

# Construction and Demolition Waste management in

## Estonia

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# Screening factsheet

## 1. Summary

Estonia managed to reach high recovery rates of Construction and Demolition Waste (CDW) and has already reached the target of the Waste Framework Directive (2008/98/EC) concerning CDW. In 2011, Estonia reported a recovery rate of 72% pursuant to Commission Decision 2011/753/EU. CDW management in Estonia is based on a free market system, which fosters competition within the waste management sector, and on the extensive use of financial instruments with the aim to divert CDW from landfilling.

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

The Estonian Environment Agency maintains a comprehensive waste register system (JATS) with detailed information on CDW generation and management by waste code (according to the European List of Wastes) and by treatment code (R-D codes, Annex I and II of the Waste Framework Directive). The latest available data in the waste register system is for 2013.

Waste category	Generated in 2013 (ktonnes)	Recovered in 2013 (ktonnes)
<i>Non-hazardous CDW (excl. soils)</i>	980.2	899.9
<i>Non-hazardous Soils</i>	939.2	963.8
<b>Non-hazardous CDW</b>	<b>1 919.4</b>	<b>1 863.7</b>
<i>Hazardous CDW (excl. soils)</i>	2.6	0.01
<i>Hazardous Soils</i>	22.1	3.7
<b>Hazardous waste</b>	<b>24.7</b>	<b>3.7</b>
<b>Total CDW</b>	<b>1 944.1</b>	<b>1 867.4</b>

Since data on CDW generation and treatment is registered by waste code, it is relatively easy to subtract the waste codes 17 05 04 and 17 05 06 which are excluded from the calculation of the target pursuant to Commission Decision 2011/753/EU. However, it is not possible to distinguish between recovery and backfilling as there is no national code used to indicate backfilling. Backfilling is calculated by the Estonian Environment Agency in combination with the database of environmental (waste) permitting, where the exact operations of the registered treatment facilities are recorder together with the quantities of waste treated. CDW generation is constantly increasing the since 2010, after a critical decrease following the economic crisis.

Taking into account the latest published data in the Estonian waste register and following the calculation method described in Commission Decision 2011/753/EU, Estonia reached a recovery rate of 87% in 2013. This is a very high recovery rate, meaning that most of the quantities of CDW generated in Estonia are recovered in one way or another and thus diverted from landfilling. According to the Ministry of the Environment, so far most part of mineral CDW is used for backfilling operations (reclamation of old quarries, use on construction works, etc.). This means that a large part of the 91% recovery rate consists of backfilling.

### CDW management practices

There are specific CDW management rules in place in the municipalities of Estonia, regulating in detail the processes of managing CDW from construction and demolition works. CDW should be separately collected at source by a licenced waste management company and transported to their treatment facilities for further sorting and recycling. However, in practice, most of the waste management companies use large containers for the collection of mixed CDW which they sort afterwards in their treatment facilities.

A major driver for diversion of the CDW stream from landfilling is the pollution charge which applies to all waste deposited in landfills. Waste management companies that are contracted by construction/demolition operators to collect CDW, avoid the pollution charge by recovering the collected CDW quantities. The pollution charge is set to very low level for hazardous CDW (e.g. asbestos-containing waste) in order to limit the illegal disposal of such waste to the environment and prevent risk to human health.

The market for recycled aggregates is not well developed yet and there is little uptake of this material within the construction sector. So far, most of the recovered mineral CDW is used for backfilling operations or landscaping and mild engineering purposes.

## Main obstacles to sustainable CDW management

- Delays in developing advanced measures for increasing recycling
  - Although there have been talks about introducing GPP criteria in public works and provisions for recycled content in materials at tendering procedures, the Ministry of Environment is reluctant to move forward. Better coordination is needed between all involved actors.
- Mentality in the construction sector
  - Lack of trust in recycled materials, perceived as of lower quality by builders and developers.
  - No market/no demand for recycled CDW, natural materials are always preferred over recycled materials in the construction works.
- Overreliance to private sector for waste management
  - Tight competition leads to improved performance but on certain occasions there could be distortion effects. E.g. although in the local waste management rules the separate collection of CDW is required, the norm tends to be that waste management companies collect CDW mixed because it saves time and is less costly (in the case that the same waste management company controls the collection and treatment of the waste).
  - Private companies usually follow market dynamics and not necessarily the principles of the waste hierarchy. As a result, the recovery of CDW could be enough to fulfil their obligations (according to permit requirements) but do not consider improving the quality of recovery or recycling operation if market demand is not there.
- Limited treatment options
  - Except from recycling of CDW into aggregates, there are no other recycling options available at the moment in Estonia for recycling other materials in CDW.
- Not full traceability of CDW
  - Despite the significant achievement of establishing the national waste register (JATS), there are some quantities of CDW not reported. There are cases of fly tipping and illegal dumping of CDW.

## Main drivers to sustainable CDW management

- Existence of strong national policy governing the principles of sustainable waste management, including CDW.
  - Waste Act (RT I 2004, 9, 52)
  - Environmental charges Act (RT I 2005, 67, 512)
  - Local governments' waste management rules
- Economic incentives
  - Pollution charge applied to CDW disposal
  - Subsidies through the Estonian Environmental Investment Centre to demolition projects that include detailed planning for the sustainable management of CDW and for the appropriate treatment of asbestos-containing CDW (e.g. eternity roofs).
- The establishment of the Estonian Recycling Cluster and Recycling Competence Centre with the aim to increase the recycling of CDW (among other priority waste streams) and to create value from the produced recycled materials
  - Promotion of recycled aggregates through the establishments of standards for recycled aggregates, promotion of the use of recycled aggregates in new construction, information dissemination and pilot testing of the use of recycled aggregates – case study to demonstrate the feasibility of use and test the quality of the material

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

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

### 2.1. Definition of waste

The EU Waste Framework Directive (2008/98/EC) has been transposed into Estonian legislation through the Waste Act (RT I 2004, 9, 52), adopted in 2004, and its subsequent amendments (the most recent one in 2015) as well as subordinated regulations. The translation of the definition of waste provided in the Waste Act is found in the 'Riigi Teataja' website of the Estonian government. Specifically, Article 2(1) of the Waste Act<sup>1</sup> stipulates that:

*"Waste" means any movable property or registered ship which the holder discards, intends or is required to discard. [RT I, 09.11.2011, 1 - entry into force 10.11.2011]*

Although the wording is not exactly as it appears in the WFD (2008/98/EC), the substance of the definitions remains the same.

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

The definition of CDW found in the new Waste Management Plan of Estonia follows the definition provided by the European Environment Agency in its glossary of terms. Specifically, the definition as presented in Annex 1 of the WMP<sup>2</sup> is:

*'Rubble and other waste material arising from the construction, demolition, renovation or reconstruction of buildings or parts thereof, whether on the surface or underground. Consists mainly of building material and soil, including excavated soil. Includes waste from all origins and from all economic activity sectors.'*

Apart from that, there isn't any other specific definition for CDW formulated in any legislative document in Estonia. However, Estonia is obliged to report to the European Commission on the progress of the target concerning CDW of the WFD and therefore Estonia follows Commission Decision 2011/753/EU. In this Commission Decision, CDW is defined as:

*'construction and demolition waste' means waste corresponding to the waste codes in Chapter 17 of the Annex to Commission Decision 2000/532/EC (List of Wastes), excluding hazardous waste and naturally occurring material as defined in Category 17 05 04.*

By comparing the two definitions above, it becomes instantly obvious that the definitions are not compatible in the case of including soils and stones and other naturally occurring materials, generated mainly through excavation activities.

There is no specific distinction between waste deriving from construction, renovation or demolition activities. In practice however, naturally occurring materials deriving from excavation activities are also included in the CDW stream in Estonia<sup>3</sup> and reported under the appropriate waste codes. This means that Estonia will have to subtract the quantities of soils and stones reported as CDW for the calculation of the WFD target. Estonia has developed a very detailed and comprehensive Waste Register system<sup>4</sup>, where waste generation and treatment is recorded by waste code of the European List of Wastes (2000/523/EC). CDW is reported under category 17 of the European List of Waste.

Despite the clear framework for reporting under the waste codes 17 of the European List of Wastes and the treatment operations as described in Annexes I and II of the WFD, there are some discrepancies concerning the reporting on backfilling and the reporting under waste codes 17 05 05\* and 17 05 05 (dredging spoils)<sup>5</sup>. Some clarifications on these issues would significantly improve reporting in the stream of CDW in Estonia.

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<sup>1</sup> <https://www.riigiteataja.ee/en/eli/ee/511032015001/consolide>

<sup>2</sup> [http://www.envir.ee/sites/default/files/riigi\\_jaاتمekava\\_2014-2020.pdf](http://www.envir.ee/sites/default/files/riigi_jaاتمekava_2014-2020.pdf)

<sup>3</sup> Rütelmann M., 'C&D waste treatment in Estonia, Estonian Recycling Cluster – driving force for recycling', Vilnius 3.3.2015

<sup>4</sup> Waste reporting system (WDMS), at: <https://jats.keskkonnainfo.ee/main.php?lang=en&public=1>

<sup>5</sup> MAVES, 'Construction and Demolition Waste Sorting' (source title: Ehitus- Ja Lammutusjäätmete Sortimisuuring), Tallinn 2010, at: [http://www.envir.ee/sites/default/files/ehitus-lammutusjaitmete\\_uuring\\_2010.pdf](http://www.envir.ee/sites/default/files/ehitus-lammutusjaitmete_uuring_2010.pdf)

## 2.3 End of Waste (EoW) status

Currently, there are no End of Waste criteria established in Estonia concerning materials from the CDW stream. The principles for establishing End of Waste criteria are clearly articulated in the Waste Act. There is no information available on the status or future planning for development of such criteria.

## 2.4. Definitions of waste treatment operations

The definitions for re-use, recovery and recycling are presented in Articles 14 and 15 of the Waste Act (RT I 2004, 9, 52). Specifically, the legislative document defines:

### *Article 14. Re-use*

*'Re-use' means any operation by which products or components of products that are not waste are used again for their original purpose. [RT I, 09.11.2011, 1 - entry into force 10.11.2011]*

### *Article 15. Waste recovery*

*(1) 'Waste recovery' means any waste management operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. [RT I, 09.11.2011, 1 - entry into force 10.11.2011]*

*(2) [Repealed - RT I, 09.11.2011, 1 - entry into force 10.11.2011]*

*(3) 'Preparing of waste for re-use' means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing. [RT I, 09.11.2011, 1 - entry into force 10.11.2011]*

*(4) 'Recycling', including 'organic recycling' means a waste recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. This does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. [RT I, 08.07.2014, 13 - entry into force 18.07.2014]*

*(5) 'Energy recovery' means a waste recovery operation where combustible waste is used as a means to produce energy through incineration of this waste, with or without other waste or fuel, with recovery of the generated heat.*

*(6) 'Organic recycling' means the degradation, under controlled conditions and using micro-organisms, of the biodegradable parts of waste, which produces stabilised organic residual materials or methane. Landfill shall not be deemed to be a form of organic recycling.*

*(7) Methods of waste recovery may comprise one or several recovery operations.*

*(8) A list of waste recovery operations shall be established by a regulation of the Government of the Republic.*

There is a clearly defined list of recovery operation for reporting, following the categorisation of Annex II of the WFD, and even going further by introducing subcategories of certain treatment operations. The list can be found in the Estonian Waste Reporting system (JATS) and is presented in Table 1.

**Table 1: List of recovery operations in Estonia<sup>6</sup>**

R-codes	Description
R1	Use principally as a fuel or other means to generate energy
R2	Solvent reclamation/regeneration
R3	Recycling/reclamation of organic substances which are not used as solvents
R3c	Chemical recycling or disintegration of waste material to initial constituents and recycling the constituents into the original material of the waste
R3f	Feedstock recycling or disintegration of waste material, including by means of gasification or pyrolysis to any chemical substances and using the substances as chemicals in the composition of a new product
R3k	Preparing for reuse of products or their components, consisting mainly of organic materials
R3m	Mechanical recycling or recovery of waste material, for the original purpose or for other purposes, without changing the chemical structure of the processed material
R3o	Organic recycling, including composting and other biological transforming processes
R4	Recycling/reclamation of metals and metal compounds
R5	Recycling/reclamation of other inorganic materials
R5c	Chemical recycling
R5f	Feedstock recycling
R5k	Preparing for reuse of products or their components, consisting mainly of inorganic materials
R5m	Mechanical recycling, including recycling of inorganic construction materials and soil cleaning resulting in recovery of the soil
R5o	Soil cleaning resulting in recovery of the soil, including treatment using biological, thermal, physico-chemical and other methods
R6	Regeneration of acids or bases
R7	Recovery of components used for pollution abatement
R8	Recovery of components from catalysts
R9	Oil re-refining or other re-uses of oil
R10	Spreading on land resulting in benefit to agriculture or ecological improvement
R11	Use of wastes obtained from any of the operations numbered R1 to R10
R12	Exchange or pre-processing of waste which results in wastes, compounds or mixtures which are recovered by means of any of the operations numbered R1 to R11
R12o	Biological treatment prior to recovery of waste
R12p	Physico-chemical treatment prior to recovery of waste (drying, evaporation, calcination etc.)
R12s	Sorting or separating of certain components of waste prior to recovery, accompanying possibly with mechanical treatment (crushing, shredding, dismantling, compacting, pelletising etc.)
R12v	Exchange of waste
R12x	Blending or mixing of waste prior to recovery
R12y	Repackaging prior to recovery of waste
R13	Storage of waste intended for submission to any operation numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)

As there is no special subcategory in the Estonian list of waste treatment operations, backfilling is mostly reported under subcategory R5m (mechanical recycling). For distinguishing between backfilling and other types of mechanical recycling, the Estonian authorities make use of the database of environmental (incl. waste) permits and database of waste management sites, analysing what was the real permitted activity on these

<sup>6</sup> Waste reporting system (WDMS), at: <https://jats.keskkonnainfo.ee/main.php?lang=en&public=1>

sites. The result of this analysis is used for reporting to Eurostat and for the calculation of the target according to Art.11 of the WFD.

There is no applicable definition of backfilling in Estonian legislation, however for reporting purposes the definition in Commission Decision 2011/753/EU applies. Specifically:

*'backfilling' means a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping and where the waste is a substitute for non-waste materials.*

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

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

#### 3.1. Legislation concerning CDW in Estonia

The overarching legislation for waste management in Estonia, setting the rules for all waste streams and treatment operations is the **Waste Act (RT I 2004, 9, 52)**<sup>7</sup>, adopted in 2004, and its subsequent amendments (the most recent one in 2015) as well as subordinate regulations. The Waste Act transposes the following: Directive 2006/21/EC on the management of waste from extractive industries, Directive 90/313/EEC on the freedom of access to information on the environment, Directive 1999/31/EC on the landfill of waste, Directive 2008/98/EC on waste, Directive 2009/31/EC on the geological storage of carbon dioxide, Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, Directive 2012/19/EU on waste electrical and electronic equipment.

The Waste Act does not include specific rules for CDW management but lays down the general rules that should apply for the management of waste according to the waste hierarchy, as presented in the WFD (2008/98/EC). This means that each professional activity related to CDW management falls under appropriate permitting regulations as described in Chapter 6 of the Waste Act concerning Waste Permits. All companies entitled to such Waste Permits are obliged to deliver yearly waste reports to the Environmental Board, presenting the treatment methods applied to the collected (received) CDW, input-output flows (secondary material streams after treatment), further waste management companies involved in subsequent treatment, where waste was delivered etc. Recovery of the CDW by backfilling operations, should also be reported within the above-mentioned frames of operation.

**The Environmental Charges Act (RT I 2005, 67, 512)**<sup>8</sup> describes the conditions under which the landfill operators should pay landfill tax to the State for receiving waste in landfills. There is also the option to issue more detailed rules concerning CDW, based on the Waste Act paragraph 29.

There is no specific legislation in place for the management of CDW, but the management of CDW is well articulated in the local waste management rules which are issued at municipality level. CDW therefore, is regulated at municipality level with the obligatory rules laid down in the local government waste management rules (Waste Act, Art.71). The local waste management rules are governed by the provisions of the National Waste Management Plan as well as the Regional Waste Management Plans.

There is also a strong landfill diversion policy in place, making use of financial measures and landfilling bans. Based on the Environmental Charges Act, the pollution charge (landfill tax) must be paid for any type of waste which is landfilled. The pollution charges are set in Art.21 of the Act. The level of the charges for 2015 are as follows: The tax for all non-hazardous waste is 29.84 EUR/tonne, while for CDW (incl. asbestos-containing CDW) the level of the tax is 0.63 EUR/tonne. The pollution charge is included in the 'gate fee' of the landfill operators and the level of the gate fee currently is about 50-55 EUR/tonne. Additionally, there is a landfill ban in place for untreated municipal solid waste since 2004 and for unsorted waste since 2008. The last two are however not applicable in the case of CDW since the majority of this waste is inert waste.

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<sup>7</sup> <https://www.riigiteataja.ee/en/eli/ee/511032015001/consolide>

<sup>8</sup> <https://www.riigiteataja.ee/en/eli/505022015011/consolide>

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

Estonia has a brand new National Waste Management Plan for the period 2014-2020<sup>9</sup>. A chapter of the new WMP is dedicated to the development of the national Waste Prevention Plan (WPP), according to provisions stated in the WFD (2008/98/EC). The WMP places specific focus on the promotion and intensification of support for investments and financing to companies engaged in waste recycling in order to enhance their performance and treatment capacity with the aim of contributing to the achievement of both recovery/recycling targets of the WFD, for municipal solid waste and construction and demolition waste. The goal of Estonia, as described in the WMP, is to reduce landfilling as much as possible and recover the highest possible share of CDW.

CDW is considered as a priority waste stream in the WPP section within the WMP of Estonia. Several measures for waste prevention, in line with Annex IV of the WFD, are presented in the WPP and they are also applicable to CDW.

Currently, a study analysing the status of the CDW management in Estonia is under preparation for the Ministry of the Environment with the aim of acquire a deeper insight on the issue for drafting relevant secondary legislation concerning the management of CDW. The study is expected later in 2015<sup>10</sup>.

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

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

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  Sorting obligation established by the local waste management rules at municipality level  Sorting can either take place on site or if deemed inappropriate (e.g. uneconomical) sorting takes place at CDW recycling facilities	Local waste management rules in municipalities  e.g. since 2002 in Tallinn, later for other municipalities	Rüütelmann M. (2015)
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i>	YES  Separate collection obligation established by the local waste management rules at municipality level and involves private collectors of separately collected materials e.g. metals, plastic, concrete	Local waste management rules in municipalities  e.g. since 2002 in Tallinn, later for other municipalities	Rüütelmann M. (2015)

<sup>9</sup> <http://www.envir.ee/et/riigi-jaatmekava-2014-2020>

<sup>10</sup> Communication with Peeter Eek, Ministry of the Environment

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>Obligation for separate collection and management of hazardous waste from C&amp;D operations? Please specify</i>	YES  Separate collection obligation established by the local waste management rules at municipality level and involves private collectors of hazardous waste	Local waste management rules in municipalities  e.g. since 2002 in Tallinn, later for other municipalities	Rüütelmann M. (2015)
<i>Related Green public procurement requirements</i>	NO		

### 3.4. Targets

The new WMP of Estonia is setting a more ambitious target of CDW recovery than the WFD. **The target is set to 75% recovery rate by 2020.** According to Article 11 of the WFD – setting the target of minimum 70% for the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste by 2020 – Estonia has already reached the target, as in 2011 the recovery rate of CDW was at the level of 72%<sup>11</sup>.

For the calculation of the target (current performance and future target setting) in the new WMP, Estonia followed the specification in Article 11(2b) detailing that the code 17 05 04 should be excluded from the calculation.

Further targets set in the new WMP and in the local waste management rules that are designed to affect positively the recovery performance of CDW include the target of closing down all uncontrolled landfills in the country by 2015<sup>11</sup> and the separate collection and recycling of CDW<sup>12</sup>.

The recovery targets also include the method of backfilling as a recovery practice with specific significance for Estonia, as it is widely used for recovery of CDW. So far, a major part of the mineral CDW are diverted to backfilling operations (reclamation of old quarries, use on construction works etc.)<sup>13</sup>.

## 4. Non legislative instruments

In this section, any other instruments that may specify how the country is addressing the question of CDW management maybe highlighted, as these instruments might be creating conditions for the 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
<i>Sustainability standards that cover CDW (e.g. BREEAM)</i>	LEED: YES  New construction – Buildings	2011	<a href="http://www.usgbc.org/projects?keys=estonia">http://www.usgbc.org/projects?keys=estonia</a>  2 buildings certified and 3 under the process of certification

<sup>11</sup> <http://www.envir.ee/et/riigi-jaatmekava-2014-2020>

<sup>12</sup> Rüütelmann M., 'C&D waste treatment in Estonia, Estonian Recycling Cluster – driving force for recycling', Vilnius 3.3.2015

<sup>13</sup> Communication with Peeter Eek, Ministry of the Environment

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
<i>Extended producer responsibility scheme</i>	NO		

#### Other non-legislative instruments

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year established	National or regional (specify if regional)	Details of Public sector and Industry enforcement/ involvement/ collaboration	Levels of performance e.g. tonnes recycled,% coverage	Further information/ web-site
Requirement for pre-demolition audits	NO					
Standards for recycled CDW	YES – NO  Standards for recycled aggregates	2012	By application	Developed through a project by the Estonian Recycling Cluster	n.a.	Rüütelmann M. (2015)
Selective demolition/ plan for large demolition sites/demolition standard	NO					
Other CDW planning requirements	YES – YES  If generated CDW is more than 10 m <sup>3</sup> , special documentation is required for the adoption of proper CDW handling	2002	National	Private construction and demolition companies must submit CDW management plan to local authorities	No information available	Rüütelmann M. (2015)

The above lists may not cover all CDW management initiatives.

## Other initiatives

A major initiative that contributes to the development of recycling of CDW in Estonia is the creation of the Estonian Recycling Cluster and the Estonian Waste Recycling Competence Centre.

The Waste Recycling Cluster was developed by the Estonian Waste Management Association (EWMA)<sup>14</sup>. The Association has 40 members (private waste management companies) all over Estonia. The mission of EWMA is to stand for the common interests of the members and to develop waste management in Estonia directed by the general principles of sustainable development.

Main objectives of the Estonian Recycling Cluster include the following:

- Increase the amounts of waste recycled in Estonia.
- Produce from waste, products compliant to quality standards and certified.
- Increase:
  - production capacity and volumes, joint marketing;
  - sales of the products-services and export.
  - international competitiveness.

Currently there are 21 Cluster members, of which 16 are private waste management companies, 3 research and educational institutions (Estonian University of Life Sciences, Tallinn Technical University, Central; Estonian Education and Competence Centre), as well as the Estonian Water Works Association and the Estonian Waste Recycling Competence Centre<sup>15</sup>.

The Estonian Waste Recycling Competence Centre<sup>16</sup> was founded in September 2013 as a non-profit organisation with the aim to increase waste recycling in Estonia and to support waste recycling companies in producing from waste high quality and certified materials.

The activities of the Estonian Waste Recycling Competence Centre are focused on development of different waste recycling projects (incl. international projects), trainings for all stakeholders in waste management/recycling and also sharing internationally the experiences of Estonian companies in waste recycling.

CDW consists a priority waste stream in the activities of the Competence Centre and especially recycling, the development of standards and the use of recycled aggregates in new construction.

## Hazardous CDW

Hazardous waste are separately collected and handled by private waste management companies who possess the appropriate waste permits according the Waste Act. Hazardous waste from CDW is mainly treated in the country and only few quantities are exported for recovery or disposal. The main waste types exported for final treatment is glass, plastic and wood containing or contaminated with hazardous substances (code 17 02 04\*). The total generated amount of asbestos-containing CDW is landfilled in Estonia in hazardous landfills complying with EU regulations.

The largest part of all hazardous waste generated in Estonia derives from the production of oil shale energy and shale oil, mainly in the form of oil shale ash and semi-coke. Hazardous waste generated by the oil shale industry constitutes nearly 95% of the total amount of hazardous waste. The generation of CDW hazardous has been more or less stable over the years<sup>17</sup>.

## **5. CDW management performance – CDW data**

Data on the generation and treatment of CDW in Estonia is collected directly from the waste management entities holding valid waste permits according to the Waste Act. They are obliged to submit reports on their waste-related activities to the Environmental Board at least once a year for entry into the environmental register. The reported data should describe the quantities of inputs and outputs of waste, the type of treatment and the type of waste treated. The Estonian Environment Agency maintains a very detailed waste register system (JATS)<sup>18</sup>, where the amounts of waste generated, treated and exported/imported in Estonia are

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<sup>14</sup> <http://www.ejkl.ee/en/?75>

<sup>15</sup> <http://www.recycling.ee/en/waste-recycling-cluster/partners/>

<sup>16</sup> <http://www.recycling.ee/en/>

<sup>17</sup> Estonian Environmental Review 2013, Chapter 4: Waste, at: <http://www.keskkonnaagentuur.ee/et/review2013>

<sup>18</sup> Waste reporting system (WDMS), at: <https://jats.keskkonnainfo.ee/main.php?lang=en&public=1>

reported by waste code, following the classification of the European List of Wastes (2000/532/EC), and by treatment category, according to the classification found in Annexes I and II of the WFD (2008/98/EC).

The reporting of data directly from entities holding valid waste permits for performing waste management operations ensures that all sectors of the economy are covered, including households. However, illegal disposal of CDW by individuals is not taken into account in the statistics since it is not officially recorded. There are no estimations on fly tipping of CDW available.

The only official source of CDW data in Estonia is the Estonian Environment Agency and the official data is found in the Waste Register (JATS). Estonia is reporting to Eurostat using the data from its waste register.

## 5.1. CDW generation data

Data on CDW generation are presented in Table 2. Data for naturally occurring materials from excavation activities (codes 17 05 04 and 17 05 06) are presented separately.

**Table 2: CDW generation in Estonia<sup>18</sup>**

CDW generation (tonnes)	2006	2007	2008	2009	2010	2011	2012	2013
<b>Total</b>	<b>2 388 464</b>	<b>2 316 305</b>	<b>1 692 662</b>	<b>1 240 609</b>	<b>1 082 735</b>	<b>1 439 913</b>	<b>1 499 131</b>	<b>1 944 100</b>
CDW (excl. soils) Non-hazardous	1 108 607	892 936	864 386	590 467	640 991	839 590	805 885	980 220
CDW (excl. soils) Hazardous	5 383	5 551	4 073	1 511	3 639	7 399	5 541	2 600
Soils (non-hazardous)	1 267 631	1 398 700	813 397	634 486	409 505	561 474	677 026	939 170
Soils (hazardous)	6 842	19 118	10 806	14 146	28 599	31 450	10 679	22 110

There was a decreasing trend in CDW generation until 2010 but then the quantities of generated CDW picked up again and in 2013 reached approximately 2 million tonnes, split more or less equally between naturally occurring materials (e.g. soils and stones) and other inert and non-inert CDW.

The quantities of CDW generated differ from the data found in Eurostat database for the previous years (e.g. 2012, 2010, etc.). Discrepancies between the two databases appear due to the fact that the Waste Register in Estonia is based on the reports of the permits holders whereas the information sent to Eurostat is based on the calculation of classification EWC-Stat set out in Annex III of Regulation 2150/2002/EC. Using this material-based classification it is not possible to differ some categories of the construction and demolition waste (metal, plastic, glass and wood waste) from other waste which is made of same material. Annex III p 2 of Council Decision 2011/753/EL foresees that only waste generated in construction sector (NACE F) has to be taken into account, but same kind of waste can actually be generated in many other sectors as well. Waste Register has more accurate data and using this information all construction and demolition waste in all NACE sectors can be covered.

The generated amounts of CDW are likely to be higher than the ones reported in the Waste register because reuse and recycling on-site is not always included in the reporting. This especially concerns wood CDW arising from demolition activities, which is used directly for energy recovery (heating) on-site and not reported as generated waste<sup>19</sup>.

## 5.2. CDW treatment data

Data regarding the treatment of CDW in 2013 is presented in Table 3. There is no available data in the Estonian Waste register concerning the treatment option of backfilling and as a result data on backfilling in the table below is included in the column 'Recovery other than energy recovery'. However, according to Commission Decision 2011/753/EU, Member States are required to report separately the amounts of CDW used for backfilling from the amounts of CDW prepared for reuse, recycled and material recovered. For distinguishing

<sup>19</sup> Ministry of the Environment, 'Description of current waste management' (source title: Olemasoleva jäätmekäitluse kirjeldus), at: <http://www.envir.ee/et/riigi-jaatmekava-2014-2020>

between backfilling and other types of mechanical recycling (R5 code), the Estonian Environment Agency makes use of the database of environmental (incl. waste) permits and database of waste management sites, analysing what was the real permitted activity on these sites. The results of this analysis are used for reporting to Eurostat and for calculation of the target according to Art.11 of the WFD.

Estonia has reported to Eurostat that in 2012 the amount of CDW backfilled was 113 814 tonnes<sup>20</sup>.

**Table 3: CDW treatment in 2013 in Estonia<sup>18</sup>**

CDW treatment (tonnes)	Landfill/Disposal (all D-codes)	Energy recovery (R1)	Backfilling	Recovery other than energy recovery
<b>Total</b>	31 683	848	n.a.	1 867 401
CDW (excl. soils) non-hazardous	30 951	447	n.a.	899 888
CDW (excl. soils) hazardous	5 492	401	n.a.	10
Soils non-hazardous	733	0	n.a.	963 827
Soils hazardous	0	0	n.a.	3 676

According to the background study for the WMP, concerning the current situation of waste management in Estonia<sup>19</sup>, the amount of CDW reused on site is not reported as generated waste and therefore also excluded from the statistics on recycling and recovery of CDW. There is no estimation on the amounts of CDW reused on-site and not reported as reuse or recycling activities. The main type of CDW reused or recovered on-site is wood waste and naturally occurring materials.

Temporary storage of CDW is practiced sometimes in Estonia and for this reason it is possible that the amounts of treated CDW do not match the amount of generated CDW but shifted to the next reporting year. For 2013, there is an amount of approximately 50 thousand tonnes of CDW for which the treatment option applied is unknown. The amount of hazardous CDW landfilled consists entirely of asbestos-containing waste

### 5.3. CDW exports/imports data

Detailed data on imports and exports of CDW can be found in the Estonian Waste register, classified by waste code of the European List of Wastes. Table 4 presents the amount of CDW imported to and exported from Estonia the last eight years.

Until 2010, the import of CDW remained at relative low levels, while in 2010 the amount of CDW was increased significantly (Figure 1) due to the import of asphalt removed from road surfaces (asphalt millings). Asphalt millings are used in road construction and port extension works. This changed the ratio of import to export shipments of waste for a few years, with more CDW imported than exported, but the trend was reversed again in 2013. The biggest share in the exports of CDW is reported under the waste code 17 04 05 consisting of iron and steel from construction and demolition activities. The main destination of waste metal was Turkey<sup>21</sup>.

**Table 4: Imports/exports of CDW for the period 2006-2013 in Estonia<sup>22</sup>**

CDW	2006	2007	2008	2009	2010	2011	2012	2013
<b>Imports (Total)</b>	<b>54 557</b>	<b>46 686</b>	<b>3 397</b>	<b>3 321</b>	<b>748 449</b>	<b>551 558</b>	<b>271 089</b>	<b>149 760</b>
<i>Non-hazardous</i>	<i>54 557</i>	<i>46 686</i>	<i>3 397</i>	<i>3 321</i>	<i>748 449</i>	<i>551 558</i>	<i>271 089</i>	<i>149 760</i>

<sup>20</sup> Eurostat Waste database: Treatment of waste (env\_wastrt)

<sup>21</sup> Estonian Environmental Review 2013, Chapter 4: Waste, at: <http://www.keskkonnaagentuur.ee/et/review2013>

<sup>22</sup> Waste reporting system (WDMS), at: <https://jats.keskkonnainfo.ee/main.php?lang=en&public=1>

<i>Hazardous</i>	0	0	0	0	0	0	0	0
<b>Exports (Total)</b>	436 429	308 441	186 518	124 857	220 678	227 095	200 948	239 474
<i>Non-hazardous</i>	436 429	306 921	186 518	121 341	220 678	227 095	198 879	237 249
<i>Hazardous</i>	0	1 520	0	3 517	0	0	2 069	2 225

The amount of hazardous CDW exported ranges between 1.5 - 3.5 thousand tonnes over the last years, while for some years no exports were observed. The type of hazardous CDW exported is reported under the waste code 17 02 04\* consisting of glass, plastic and wood containing or contaminated with hazardous substances.



Figure 1: Imports/exports of CDW for the period of 2006-2013 in Estonia

#### 5.4. CDW treatment facilities data

The number of landfills operating in Estonia until 2011 is presented in Table 5. All the landfills are compliant with EU legislation, while all non-compliant landfills have been closed down. Pursuant to the Waste Act, all closed landfills must be rehabilitated by 31 December 2015. As of the beginning of 2013, the majority of landfill sites closed in 2009 were rehabilitated<sup>21</sup>.

Table 5: Number of landfills in Estonia

Type of landfill	2004	2005	2006	2007	2008	2009	2010	2011
Landfill for hazardous waste	10	11	10	10	9	10	7	7
Landfill for non-hazardous waste	33	26	24	18	15	15	6	6
Landfill for inert waste	3	2	2	2	2	2	2	1
<b>Total</b>	<b>46</b>	<b>39</b>	<b>36</b>	<b>30</b>	<b>26</b>	<b>27</b>	<b>15</b>	<b>14</b>

There were six landfills for non-hazardous waste remaining in operation in Estonia in 2011. The only landfill site for CDW is classified as landfill for non-hazardous waste and not landfill for inert waste. It is situated at Maleva 4 in Tallinn, at the site of a former clay quarry and is being filled with mineral waste, mainly waste from construction and demolition activities. The only landfill site classified as landfill for inert waste is located in Ida-Viru County and receives exclusively inert mineral waste from the oil shale mining industry. Oil shale mining

waste consists by far the largest share of mineral waste in Estonia, approximately 80% by weight in 2011. For comparison, CDW represent about 8% of the total waste generated in Estonia in 2011<sup>23</sup>. There were seven landfills for hazardous waste in Estonia in 2011, mainly used for depositing waste from oil shale processing.

There are no plans for increasing the capacity of landfills, on the contrary the goal of Estonia, as described also through the aspirations in the new Waste Management Plan, is to reduce landfilling as much as possible and recover the highest possible share of CDW.

There are no specific figures for the total available treatment capacity in Estonia, but estimations from the Estonian Waste Recycling Competence Centre indicate that the current installed capacity is more than enough to cover the treatment of CDW generated in Estonia. Actually, there might be a slight overcapacity and many Estonian waste management companies are thinking of importing CDW for recovery.

The main targeted materials for recovery is mineral waste for the production of high quality aggregates. Metals from CDW are separately collected and directed to the market of metals waste for recycling (mainly abroad). Wood CDW is considered very problematic as a material for recovery as there are not many technological available options at the moment for the efficient recovery and use of wood CDW. As a result, the amounts of wood CDW generated are mostly used on site for energy recovery (heating). So far no treatment of the gypsum based materials and sheet glass exist in Estonia. Plastics, rubber and tar materials are mainly burned in permitted waste incineration and co-incineration (cement work) facilities.

There is no specific data on mobile vs. fixed treatment units. The waste management companies in Estonia employ a great variety of methods for the collection and treatment of CDW. Most commonly, waste management companies prefer to collect all CDW mixed in large containers and sort it afterwards in their facilities.

## 5.5. Future projections of CDW generation and treatment

No study containing future projections of CDW generation and treatment in Estonia was identified. No such projections were also identified in the new WMP of Estonia for 2014-2020. However, in the previous WMP for the period 2008-2013 there was a conclusion that about 3-4 million m<sup>2</sup> of buildings and structures would be demolished in the following years (without specifying a time horizon). This can be translated in the amount of CDW that will be generated in the future years by taking into account a factor of 900 kg of CDW per 1 m<sup>2</sup>.<sup>24</sup>

The new WMP of Estonia for the period 2014-2020 foresees that during this period a lot of old industrial, agricultural and military buildings of the soviet era will be demolished, leading to an increased amount of CDW. However, there is no quantification of the expected CDW generation.

Currently, a new study for the status of CDW management in Estonia is being prepared for the Ministry of the Environment and is expected by the end of 2015. More detailed information on CDW generation and projections for the future will be included in the study, as the main objective of this study is to enhance the insight of the Ministry for drafting relevant secondary legislation concerning CDW<sup>25</sup>.

## 5.6. Methodology for CDW statistics

The methodology used for waste statistics in Estonia follows Eurostat guidelines as explained in the manual on waste statistics. No changes in methodology have been identified and no significant changes are expected to take place in the near future.

# 6. C&D waste management in practice

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

## 6.1. CDW management initiatives

The initiatives listed below were identified through literature review and stakeholders interviews.

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<sup>23</sup> Estonian Environmental Review 2013, Chapter 4: Waste, at: <http://www.keskkonnaagentuur.ee/et/review2013>

<sup>24</sup> Talvik O., 2014, 'Possibilities to use recycled aggregates in road construction – Estonian case study.

<sup>25</sup> Communication with Peeter Eek, Ministry of the Environment.



Description of initiative	Scope	Year established	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
Economic instrument  Pollution charge	Pollution charge (landfill tax) applied to all waste being disposed in landfills  The charge in 2015 for all non-hazardous waste is 29.84 €/t	1990	National	Estonian government	Large amounts of CDW diverted from landfills over the last years. No specific figures of CDW diverted due to the tax	Eek Peeter (communication)
Economic instrument  Varying gate fees	Gate fees for separately collected materials (incl. soil & stones, asphalt concrete, wood) at 4-6 €/ t (VAT not included) and Mixed C&D waste at 45-62 €/ t (VAT not included)	variable	National	Waste treatment facilities	The economic incentive favours separate collection and treatment of CDW. No specific figures can be attributed to the effect of this measure alone.	Rüütelmann M. (2015)
Economic instrument  Financial support	Municipalities can apply for financial support from the Environmental Investment Centre to cover up to 90% of costs related to 'eternite' waste collected from the households	2012	National	Environmental Investment Centre (governmental organisation)	No performance figures available	Eek Peeter (communication)  <a href="http://www.kik.ee/en">http://www.kik.ee/en</a>

Description of initiative	Scope	Year established	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
Economic instrument  Financial support	Financial support through the EIC for demolition projects of the obsolete Soviet era military, industrial and collective farms (agricultural) buildings. The support could be up to 90% of total costs (up to 50% for Companies). The applicant should demonstrate separate collection in the demolition project and that CDW is handled according to the waste hierarchy	2012	National	Environmental Investment Centre (governmental organisation)	No performance figures available	Eek Peeter (communication)  <a href="http://www.kik.ee/en">http://www.kik.ee/en</a>
Technical standards project	The Estonian Waste Management Association has been granted financing through the Enterprise Estonia for the development of a project aiming at compiling technical standards for crushed concrete as constructions material (recycling of aggregates).	2010	National	Waste association (incl. private and public stakeholders)	n.a.	Eek Peeter (communication)  <a href="http://www.eas.ee/en">http://www.eas.ee/en</a>

Description of initiative	Scope	Year established	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
Training programmes	The Estonian Recycling Competence Centre is offering training courses for employees in recycling companies, local authorities and sharing of international experiences with the aim of increasing the competence of actors involved in CDW recycling	2014	National	Waste association (incl. private and public stakeholders)	n.a.	Rüütelmann M. (2015)  <a href="http://www.recycling.ee/en/estonian-waste-recycling-competence-center/">http://www.recycling.ee/en/estonian-waste-recycling-competence-center/</a>
Research – Pilot study on the construction of a test road with recycled aggregates	The Estonian Recycling Cluster developed a test road in order to study the properties of recycled aggregates and assess their quality compared to natural materials	2010	Local	Waste association (incl. private and public stakeholders)  Academic partner – Tallinn Technical University  Estonian Road Authority	No data	Talvik O. (2014)  <a href="http://www.recycling.ee/wp-content/uploads/2014/10/Possibilities_to_use_recycled_aggregates_in_road_construction_-_Estonian_case_study_141009.pdf">http://www.recycling.ee/wp-content/uploads/2014/10/Possibilities to use recycled aggregates in road construction - Estonian case study 141009.pdf</a>

The Estonian Waste Recycling Competence Centre is trying to establish a bridge between CDW producers, recyclers and construction developers in order to raise awareness for the use of recycled aggregates. Tests for specifications and standards for recycled aggregates have been performed and the results have been widely communicated to all actors within the construction sector for awareness. The Competence Centre is striving to develop a better image for the recycled materials and overcome the common belief in the construction sector that recycled aggregates are of lesser quality than the natural aggregates.

## 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 Estonia. In the table below, there is a brief presentation of the stakeholders' opinion on a few initiatives presented in the previous sections of this factsheet.

Description of initiative	Scope, year established, actors involved	Advantages/ Enabling factors	Disadvantages/ Obstacles	Further information/ web-site
<i>Obligation for separate collection of different materials in CDW</i>	2002 <ul style="list-style-type: none"> <li>Municipal level</li> <li>Waste management companies</li> </ul>	<ul style="list-style-type: none"> <li>Clear legislative framework.</li> <li>Higher value of separately collected materials.</li> <li>Reduced gates fees in treatment facilities.</li> <li>Higher re-use potential</li> </ul>	<ul style="list-style-type: none"> <li>Private companies – mostly responsible for collection – not always follow the established rules, despite regular inspections.</li> <li>Construction sector have not been very keen to organise separate collection on site, as C&amp;D waste management companies more often offer services as 'put all to one container, we'll sort it'</li> </ul>	Rüütelmann M. (2015)
Pollution charge	1990 <ul style="list-style-type: none"> <li>Estonian government</li> <li>Municipalities</li> <li>Waste management companies</li> </ul>	<ul style="list-style-type: none"> <li>Clear legislative framework</li> <li>Strong economic incentive for diversion from landfilling</li> <li>Favourable charges for asbestos-containing CDW in order to avoid uncontrolled dumping and illegal practices</li> </ul>	<ul style="list-style-type: none"> <li>Cases of illegal dumping in order to avoid the pollution charge</li> </ul>	EEK Peeter (communication)

### 6.3. Waste legislation enforcement

Responsible authority for the monitoring and enforcement of waste regulation requirements in Estonia is the Environmental Inspectorate as well as the local authorities, especially for controlling the enforcement of the local waste management rules. The Inspectorate is an administrative unit under the Ministry of Environment which exercises supervision in all areas of environmental protection. It coordinates and executes supervision regarding the use of natural resources and the protection of the environment by applying the state's coercive measures on the basis and to the extent specified by law. Since September 2011 it also carries out investigations in criminal cases. The functions, rights and obligations of the Environmental Inspectorate are specified in the Environmental Supervision Act<sup>26</sup>.

There are adequate human resources to administer environmental inspections all over Estonia and the usual measures taken to enforce compliance with current legislation and the local waste management rules is through fines. Violation of the requirements of local government waste management rules entails a fine of up to 200 fine units (1 fine unit = 4 EUR) for private persons and up to 20 000 fine units for a legal entity<sup>27</sup>.

CDW management has been increasingly elevating the steps of the waste hierarchy over the recent years and currently the recovery performance is high enough that Estonia has already achieved the WFD<sup>28</sup>. There is more than enough treatment capacity installed in the country and already most of CDW generated is treated in the country. There is also indications that Estonia is able to recover more CDW than that produced in the country. However, the quality of recycling still needs to be improved and the prevention of CDW needs to be improved as well.

Estonia has no infringement cases concerning the management of CDW.

There have been several reported cases of fly tipping and illegal dumping of CDW but there is no solid data on the cases and the amount of CDW disposed.

<sup>26</sup> <http://www.kki.ee/eng/>

<sup>27</sup> Rüütelmann M., 'C&D waste treatment in Estonia, Estonian Recycling Cluster – driving force for recycling', Vilnius 3.3.2015

<sup>28</sup> <http://www.envir.ee/et/riigi-jaatmekava-2014-2020>

## 6.4. Drivers / barriers to increase CDW recycling

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
<b>Legislative Framework</b>	<ul style="list-style-type: none"> <li>• Existence of comprehensive national legislation, governing the management of waste in Estonia, including provisions for CDW in particular.</li> <li>• Local government waste management rules include specific provisions for the management of CDW in practice</li> <li>• Source separation of CDW on-site</li> <li>• Target in the Waste Management Plan of Estonia is set at higher level than that defined in the WFD for recovery of CDW (article 11)</li> </ul>	<ul style="list-style-type: none"> <li>• Generally there is quite satisfactory implementation of rules on CDW management, however it is reported that not all the times the rules are followed</li> <li>• Source separation on-site needs further development, but it seems that the construction sector is not so keen to organise effective separation at source. They support the practice of after-sorting at their recycling facilities.</li> <li>• Illegal dumping (fly-tipping) is likely by private persons or small construction companies, at a small scale, when CDW is not managed by legally permitted waste management companies.</li> </ul>
<b>Inspection procedures and CDW legislation enforcement</b>	<ul style="list-style-type: none"> <li>• Generally sufficient inspection procedures</li> <li>• Fines administered to CDW management rules violators</li> </ul>	<ul style="list-style-type: none"> <li>• Still there is a room from improvement, since not all cases have been possible to be addressed effectively by the inspectors</li> </ul>
<b>Treatment facilities territorial network</b>	<ul style="list-style-type: none"> <li>• Sufficient network of treatment facilities in the country, operated mainly by private waste management companies (excl. few landfills which are municipality owned)</li> </ul>	<ul style="list-style-type: none"> <li>• Limited recovery options for CDW. Currently, only aggregates are recycled to a good quality material.</li> </ul>
<b>Key stakeholders involvement</b>	<ul style="list-style-type: none"> <li>• The Estonian Waste Recycling Cluster and the Waste Recycling Competence Centre aim to increase waste recycling in Estonia and to support waste recycling companies in producing from waste high quality and certified materials.</li> <li>• Commercial engagement of private waste management companies in the collection and treatment of CDW, in response to policy obligations.</li> <li>• The Environmental Investment Centre is providing financial support to projects in relation to sound environmental management of CDW, following the waste hierarchy.</li> </ul>	<ul style="list-style-type: none"> <li>• Private companies are mostly responsible for the management of CDW in Estonia. As a result the treatment options for CDW usually follow market dynamics and not necessarily the principles of the waste hierarchy.</li> <li>• General mentality of the construction sector (contractors, operators, etc.) which consider recycled CDW as lower quality material and avoid it most of the times, especially in the case that natural materials are cheaper than the recycled.</li> </ul>
<b>Data reporting</b>	<ul style="list-style-type: none"> <li>• Obligation of the legally permitted CDW management companies to report data regarding CDW management by waste code (according to the European List of Waste) for both the receiving quantities and the treated quantities, indicating the final destination of CDW, R-D codes.</li> <li>• Well-developed Waste Register database (JATS) including very detailed data on CDW generation, treatment, exports and imports by waste code.</li> <li>• Eurostat guidelines on CDW data reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Certain amounts of CDW still remain unreported, mainly through illegal activities of private persons or non-legally permitted legal entities. Uncontrolled dumping in remote areas (mainly in the countryside).</li> <li>• There are certain amounts of CDW which although are reported treated, not specific treatment method is indicated in the database (unspecified treatment). In this case this amount of CDW is not included in any specific treatment option (R-D codes) and is not counted for the calculation of the targets.</li> <li>• There is no distinct data concerning backfilling in the national waste register (JATS) and it is impossible to extract this data directly from the database. Instead, complementary data from other databases (environmental permits) is used for the calculation of the CDW backfilled. As a result discrepancies may appear in CDW backfilling data for Estonia</li> </ul>

<b>Market conditions</b>	<ul style="list-style-type: none"> <li>• Pollution charge is a strong driver for diversion from landfills. Applies to all non-hazardous waste including CDW.</li> <li>• Landfilling is considered to be an expensive option and as a result services providing recovery and recycling options are well developed.</li> <li>• Significantly lower charges for asbestos-containing waste in order to discourage illegal dumping of this waste.</li> <li>• Lower gate fees for separately collected CDW than for mixed CDW</li> <li>• Good market of CDW metals</li> <li>• Strong competition in the waste management sector lowers the costs of CDW management.</li> <li>• Currently, there is a concentrated effort to boost the image of recycled aggregates, by the Waste Recycling Cluster, in order improve the market of this materials and make it competitive in the market.</li> </ul>	<ul style="list-style-type: none"> <li>• There is no market for other recycled CDW, except from metals from CDW. Recycled aggregates are only used at a very limited scale.</li> <li>• Low resource tax on natural materials (e.g. aggregates) discourages the use of recycled materials, as natural materials are still cheaper than their respective recycled materials.</li> <li>• So far, most part of mineral CDW is used for backfilling operations (reclamation of old quarries, use on construction works, etc.). Recycled aggregates are used only for secondary roads (low traffic), bicycle paths, parking lots, etc.</li> </ul>
<b>Construction works contracts</b>	<ul style="list-style-type: none"> <li>• If the generation of CDW in a construction/ demolition project is more than 10m<sup>3</sup> then the contractor is obliged to submit a plan for appropriate treatment options to the Local Authority Environment Department (in case it is required by the local authority waste management rules)</li> <li>• Demolition works are usually done at a good technical level. Most widely used treatment options (crushing, sieving, etc.) for concrete and bricks are available.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of GPP criteria for recycled material content in new construction projects. The Ministry of Environment wants to incorporate such criteria to public tendering procedures, but still there is no progress made.</li> <li>• During demolition of old buildings, where certain parts (roof elements, windows, doors, brick, stones, etc.) could be reused (prepared for reuse), the re-use aspect of these elements is often neglected, as it is more time and cost demanding.</li> </ul>
<b>Recycling process</b>	<ul style="list-style-type: none"> <li>• Research projects on the application and quality of recycled aggregates</li> <li>• The Estonian Recycling Cluster supports waste companies in improving their techniques and producing higher quality recycled materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Although obligation for source separation and sorting on-site exists, it is reported that the rules are not followed all the times.</li> <li>• Recycled concrete must reach high standards criteria, equal to natural materials. Requirements in construction guidelines traditionally were made for natural aggregate and are too high for recycled aggregates to achieve.</li> <li>• No EoW criteria for inert CDW.</li> <li>• No treatment of gypsum based materials and sheet glass exist.</li> <li>• Wood CDW is used exclusively for energy recovery as it is considered a problematic waste material for recyclers.</li> </ul>

## 7. CDW sector characterisation

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

### 7.1. Sector characteristics

Private waste management companies play a major role in the management of CDW in Estonia. Waste management companies are obliged by law to hold appropriate environmental permits according to Chapter 6 of the Waste Act, concerning Waste Permits. The environmental permits are issued by the Ministry of Environment while the inspection of the validity and use of environmental permits is performed by the Environmental Inspectorate.

The owner of CDW is responsible for the proper its treatment, either by own means (fulfilling the required provisions of the Waste Act) or by contracting a waste management company to manage the CDW instead. The waste management companies are responsible for collecting CDW at source and separating it according

to the local waste management rules, depending on the rules of each municipality in Estonia. Although CDW separation at source consists usually a standard obligation, many companies prefer to collect the whole quantity of CDW mixed in containers and transport it to their facilities for later sorting and recycling. A waste management company might control all steps in the CDW management value chain (collection, sorting, recycling, marketing the recycled materials) or just some parts of the chain, while outsourcing the rest to subcontractors. The open market environment in the waste sector of Estonia leads to strong competition between the waste recycling companies in ensuring enough waste to manage and treat in their CDW treatment facilities. Currently, the waste management companies are investigating the option of importing CDW for recycling<sup>29</sup>, since enough capacity is already installed and the economies of scale might render this activity profitable in the near future.

The roles in the CDW management chain are clearly defined in the waste legislation and the local waste management rules, however, the way the private companies choose to manage the waste is not clearly articulated but driven mainly by market forces. The waste management system in Estonia is highly liberalised, with private actors playing a significant role in the direction of CDW management.

So far, the Ministry of Environment has limited power on directing the treatment practices employed by the waste management companies, as long as these companies fulfil all the requirements of environmental permitting.

The Estonian Waste Management Association, as well as the Waste Recycling Cluster and the Waste Recycling Competence Centre, are representing the majority of the actors in the CDW management value chain. The mission of EWMA is to stand for the common interests of its members and to develop waste management in Estonia directed by the general principles of sustainable development. The Association and the Cluster are coordinating efforts in order to increase the recycling of CDW in Estonia and to produce higher value from waste. The existing actors involved throughout the CDW management value chain have managed to produce good results in increasing the recovery of CDW in Estonia, which currently stands above the target of the WFD for 2020. The CDW management actors have worked individually and together within associations to produce this high recovery performance.

The Estonian Recycling Competence Centre is planning to establish a certification institution with the aim to create a certification scheme for crushed concrete (primarily) and at a longer term perspective to include other CDW materials as well. The certification of CDW materials will ensure high and common applied standards for crushed concrete to be used as aggregates for construction purposes. The certification system will increase the visibility and confidence in use of this material instead of natural aggregates. The certification is expected to boost the image of recycled CDW and raise awareness for the quality of the recycled materials among the relevant actors in the construction and retail sector (of materials).

Recycling has generally a high potential for job creation, compared to other waste management options such as landfilling and incineration. In the case of CDW management in Estonia, no data was found concerning recycling or any other steps in the value chain of CDW. Since the private sector is a major force behind the CDW management system of Estonia, data concerning employment are not easily available and considered confidential.

## 7.2. Exports / imports of CDW

There is enough capacity at the moment for the treatment of most CDW generated in Estonia, already in place. There are even indications of potential overcapacity<sup>30</sup> in CDW treatment facilities and the possibility for Estonia to import CDW for treatment from its neighbouring countries. The main partners for imports and exports of CDW are Finland, Latvia and Lithuania, while countries as far as Sweden and Denmark get a share of the CDW trade. Most of the waste iron and steel extracted from waste concrete blocks and columns is exported together with the bulk of iron scrap mainly to Turkey<sup>31</sup>.

Hazardous CDW containing plastic, glass and wood is exported for proper treatment abroad, while asbestos-containing CDW is landfilled under controlled conditions in Estonia.

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<sup>29</sup> Communication with Margit Rütelmann, Estonian Recycling Cluster

<sup>30</sup> Communication with Margit Rütelmann, Estonian Recycling Cluster

<sup>31</sup> Estonian Environmental Review 2013, Chapter 4: Waste, at: <http://www.keskkonnaagentuur.ee/et/review2013>

### 7.3. CDW as landfill cover

There has been a remarkable effort in Estonia over the last years for the closure and rehabilitation of all non-compliant landfills, according to EU regulations. So far, 150 landfills have closed down and rehabilitated or they are under the process of rehabilitation (currently 2-3 remaining).

During the course of rehabilitation operations CDW has been used as well as cover material, among other waste and non-waste materials. However, comprehensive data is not available concerning the type and the amount of CDW used for rehabilitation purposes. Among CDW used for landfill cover are mineral CDW such as concrete, bricks, stone, etc. as well as excavated soils. The amount of CDW used for this purpose is reported as 'recovery' in the Waste Register of Estonia. This leads to the conclusion that significant amounts of CDW recovered in this way contributed to the high recovery rate of Estonia.

### 7.4. Market conditions / costs and benefits

There are strong financial incentives in place in Estonia for encouraging recycling and recovery of CDW over landfilling. As landfilling is considered to be rather an expensive option, waste recovery services and infrastructure have developed considerably over the last years.

Based on the Environmental Charges Act, the pollution charge (landfill tax) should be paid for any type of waste, which is landfilled. The pollution charges are set in par. 21 of the Act. The levels of the charges are in 2015 as follows:

- 29.84 €/t for all non-hazardous waste
- 0.63 €/t for construction and demolition waste containing asbestos

The pollution charge (landfill tax) is parts of the landfill operators 'gate fee', which is estimated today (2015) at 50-55 €/t. This is a strong enough signal from an economic point of view to divert waste to cheaper alternatives, i.e. recovery and recycling<sup>32</sup>.

The pollution charge for all kind of asbestos-containing CDW (where asbestos-containing roof material '*eternit*' has the biggest part) is set on very low level to make landfilling cheaper and to avoid illegal dumping, as there are no legal recovery options for those waste types.

Currently the resource tax is considered to be at very low level<sup>30</sup> and do not represent the actual situation of prospective resource scarcity of natural materials for construction (e.g. aggregates). It is estimated that the quarries in Tallinn and in its surrounding area have a life expectancy of approximately 5-6 years, while at the same time there are significant difficulties in opening new quarries<sup>33</sup>. This means that resource constraints will arise in the short-medium term which will affect the construction industry in the capital city of Estonia. Alternative options would be to transport aggregates for longer distances within Estonia or even import aggregates from abroad. However, it is considered more beneficial to recycle and use again material from CDW which can be found in abundance from construction works around Tallinn metropolitan region.

### 7.5. Recycled materials from CDW

The market for recycled CDW materials in Estonia is not very developed yet. So far, the major part of mineral CDW is used for backfilling operations (reclamation of old quarries, use on construction works, etc.) and is not recycled to new products.

The Estonian building product standard 2325-CPD-0038, following the specification of EU standard EVS-EN 13242:2006+A1:2008, is applied for recycled aggregates. However, this standard applies to all natural, artificial or recycled materials for construction purposes. This means that the requirements set by this standard are high for recycled aggregates, compared to the natural material.

The Waste Recycling Competence Centre is putting forward a plan to establish certification criteria for crushed concrete for the production of recycled aggregates. This endeavour is still at the planning stage but the Competence Centre would like to speed up the process<sup>34</sup>.

No End-of-Waste criteria have been established so far for any material found in the CDW stream.

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<sup>32</sup> Communication with Peeter Eek, Ministry of the Environment

<sup>33</sup> Rüttemann M., 'C&D waste treatment in Estonia, Estonian Recycling Cluster – driving force for recycling', Vilnius 3.3.2015

<sup>34</sup> Communication with Margit Rüttemann, Estonian Recycling Cluster

The Waste Recycling Cluster of Estonia is marketing actively the use of recycled aggregates in new construction activities. There is a big challenge in Estonia to improve the image of recycled aggregates and reduce the reluctance of the relevant actors in the construction sector to start using recycled materials in new construction of building or other infrastructure projects<sup>34</sup>.

## 7.6. Construction sector make up

The construction sector make up in Estonia is presented in the tables below.

**Table 6: Production value of the construction sector in Estonia (in million EUR)<sup>35</sup>**

Sector	2006	2007	2008	2009	2010	2011	2012	2013
Construction of buildings	1 399 504	1 712 429	1 212 494	787 669	595 546	848 169	971 836	854 839
Refurbishment and demolition activities	690 078	970 063	978 556	606 546	598 183	784 327	988 954	1 120 224
Civil engineering (e.g. roads, etc.)	521 599	653 884	708 745	529 894	483 063	608 650	745 849	829 425
<b>Construction sector TOTAL</b>	<b>2 611 181</b>	<b>3 336 376</b>	<b>2 899 795</b>	<b>1 924 109</b>	<b>1 676 792</b>	<b>2 241 146</b>	<b>2 706 639</b>	<b>2 804 488</b>

In contrast to many EU Member States which suffered a severe downturn in their construction sector due to the recent economic crisis, Estonia appears to have tackled the negative economic environment of the crisis quite quickly and by 2013 the production value of the construction sector in Estonia was already at the same level as in 2008, but lower compared to 2007.

**Table 7: Number of enterprises in the construction sector of Estonia<sup>35</sup>**

Sector	2006	2007	2008	2009	2010	2011	2012	2013
Construction of buildings	3 694	4 792	4 547	3 794	2 874	3 048	3 280	3 363
Refurbishment and demolition activities	1 828	2 667	3 267	3 568	3 886	4 111	4 451	4 770
Civil engineering (e.g. roads, etc.)	293	363	503	549	686	729	643	738
<b>Construction sector TOTAL</b>	<b>5 815</b>	<b>7 822</b>	<b>8 317</b>	<b>7 911</b>	<b>7 446</b>	<b>7 888</b>	<b>8 374</b>	<b>8 871</b>

The relative decline in the number of enterprises for the construction of buildings, over the period 2008-2013, seems to be counterbalanced by the rise in the number of enterprises of refurbishment and demolition activities over the same period. It seems that there is a significant activity of refurbishment or demolition of old buildings, rather than the construction of new buildings.

The number of enterprises active in civil engineering works has doubled in 2013 compared to 2007. It seems that there is considerable development in infrastructure works in Estonia the recent years.

However, the number of persons employed in the construction sector appears to be significantly lower in 2013 than it was before the crisis (Table 8), despite the fact the figures of production value (Table 6) and number of enterprises (Table 7) seem to have recovered completely, reaching pre-crisis levels. There seems to be a social cost in the construction sector of Estonia which is not easily discerned in the economic figures of the sector.

<sup>35</sup> Statistics Estonia, 'CO035: Value added and productivity indicators of construction enterprises by economic activity (EMTAK 2008) and number of persons employed', at: <http://www.stat.ee/construction>

**Table 8: Number of persons employed in the construction sector of Estonia<sup>35</sup>**

Sector	2006	2007	2008	2009	2010	2011	2012	2013
Construction of buildings	27 178	30 696	25 264	17 730	13 813	15 912	16 292	15 138
Refurbishment and demolition activities	16 785	21 314	21 429	17 261	16 116	17 165	18 034	19 410
Civil engineering (e.g. roads, etc.)	8 244	9 800	10 535	9 395	8 693	8 860	9 111	9 657
Construction sector <b>TOTAL</b>	52 207	61 810	57 228	44 386	38 622	41 937	43 437	44 205

Data on the use of recycled aggregates by the construction industry in Estonia is not readily available. However, the Estonian Recycling Competence Centre is organising trainings and special conferences in an effort to increase awareness about the use of recycled aggregates among the construction sector.

# References

## Interview sources:

- Interview with Mrs Margit Rütelmann, Managing Director, Estonian Waste Management Association – Estonian Waste Recycling Competence Center, 11.05.2015
- E-mail communication with Mr Peeter Eek, Director of the Waste Department, Ministry of Environment of Estonia, April-May 2015
- E-mail communication with Mr Andres Rattur, International Reporting Senior Specialist, Waste Department, Estonian Environment Agency, April-May 2015

No other stakeholder was identified nor contacted.

## Literature sources:

- Estonian Environment Agency (2014), Estonian Environmental Review 2013, Chapter 4: Waste, available at: [http://www.keskkonnainfo.ee/failid/ky\\_2013\\_eng\\_4.pdf](http://www.keskkonnainfo.ee/failid/ky_2013_eng_4.pdf)
- Eurostat (2015), Waste database, available at: <http://ec.europa.eu/eurostat/web/environment/waste/database>
- MAVES (2010), Construction and Demolition Waste Sorting (source title: *Ehitus- Ja Lammutusjäätmete Sortimisuuring*), available at: [http://www.envir.ee/sites/default/files/ehitus-lammutusjmetete\\_uuring\\_2010.pdf](http://www.envir.ee/sites/default/files/ehitus-lammutusjmetete_uuring_2010.pdf)
- Ministry of Environment (2014), National Waste Management Plan 2014-2020, available at: [http://www.envir.ee/sites/default/files/riigi\\_jaatmekava\\_2014-2020.pdf](http://www.envir.ee/sites/default/files/riigi_jaatmekava_2014-2020.pdf)
- Ministry of the Environment (2014), Description of current waste management (source title: *Olemasoleva jäätmekäitluse kirjeldus*), at: <http://www.envir.ee/et/riigi-jaatmekava-2014-2020>
- Rütelmann M. (2015), C&D waste treatment in Estonia, Estonian Recycling Cluster – driving force for recycling, Vilnius 3.3.2015, at: <http://lkata.lt/upload/files/C%26D%20waste%20in%20Estonia.pdf>
- Statistics Estonia (2015), CO035: Value added and productivity indicators of construction enterprises by economic activity (EMTAK 2008) and number of persons employed, available at: <http://www.stat.ee/construction>
- Talvik O. (2014), Possibilities to use recycled aggregates in road construction – Estonian case study, available at: [http://www.recycling.ee/wp-content/uploads/2014/10/Possibilities\\_to\\_use\\_recycled\\_aggregates\\_in\\_road\\_construction-Estonian\\_case\\_study\\_141009.pdf](http://www.recycling.ee/wp-content/uploads/2014/10/Possibilities_to_use_recycled_aggregates_in_road_construction-Estonian_case_study_141009.pdf)

## Online sources:

- <https://jats.keskkonnainfo.ee/main.php?lang=en&public=1>
- <http://www.ejkl.ee/en/?75>
- <http://www.kki.ee/eng/>
- <http://www.recycling.ee/en/>



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