulation material) and polyurethane foam residues that are shredded or dissolved and used for example as:
  - Insulation material: to fill small spaces in the structure not covered by the solid polystyrene
  - Soil conditioner: to improve heavy clay soil structure, increase soil aeration, to accumulate excess of water and mineral salt contained in soil
  - Component of plaster and concrete: to replace part of mineral aggregate
  - Paint products, adhesives, varnishes, wood treatment products, etc.
- Shredded glass used for example as:
  - Abrasive materials
  - Component of concrete and plaster
  - Component of bitumen
  - Decorative material for pavements
- Paper (mainly from packaging) shredded dry or wet, used as:
  - Dry as component of insulation materials
  - Wet as component of concrete, plaster, adhesives and other, as component of papercrete (re-pulped paper fibre with cement or clay and/or other soil added)
- Mineral wool shredded with paper to reinforce materials, similar use as paper pulp.

The exact scale of recycling and materials used and recovered was not identified for this study.

## 7.6. Construction sector make up

According to the Polish Association of Construction Industry Employers, construction sector together with other related sectors generated during 2010-2012 in the average 211 billion PLN annually (around 52 billion EUR) of net added value (which was about 15,2% of total GDP of Poland). It employed 2.5 million people.

The EU funds has played an important role in increase of investments in the construction sector.

### Structure of construction and assembly production according to types of buildings (in %)

Type of activity	2005	2008	2009	2010	2011	2012	2013
Residential construction	15.8	17.5	14.4	12.7	12.4	14.0	13.1
Non-residential construction (services)	32.3	31.2	27.3	27.9	27.5	30.8	34.9
Transport infrastructure	26.1	27.3	32.7	34.6	36.7	32.8	27.8
Pipelines, communication lines and grids	17.0	15.8	16.8	15.9	15.0	14.2	15.9
Industrial construction	8.8	8.2	8.8	8.9	8.4	8.2	8.3
In total	100	100	100	100	100	100	100

Source: Presentation on Polish construction by the Polish Association of Construction Industry Employers, based on data from Central Statistical Office

<sup>23</sup> Based on article in Nowoczesna Gospodarka Odpadami 2(2) 2013

According to the newest statistical bulletin<sup>24</sup>, at the end of 2014 there were 46 908 commercial companies registered in Poland in construction sector (43 799 in 2013), 30 state owned companies (no change compared to 2013) and 2 218 cooperatives (2 198 in 2013).

#### Construction and assembly production companies according to number of employed staff - 2nd quarter of 2014

Company size	In total	Building construction	Civil engineering	Specialised construction works
10 – 49 persons	14 325	6 884	2 180	5 261
50 – 249 persons	1 781	868	536	377
250 persons and more	159	55	73	31
In total > 9 persons	16 265	7 807	2 789	5 669
Percentage structure	100	48.0	17.1	34.9

Source: Presentation on Polish construction by the Polish Association of Construction Industry Employers

Production in infrastructure sector between 2008 and 2011 increased by 55%, however in 2012-2013 a decrease of over 37% has been observed and 1.6% decrease in profitability. Number of companies from the sector that bankrupted was 98 in 2011, 218 in 2012 and 213 in 2013.

#### Construction and assembly production based on the contract system and the own-account construction

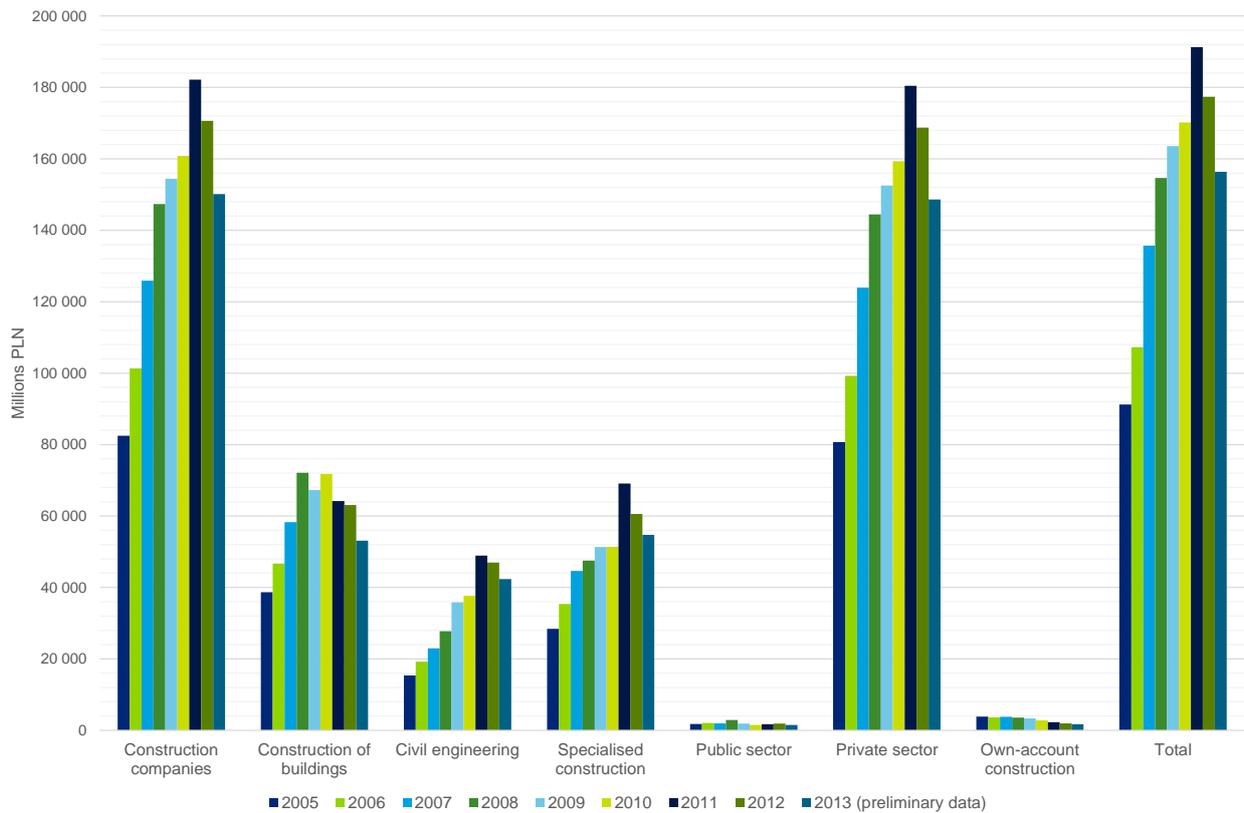
		2005	2006	2007	2008	2009	2010	2011	2012	2013 (preliminary data)
<b>TOTAL</b>	a = absolute numbers (current prices) in thousand PLN	91 250 484	107 268 536	135 714 308	154 630 533	163 576 574	170 211 984	191 280 758	177 376 400	156 405 385
	b = previous year=100 (constant prices)	.	113,0	117,0	109,9	105,9	104,4	111,0	92,7	89,9
of which:										
Construction companies	a	82 470 041	101 333 211	125 906 213	147 350 610	154 421 942	160 857 585	182 194 221	170 643 811	150 158 548
	b	.	118	116	112	105	105	112	94	90
Construction of buildings	a	38 656 778	46 697 341	58 313 640	72 092 069	67 283 327	71 800 761	64 177 344	63 101 920	53 089 503
	b	.	117	115	118	94	108	89	99	87
Civil engineering	a	15 391 512	19 227 204	22 970 720	27 747 442	35 816 466	37 689 547	48 915 833	46 966 033	42 352 827
	b	.	121	113	117	128	105	128	96	91
Specialised construction	a	28 421 751	35 408 666	44 621 853	47 511 099	51 322 150	51 367 278	69 101 045	60 575 858	54 716 218
	b	.	119	117	103	108	101	133	87	92

<sup>24</sup> Central Statistical Office (2015) Statistical bulletin March 2015

		2005	2006	2007	2008	2009	2010	2011	2012	2013 (preliminary data)
Public sector	a	1 756 042	2 054 025	1 967 552	2 903 432	1 878 053	1 508 528	1 745 481	1 864 151	1 507 779
	b	.	113	89	142	65	81	114	107	82
Private sector	a	80 713 999	99 279 186	123 938 661	144 447 178	152 543 889	159 349 057	180 448 740	168 779 661	148 650 768
	b	.	118	116	112	106	111	112	94	90
Own-account construction	a	3 854 615	3 623 497	3 790 970	3 571 822	3 313 977	2 787 611	2 271 634	1 965 916	1 699 140
	b	.	91	99	92	90	84	82	85	88

\* Data for construction companies in 2013, for entities with more than 9 persons employed - final data

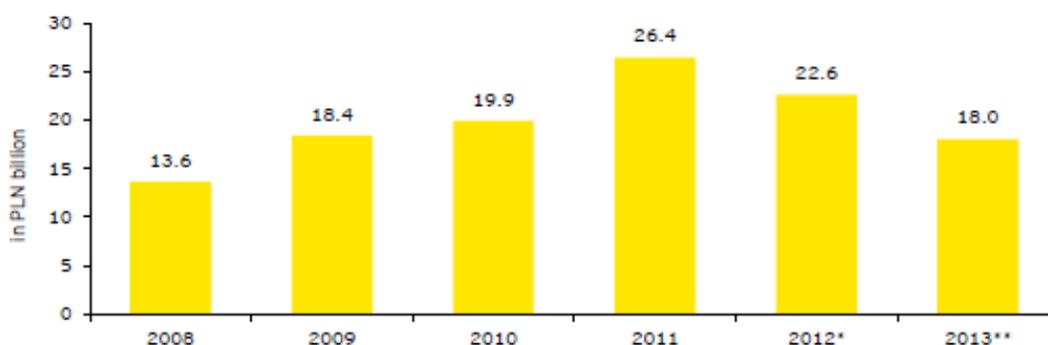
Source: Construction - activity results in 2013, Central Statistical Office



Source: Central Statistical Office (2014) Construction - activity results in 2013

The General Directorate for National Roads and Highways (Generalna Dyrekcja Dróg Krajowych i Autostrad GDDKiA), the central authority of national administration managing the national road network in Poland, estimated a decrease in expenses for national roads investments since 2011.

Chart 17. The expenditure of GDDKiA for the investments in the national roads network in the period 2008-2013 (in PLN billion)



\* in the period January-November 2012, almost PLN 18.5 billion was paid by the GDDKiA. The expected expenditure at the end of the year amounts to approx. PLN 22.6 billion. Source: GDDKiA.

\*\* forecast for the year 2013. Source: GDDKiA.

Source: Own study based on the data of the GDDKiA.

Source: Presentation on Polish construction by the Polish Association of Construction Industry Employers

However, by 2020 the Polish government plans to invest over 95 billion PLN (22.4 billion EUR) to build 1,770 km of motorways and express roads and 35 new bypass routes. The maintenance and management of existing roads is estimated to cost around 49 billion PLN (11.6 billion EUR). The government expects that the EU subsidies for those constructions will be around 15 billion EUR. According to the report published by PwC<sup>25</sup>, Poland received more than 10 billion EUR as EU funds for road infrastructure in 2007-2013. With the construction of 1500 km of new roads, the express road network in Poland grew by 230% over that time.

According to Deloitte study<sup>26</sup>, the financial performance of Polish construction companies is improving and the average annual growth of works in buildings and infrastructure construction sectors should be about 7.6% in years 2014-2017. In the framework of the EU budget for 2014-2020, Poland will receive 82.5 billion EUR. It is estimated that 19.8 billion EUR will be allocated for transport infrastructure as part of the Infrastructure and Environment Operational program (12 billion EUR for roads and 7.4 billion EUR for rail infrastructure). In addition, 31.2 billion EUR has been allocated for regional programs, which may also cover infrastructure investment projects. The biggest expenditures are expected to be related to road, rail, energy and hydroelectric infrastructure.

In 2014, construction of 143 235 residential buildings was delivered, which is 1.3% less than in 2013<sup>27</sup>. At the same time construction of 148 122 residential buildings has started, which is 16.3% more than in 2013. It was also estimated that by the end of December 2014, 699 800 residential buildings were under construction (0.7% more than at the end of 2013).

According to the newest statistical bulletin<sup>28</sup>, the construction sector employed in average 410 000 people during the first nine months of 2014 (444 000 were employed during same period of 2013, excluding farms in agriculture and employees of budgetary entities conducting activity within the scope of national defence and public safety). In 2013 the average employment in construction was 446 000 in comparison to the 488 000 people employed in 2012.

<sup>25</sup> PwC for the General Directorate for National Roads and Highways (2013) Report "Road construction in Poland"

<sup>26</sup> Deloitte Polska (2014) Report "Polish construction companies 2013"

<sup>27</sup> Central Statistical Office (2015) Residential building construction in 2014

<sup>28</sup> Central Statistical Office (2015) Statistical bulletin March 2015

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Written responses received from:

- Ms. Iwona Andrzejczuk-Garbacz, senior expert, Department of Waste Management, Ministry of Environment, 11/06/2015, 11/08/2015
- Mr. Tomasz Malkowski, Communication specialist, Xella Polska Sp. z o.o., 11/06/2015
- Joanna Sulik, Department of Environmental Statistics, Central Statistical Office, 5/08/2015

## Other contacted stakeholders

The following stakeholders have been contacted but did not participate:

- Krajowa Izba Gospodarki Odpadami (waste management companies association)
- Korporacja UNI-BUD (association of construction industry)
- Polski Związek Pracodawców Budownictwa (Polish Association of Construction Industry Employers)
- Chief Inspectorate for Environmental Protection
- Izba Projektowania Budowlanego (construction industry association)
- Instytut Techniki Budowlanej (Building Research Institute)

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# Annex

Extract of the Decree of 29 December 2014 of Ministry of Environment specifying the catalogue of waste with breakdown in groups, sub-groups and types with indication of hazardous waste – group 17: waste from construction, renovation and demolition of buildings and road infrastructure (including excavated soil from contaminated sites) <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20140001923>

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Kod <sup>2)</sup>	Grupy, podgrupy i rodzaje odpadów <sup>3), 4)</sup>
1	2
16 82 02	Odpady inne niż wymienione w 16 82 01
17	Odpady z budowy, remontów i demontażu obiektów budowlanych oraz infrastruktury drogowej (włączając glebę i ziemię z terenów zanieczyszczonych)
17 01	Odpady materiałów i elementów budowlanych oraz infrastruktury drogowej (np. beton, cegły, płyty, ceramika)
17 01 01	Odpady betonu oraz gruz betonowy z rozbiórek i remontów
17 01 02	Gruz ceglany
17 01 03	Odpady innych materiałów ceramicznych i elementów wyposażenia
17 01 06*	Zmieszane lub wysegregowane odpady z betonu, gruzu ceglanego, odpadowych materiałów ceramicznych i elementów wyposażenia zawierające substancje niebezpieczne
17 01 07	Zmieszane odpady z betonu, gruzu ceglanego, odpadowych materiałów ceramicznych i elementów wyposażenia inne niż wymienione w 17 01 06
17 01 80	Usunięte tynki, tapety, okleiny itp.
17 01 81	Odpady z remontów i przebudowy dróg
17 01 82	Inne niewymienione odpady
17 02	Odpady drewna, szkła i tworzyw sztucznych
17 02 01	Drewno
17 02 02	Szkło
17 02 03	Tworzywa sztuczne
17 02 04*	Odpady drewna, szkła i tworzyw sztucznych zawierające lub zanieczyszczone substancjami niebezpiecznymi (np. drewniane podkłady kolejowe)
17 03	Mieszanki bitumiczne, smoła i produkty smołowe
17 03 01*	Mieszanki bitumiczne zawierające smołę
17 03 02	Mieszanki bitumiczne inne niż wymienione w 17 03 01
17 03 03*	Smoła i produkty smołowe
17 03 80	Odpadowa papa
17 04	Odpady i złomy metaliczne oraz stopów metali
17 04 01	Miedź, brąz, mosiądz
17 04 02	Aluminium

Kod <sup>2)</sup>	Grupy, podgrupy i rodzaje odpadów <sup>3), 4)</sup>
1	2
17 04 03	Olów
17 04 04	Cynk
17 04 05	Żelazo i stal
17 04 06	Cyna
17 04 07	Mieszanki metali
17 04 09*	Odpady metali zanieczyszczone substancjami niebezpiecznymi
17 04 10*	Kable zawierające ropę naftową, smołę i inne substancje niebezpieczne
17 04 11	Kable inne niż wymienione w 17 04 10
17 05	Gleba i ziemia (włączając glebę i ziemię z terenów zanieczyszczonych oraz urobek z pogłębiania)
17 05 03*	Gleba i ziemia, w tym kamienie, zawierające substancje niebezpieczne (np. PCB)
17 05 04	Gleba i ziemia, w tym kamienie, inne niż wymienione w 17 05 03
17 05 05*	Urobek z pogłębiania zawierający lub zanieczyszczony substancjami niebezpiecznymi
17 05 06	Urobek z pogłębiania inny niż wymieniony w 17 05 05
17 05 07*	Tłuczeń torowy (kruszywo) zawierający substancje niebezpieczne
17 05 08	Tłuczeń torowy (kruszywo) inny niż wymieniony w 17 05 07
17 06	Materiały izolacyjne oraz materiały budowlane zawierające azbest
17 06 01*	Materiały izolacyjne zawierające azbest
17 06 03*	Inne materiały izolacyjne zawierające substancje niebezpieczne
17 06 04	Materiały izolacyjne inne niż wymienione w 17 06 01 i 17 06 03
17 06 05*	Materiały budowlane zawierające azbest
17 08	Materiały budowlane zawierające gips
17 08 01*	Materiały budowlane zawierające gips zanieczyszczone substancjami niebezpiecznymi
17 08 02	Materiały budowlane zawierające gips inne niż wymienione w 17 08 01
17 09	Inne odpady z budowy, remontów i demontażu
17 09 01*	Odpady z budowy, remontów i demontażu zawierające rtęć

Kod <sup>2)</sup>	Grupy, podgrupy i rodzaje odpadów <sup>3), 4)</sup>
1	2
17 09 02*	Odpady z budowy, remontów i demontażu zawierające PCB (np. substancje i przedmioty zawierające PCB: szczeliwa, wykładziny podłogowe zawierające żywice, szczelne zespoły okienne, kondensatory)
17 09 03*	Inne odpady z budowy, remontów i demontażu (w tym odpady zmieszane) zawierające substancje niebezpieczne
17 09 04	Zmieszane odpady z budowy, remontów i demontażu inne niż wymienione w 17 09 01, 17 09 02 i 17 09 03



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