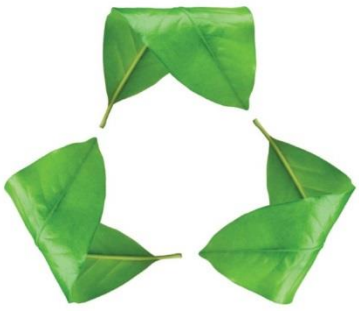
Screening template for Construction and Demolition Waste management in

Belgium

V2 – September 2015



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1. Summary

Belgium is a largely federalised country with shared responsibility between the Federal Government and the Regions for environmental matters. Regions became almost fully competent regarding environmental and waste management, which is not coordinated or harmonized amongst regions in a mandatory manner. The Federal Government has however retained limited responsibility for some specific environmental matters such as nuclear waste, product standards, etc. Moreover, all regions do implement the European Directives and their legislation in principle follows similar lines in the three regions. In order to ease the reading of this factsheet for Belgium, information retrieved is presented in 3 rows, one row for each of the three regions: Flemish Region, Brussels Capital Region and Walloon Region.

Construction and Demolition Waste (CDW) management national performance

Legislation and actors in the CDW sector vary from one region to another. Therefore, no reliable and harmonized data on CDW, other than the data reported pursuant the Waste Statistics Regulation (WStatR), could be retrieved at the national level.

Year	2012
Generated CDW (tons)	**6,945,480**
Recycled CDW (tons)	14,542,374
Backfilled CDW (tons)	0
Landfilled CDW (tons)	270,868
Energy recovery if any (tons)	30,782
Total CDW treatment (tons)	**14,844,024**

In 2012, according to WStatR data, 6.95 million tons of CDW were officially reported as generated in Belgium. It represents a 23 % decrease compared to 2010 (9.0 million tons). The amount of hazardous CDW is about 171,474tons (compared to 326,688 tons in 2010).

Total CDW treatment[1] accounted for 14.8 million tons in 2012 compared to 491,912 tons in 2010. The main fraction of CDW was recycled (14.5 tons). This amount seems to be underestimated as at least 13 million tons and 3 million tons of recycled granulates are produced in the Flemish region and the Walloon region, respectively.

CDW management practices in Flanders

Over the past 25 years, Flemish waste policy evolved towards a well-structured and regulated frame for prevention, re-use, recycling, other recovery and final treatment of waste materials. The legislation changed considerably towards a more holistic approach of the integral material chain including waste in 2011. Several sectorial implementation plans were adopted for the management of CDW and were successful amongst others in diverting waste from landfilling.

[1] The total treatment includes only category W121 from WStatR, whereas the generation data includes W061, W062, W063, W071, W074, W075 and W121.

Overall, CDW management is an important issue for the Flemish region and the sector is very dynamic in terms of technical innovation and waste policy.

CDW management practices in Brussels Capital Region

Construction and demolition waste alone constitute a third of non-household waste in Brussels. Brussels Environment (IBGE) has therefore made it a priority stream. First, the emphasis is laid on prevention, which means preserving existing buildings and its constituent materials (quantitative prevention), limiting the hazardous nature of the materials used (qualitative prevention), and designing new buildings to increase their lifespan (quality and building flexibility), anticipating their deconstruction (design for deconstruction) and using materials and recycled/recyclable elements (design for recycling and reversible connections). The second step after prevention is the promotion of selective deconstruction and reuse and the third one is on-site sorting and recycling. Brussels Environment offers many tools (guide, training, etc.). One of these tools is the Opalis Website which allows individuals or a company to buy and sell reclaimed materials.

CDW management practices in Wallonia

In Wallonia, the legal framework transposes the European Waste Framework Directive and its waste hierarchy (prevention, re-use, recycling, other recovery and final treatment). This legal framework is constantly changing. One new text establishes a sorting obligation for several wastes. The future changes should enable End of Waste criteria (EoW) to be applied. According to actors of the sector, waste management is effective in Wallonia. The European objectives are outperformed. Moreover, the region is implementing more and more the concepts of circular economy and this is expected to continue in the near future.

Barriers:

- The three different waste legislations. For example: To send inert waste from Brussel to recycling facilities in Flanders, contractors have to prove that there is no hazardous waste in the inert waste. To prove it, contractors have to pay a lab test which is expensive.
- Enforcement of the different regulations is experienced by the actors of the sector as a bottleneck.
- The composite nature of current construction materials will make recycling even more challenging in the future.
- The logistical and economic aspects for recycling small fractions of certain CDW streams are challenging
- Sorting waste takes time and space; it is thus an additional cost of waste.
- In Wallonia, the technical specifications for road are really high compared to all European specifications. The allowed quantity of recycled aggregates is too small.
- There are no EoW criteria for recycling aggregates and other recycling materials from CDW in the Walloon Region and Brussels Capital Region (BCR). Therefore the reuse of recycled aggregates is still quite low in BCR as it suffers from an important administrative burden. The new legal text in preparation (Brudalex) aims, amongst others, at facilitating the reuse of recycled aggregates in the future.

Drivers:

- In Flanders, legal framework for the sustainable management of CDW was set in place at an early stage, especially for the recycling of the stony-fraction of CDW. In collaboration with the actors of the C&D sector:
  - The material loop of the stony-fraction has almost been closed (more than 95%) and further attention is paid to research and to encouraging the high-grade applications of recycled granulates.
  - Further research (in collaboration with the different actors of the sector) is carried out to recycling applications of the different streams of the non-stony CDW fraction (e.g. gypsum, aerated concrete, flat glass, etc.) as well as on ways to build and renovate in a more sustainable way.
  - Differentiated landfill taxes and the voluntary TraciMat system (which will enable to distinguish between the high and low risk environmental profile of rubble and differentiate the recycling cost according to the high or low risk profile) are also set to further encourage selective demolition.
- In Wallonia, the legislation obliges to a high recycling rate for CDW and establishes progressive landfill bans of waste.
- Economic drivers: The higher landfilling prices (taxes) compared to other treatment options encourage the recovery of waste. Moreover the treatment of sorted waste is 3 to 10 times less expensive than the treatment of mixed waste.

- Standard specifications for road works in the 3 regions (Standaardbestek 250, Cahier des Charges-Type 2011, QualiRoutes) have played an important role in the uptake of recycling in Belgium, as they allow the use of recycled aggregates in several applications. It makes clients confident in the use, and thus they apply them (since cheaper).

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

In this section the definitions of waste used in Belgium are detailed. In order to ease the reading of this factsheet for Belgium, it is presented in 3 raws, one raws for each of the three regions: Flemish region, Brussels Capital Region, and Walloon Region.

2.1. Definition of waste

Flemish Region	In Flanders, the Decree of 2012 on the management of material cycles and waste ("Materialendecreet"[2] or Materials Decree) transposes part of the Waste Framework Directive 2008/98/EC (WFD) and provides the same definition of waste (in article 3 of this Decree): "any substance or object which the holder discards or intends or is required to discard." https://navigator.emis.vito.be/mijn-navigator?woId=41707
Brussels Capital Region	Same definition as the WFD. SOURCE : Article 3, 14 juin 2012 – Ordonnance relative aux déchets
Walloon Region	Same definition as the WFD. Source : Article 2, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm

2.2. Definition of construction and demolition waste (CDW)

Flemish Region	The Flemish Region uses the List of Waste codes (LoW) to classify its waste. Construction and demolition waste in Flanders consists of the following LoW codes: ▪ 101310 (waste from asbestos-cement manufacture other than those mentioned in 10 13 09), ▪ 101311 (wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10), ▪ 101314 (waste concrete and concrete sludge), ▪ 170101 (concrete), ▪ 170102 (bricks), ▪ 170106 (mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances), ▪ 170107 (mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06), ▪ 170302 (bituminous mixtures other than those mentioned in 17 03 01), ▪ 170507 (track ballast containing hazardous substances), ▪ 170508 (track ballast other than those mentioned in 17 05 07), ▪ 170603 (other insulation materials consisting of or containing hazardous substances), ▪ 170604 (insulation materials other than those mentioned in 17 06 01 and 17 06 03), ▪ 170901 (construction and demolition wastes containing mercury), ▪ 170902 (construction and demolition wastes containing PCB),

[2] *Materialendecreet*, 2012 <https://navigator.emis.vito.be/milnav-consult/drukwerkWettekstServlet;jsessionid=431F9E555D343E8043E923C7BFFDDAD7?wettekstId=41707&actueleWetgeving=true&date=02-11-2012&appLang=nl&wettekstLang=nl>.

	▪ 170903 (other construction and demolition wastes (including mixed wastes) containing hazardous substances), and ▪ 170904 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03). Naturally occurring materials excavated in the course of construction activities and other uncontaminated soils are not included in the definition of CDW. These soils fall under the implementing order VLAREBO[3] of the soils decree or "Bodemdecreet"[4]. These two documents set the legislation concerning soil remediation and soil protection. Non-CDW generated by construction operations is not included in the definition.
Brussels Capital Region	Official definition: ▪ CDW: waste from construction, renovation or demolition of buildings, bridges, roads and other facilities ▪ Debris: the stony and sandy fraction of construction and demolition waste ▪ Recycling: the processing of debris for use as secondary raw materials. Source: 16 Mars 1995 - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relative au recyclage obligatoire de certains déchets de construction ou de démolition. There is no clear distinction between Construction and Demolition waste. The list of waste is inspired from 2000/532/EC. The main differences are highlighted in the Annex 1. There are more codes in the BCR version because some categories are subdivided in more specific categories. For example, 170408 cables are coded as 170410* - cables containing oil, tar or other dangerous substances and 170411 - cables other than those mentioned in section 170410 in BCR list. No codes are excluded from the definition. Uncontaminated soil and other natural geological materials excavated during construction activities, when some materials will be used for construction in their natural state on the same site as their excavation, are excluded from the definition of waste. Article 5, 14 juin 2012 – Ordonnance relative aux déchets.
Walloon Region	No official definition was found in legal text for CDW. One definition for inert waste is provided in the waste decree: Inert waste: waste not undergoing significant physical, chemical or biological change, not decomposing, not burning and producing no other physical or chemical reaction, not biodegradable and not deteriorating other materials with which they come into contact, in a manner likely to pollute the environment or harm human health. The total leachate production, the inert waste's pollutants content and the ecotoxicity of the leachate must be insignificant, and in particular, should not affect the quality of surface water and / or groundwater; Source : Article 2, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm The definition from the Walloon Plan of Waste: CDW are considered as: ▪ Waste from demolition and construction of buildings and public or industrial structures; ▪ Waste from road works ▪ Moulding wastes from marble and other stony building materials ▪ Uncontaminated excavated soils All flammable or putrescible materials from construction works and demolition are not taken into

[3] 'VLAREBO 2008 14 DECEMBER 2007. - Besluit van de Vlaamse Regering Houdende Vaststelling van Het Vlaams Reglement Betreffende de Bodemsanering En de Bodembescherming, Geconsolideerde Versie Oktober 2013', 2008 <http://www.ovam.be/sites/default/files/20131010_Vlarebo2008_Geconsolideerde_versie10oktober2013.pdf>.

[4] 'Bodemdecreet Decreet van 27 Oktober 2006 Betreffende de Bodemsanering En de Bodembescherming, Geconsolideerde Versie van Oktober 2013', 2006 <http://www.ovam.be/bodemdecreet-en-vlarebo>.

	account. Moreover the List of waste from the Walloon catalogue of waste is provided in Annex 2 and compared to the LoW classification. The list of waste is inspired from 2000/532/EC. The main differences are highlighted in Annex 2. There are more codes in the Walloon version because some categories are subdivided in more specific categories. For example, 170408 cables are coded as 170410 - cables containing oil, tar or other dangerous substances and 170411 - cables other than those mentioned in sections 170410 in the Walloon list. No codes are excluded from the definition There is no clear distinction between Construction and Demolition waste. However, the Walloon Plan of Waste estimates demolition waste to account for 52% of CDW. Uncontaminated soil and other natural materials geological excavated during construction activities, when some materials will be used for construction in their natural state on the same site as their excavation, are excluded from the definition of waste. - Source : Article 4, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm

2.3. End of Waste (EoW) status

Flemish Region	The concept of secondary resources was introduced in 1997 in Flanders (in the previous implementation order VLAREA) and further evolved to EoW criteria in 2012 (in the new implementing decision of the **Materials Decree** of 2012). Some criteria correspond to the ones set in Regulation 333/2011 at the European level and others are specific to the case of Flanders. There are six categories of EoW criteria according to the use of the resources (see Chapter 2 of VLAREMA[5]): ▪ Criteria for resources that can be used as fertiliser or soil conditioner (section 2.3.1.); ▪ Criteria for resources to be used as a construction material (section 2.3.2.); ▪ Criteria for resources to be used as soil (section 2.3.3.); ▪ Criteria for resources to be used as artificial seal layers with water glass on category 1 and 2 landfills (section 2.3.4.); ▪ Criteria for resources originating from or intended for metallurgic production processes for non-ferrous metals (section 2.3.5.); ▪ Criteria for resources originating from metallurgic production processes for ferrous-metals (section 2.3.6.). Annex 2.2 of **VLAREMA** contains a list of materials, including materials from C&D activities, which might be eligible for use as a resource if they meet certain conditions (e.g. concentrations of metals and organic compounds). Some C&D materials are specifically eligible for use as construction material, but also to a lesser extent as soil or artificial seal layers for landfills. The C&D type of material concerned by the EoW criteria is especially the stony fraction of CDW (e.g. concrete granulates, crushed masonry, asphalt granulate, sands from crushed asphalt, etc.). **VLAREMA** and the regulation for ensuring the quality of recycled granulates, the so-called "**eenheidsreglement**"[6], give the prescriptions that recycled granulates have to meet in order to be accepted on the market as products. CDW that fulfil EoW criteria are included in the data collected in Flanders under a category called "new resources".
Brussels Capital Region	The EoW criteria are established in BCR. The criteria are the same as the WFD and are established in the article 9 of "Ordonance relative aux déchets du 14 juin 2012." Some wastes cease to be waste if they have undergone a recycling operation or another recovery operation and if they meet specific criteria defined at the EU level. If there are no defined criteria, the regional government can decide that wastes cease to be waste if some conditions are respected.

[5] *VLAREMA*, February 2012 <https://navigator.emis.vito.be/mijn-navigator?woId=44144>.
[6] 'Ministerieel Besluit van 25 Juli 2011 Houdende de Goedkeuring van Het Eenheidsreglement Gerecycleerde Granulaten. Gewijzigd Op 1 Juli 2014 En 9 April 2015.', 2011 <http://www.ovam.be/gerecycleerdegranulaten>.

	Waste which ceases to be waste, also ceases to be waste for recovery and recycling targets set by the legislation. Up to now, no CDW ceased to be waste in BCR[7]. Discussions are ongoing about the EoW status of concrete waste because the reuse of concrete waste is in opposition with soil legislation. (discussion with FEGE[8] and confederation of construction)
Walloon Region	The EoW criteria are established in RW. The criteria are the same as the WFD. CDW which fulfils EoW criteria are still reported in statistics, they are accounted for as recycled and recovered waste when the conditions for imposed recycling and recovery are respected. If no specific criteria are defined by the EU, the Walloon government can decide in specific cases if waste can take the EoW status. At the moment, there is no implementing order for this text, so there is no EoW status attributed in Wallonia. New legislation is under development. When this legislation will be in place, Federations will try to create an EoW for recycled aggregates and for excavated soils. Source : Article 4ter, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm - Décret 10.05.2012

2.4. Definitions of waste treatment operations

Flemish Region	In Flanders, no distinction is made between recycling and recovery. The following definitions of recycling and re-use are stated in the Decree of 2012 on the management of material cycles and waste (article 3): Re-use: “any operation where objects or compounds of objects, which are not waste, may be used for the same purpose as what they were intended for”. Recycling: “any useful operation through which waste materials are treated to become products or substances, with the same or another purpose than originally meant for. This includes the treatment of organic waste, but does not comprise energy recovery; nor does it include the treatment of material that is intended to be used as a fuel or as backfilling material”. The official statistics follow the categorization in Annex II of the WFD. In the reports available online a composting category is added in the treatment categories. Recovery is translated as “terugwinning” but falls under the general category of recycling, which is less specific than the recycling definition of the WFD. There is no guidance on backfilling followed by the Flemish region when reporting on recovery operations, as no definition exists and no backfilling operations take place.
Brussels Capital Region	Definitions are the same as in Directive 2008/98/CE. SOURCE: Ordonance relative aux déchets du 14 juin 2012 There is no known definition for backfilling but some legal texts exist on waste treatment. For instance, art. 1 of the circular of May 9, 1995 (9 MAI 1995. - Circulaire relative à la réutilisation de débris dans les travaux routiers et d'infrastructure), states that: Debris resulting from the construction or demolition of buildings, structures or roads can be reused in road construction as a secondary raw material. It therefore not only allows but also encourages, wherever possible, the use of the following materials: - Soils from cuttings;

[7] Brussels Capital Region
[8] Fédération des Entreprises de Gestion de l'Environnement - Federation of Environmental Management Companies

	- Sand screening and/or crushing debris; - crushed concrete debris, crushed masonry debris, mixed crushed debris of concrete and masonry; - Cracked hydrocarbon debris. It is also appropriate to authorize and encourage any process or technique which avoids the landfilling of debris and allows re-use. Annex 3 of this circular summarizes wastes that are allowed in the different treatment operations. It seems however that this circular does not work in practice, especially for the application of crushed debris in roads. Another text defines landfilling[9]. Article 3 specifies that the use of inert waste in landfills for work development, rehabilitation, backfilling or construction is not considered as landfilling. The last legal text mentioning backfilling is the soil ordonnance[10]. Article 72 specifies that to avoid soil contamination, the government stopped the conditions for the use, transport, deposition, processing and traceability of land and for backfilling.
Walloon Region	Definitions are the same as in Directive 2008/98/CE. The only difference is that the government can determine that other operations fall into the "recovery" category. Source : Article 1, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm The definitions follow the categorisation in Annex II of the WFD. Indeed, R5 includes cleaning the land for reclamation, and recycling of inorganic construction materials. Backfilling is included in the definition of recovery in CDW reporting but not included in recycling. Backfilling is allowed if conditions are respected and if the usefulness is proved. The condition for backfilling is given in the –« Arrêté du Gouvernement wallon du 14 juin 2001 favorisant la valorisation de certains déchets and in QUALIROUTE 2012 ».

3. Legal Framework – Waste Management Plans and Strategies

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

3.1 Legislation concerning CDW in Belgium

Flemish Region	Historically, Flemish waste legislation started with the Decree of 1981 concerning the prevention and management of waste materials ("Afvalstoffendecreet" or Waste Decree) and later on with its implementation order VLAREA. Over the past 30 years, Flemish waste legislation evolved from a waste-oriented approach towards a more holistic approach of the integral material chain including waste. It resulted in 2012 in the complete replacement of the Decree of 1981 and its implementation order by two new legislative documents: ▪ The Decree of 2012 on the management of material cycles and waste ("Materialendecreet" or Materials Decree), which partly transposes the Waste Framework Directive 2008/98/EC. ▪ Its implementation order VLAREMA with detailed provisions on the transport and trade of waste, the reporting of waste and resources, the use of resources, the selective collection by enterprises and the extended producer responsibility. Two additional documents set the specific legal framework for recycled granulates: ▪ The **demolition management system**[11], which aims to guarantee the quality and traceability of the recycled aggregates. It investigates how debris waste is generated, collected, and

[9] 18 AVRIL 2002. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale concernant la mise en décharge des déchets.
[10] 5 MARS 2009. - Ordonnance relative à la gestion et à l'assainissement des sols pollués

transported and how the acceptance of the debris at the crushing plants happens. Attention is paid to the processing of granulates, the transport of recycled aggregates and the effective use.

- This management system resulted in a **regulation** for ensuring the quality of recycled granulates, the so-called "**eenheidsreglement**", that forms the basis for the certification of recycled aggregates (obliging the two certification institutions for recycled granulates, Copro and Certipro, to base certification procedures on this common regulation).

The materials Decree and its implementation order set the basis for better closing material cycles in Flanders. Together with the so-called "eenheidsreglement", they give some specific provisions for CDW:

- For some CDW types the waste producer (household or business) shall present it **separately for collection** (VLAREMA art. 4.3.1 and art. 4.3.2). E.g.: the stony fraction from CDW.
- The partial or complete demolition or dismantling of non-residential buildings with a construction volume superior to 1000 m^3 requires a **demolition inventory**. This inventory should be drawn up on the instructions of the owner of the building permit (VLAREMA art. 4.3.3).
- A recognised **demolition management organisation** can deliver a **demolition certificate** when CDW is collected separately (VLAREMA art. 4.3.5). At present, no demolition management organisation is active or has been recognised yet. TraciMat, which is such an organisation, will only be operational in 2016.
  The demolition management organisation and the delivery of demolition certificates are linked to the introduction of debris with a "high environmental risk profile" and a "low environmental risk profile" at the breaker/crusher, as specified in the regulation "eenheidsreglement". This system is aimed at ensuring a higher quality of granulates and a better traceability of the rubble. Low and high environmental risk profile debris will be processed and approved through separate procedures.
  - Low environmental risk profile rubble is rubble from which it is quite sure it complies with the conditions mentioned in art. 4.3.5 of VLAREMA and in annexes 3 and 4 of the "eenheidsreglement". They should only be controlled periodically.
  - Rubble with a high environmental risk profile should be controlled per batch of maximum 1000 m^3 before being authorised on the market of recycled aggregates. Rubble without a demolition certificate of low environmental risk profile will be more expensive to recycle..
- Some specific criteria are established for materials that can be used as a resource for construction and are no longer considered as waste (VLAREMA art. 2.3.2, annex 2.2 and art. 5.3.3). This corresponds to some of the **end-of-waste criteria** established in the WFD, but also includes some additional Flemish criteria (see section 2.3).
- **Landfill operations** are banned for materials that are collected selectively in view of recycling or for materials, which because of their nature, quantity and homogeneity should be considered for re-use or recycling according to the best available techniques (VLAREMA art. 4.5.1). CDW is concerned by this legislation as a high fraction is collected selectively and is intended to be recycled (e.g. rubble). It is forbidden to landfill the mixed fraction of CDW directly.
- The **principle of proximity and self-sufficiency** applies to CDW sorting residues (from households) and the mixed fraction of CDW (from households and enterprises)[12].
- It sets **landfill charges** depending on the types of waste (art.44 of the materials Decree). The cost of deposit consists of the landfill costs themselves (required cost for operating the landfill) and environmental taxes to be paid to the Flemish government. Environmental taxes are charged for landfilling, incineration and, since 2003, for the sorting and pre-treatment of waste. Moreover, environmental taxes are charged whenever Flemish waste is landfilled, incinerated, sorted or pre-treated outside of the Flemish region. By introducing a differentiated environmental tax for the deposit of the various fractions of CDW, the Flemish government tried and is still trying to improve the management of waste streams. For instance, landfill bans for certain fractions, higher environmental taxes for streams that can be cleaned and lower environmental charges for e.g. asbestos cement waste (which cannot be recycled).

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[11] OVAM, *Beheersysteem Milieukwaliteit Voor Gerecycleerde Granulaten* (Mechelen: OVAM, n.a.), p. 50 <http://www.ovam.be/sites/default/files/FILE1322216585747ovhl111125_Beheersysteem_granulaten_dec2010.pdf>.

[12] OVAM, *Implementatie Zelfvoorzieningsprincipe in Vlaanderen* (Mechelen: OVAM, 1 January 2014), p. 8 <http://www.ovam.be/sites/default/files/atoms/files/2014-01-01_Implementatie_zelfvoorzieningsprincipe_in_Vlaanderen.pdf>.

	Other relevant legislative instruments are: ▪ The Flemish Decree on the environmental permit procedures and exploitation conditions of installations considered as harmful for human beings and the environment. ▪ Its implementation regulations VLAREM I, VLAREM II and VLAREM III. ▪ These legal documents apply for instance to crushing facilities, which cause noise and dust nuisances, and they approach mobility issues.
Brussels Capital Region	Transposition of Directive 2008/98/CE is made in the following texts : 14 Juin 2012 – Ordonnance relative aux déchets (Article 2.); 21 JUIN 2012. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale déterminant les règles de mise en œuvre de l'obligation de tri pour les producteurs ou détenteurs de déchets autres que ménagers; 21 JUIN 2012. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif à l'enregistrement des collecteurs et des transporteurs de déchets non dangereux autres que ménagers. The list of waste is established in « 25 Avril 2002 – Arrêté du Gouvernement de la Région de Bruxelles-Capitale ». The legislative framework concerning CDW management is defined in: **Before the construction:** ▪ The environmental permit (EP)[13]: An environmental permit or an official declaration must be obtained before the beginning of some activities or equipment (classified facilities). Some sites are classified facilities, as are storage facilities, storing or processing of waste. There are specific procedures based on the type of license. **During construction:** ▪ Hazardous waste[14]: Duty to give its hazardous waste to an authorized collection or remove it by the contractor himself under certain conditions. Obligation to keep a hazardous waste register (for 5 years) with a list of minimum information. Special storage conditions. Contact an authorized collector for hazardous waste / deposit in a regional waste disposal. ▪ Asbestos[15]: Obligation to make a pre-demolition inventory and remove asbestos in a building before its demolition. In case of demolition: the entire building must be cleared of containing the asbestos. In case of single renovation or important refurbishment: all applications containing asbestos that may be affected by the works must be removed. It is forbidden to use high-speed machinery tools, high pressure water jet cleaners, air compressors, etc. Any EP demand for a removal site or encapsulation of asbestos must be accompanied by a compliant asbestos inventory and is treated by the IBGE (before construction). ▪ Inert waste : Mandatory recycling of the stony and sandy fraction of CDW[16] : This order states that any contractor in charge by the contracting authority to carry out work generating debris is required to provide or organize the recycling of these debris.

[13] Ordonnance du 5 juin 1997 relative aux permis d'environnement

[14] 25 AVRIL 2002. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale établissant la liste de déchets et de déchets dangereux. 19 SEPTEMBRE 1991. - Arrêté de l'Exécutif de la Région de Bruxelles-Capitale réglant l'élimination des déchets dangereux.

[15] 10 AVRIL 2008. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif aux conditions applicables aux chantiers d'enlèvement et d'encapsulation d'amiante.

[16] 16 MARS 1995. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif au recyclage obligatoire de certains déchets de construction ou de démolition.

	Recycling obligation is at the contractor's expense; debris should be processed for use as secondary raw material (in crushing center for example), on construction, demolition, renovation sites, in buildings, bridges, roads and other facilities. An exemption from this requirement is allowed if there is no recycling facility within 60 km, which is never the case in Brussels. Reuse of debris in road works[17]: The following applies where one can use some recycled materials: earthworks, foundations and sub-foundations, road surfacing… Recycled materials can be used as: screening debris sands, crushed sand debris, crushed concrete debris, crushed masonry debris, mixed crushed debris (concrete and masonry), broken debris of hydrocarbon coatings. This text not only allows but also encourages the use of recycled materials. Moreover, the CCT[18] (cahier des charges type – type tender specification) determines the technical and administrative clauses applicable to the execution of road works located in the Brussels Capital Region. ▪ Non-hazardous and non-inert waste[19]: Sorting requirement for non-hazardous non-inert waste applies only to certain sites. Sorting requirement for the following streams: PMC[20] , paper-cardboard, green waste , glass and waste subject to recovery obligation (WEEE , batteries , ...). Exemptions exist for sites that are not subject to reporting or do not require an environmental permit. ▪ A new legal text is in preparation. It is called BRUDALEX and pursues the following main objectives: • Rationalize the waste management framework in one more comprehensive and coherent legal framework (e.g. introducing the extended producer responsibility as well as the take-back obligation while leaving a place for specific waste streams and specific management operations). Eliminate superfluous legal texts, standardize and harmonize procedures, particularly with other regions and in accordance with European law. • Implement the changes introduced in the Ordinance on waste of June 14, 2012. • Ensure traceability and allow the actors to follow BCR[21] rules and obligations in a unified and targeted way. • Promote the circular economy. • In particular, this legal text under preparation will make it mandatory for holders of CDW to sort or to have their CDW sorted in a sorting facility. This new obligation should help reach the 70% (in weight) recycling target for CDW, as defined in articles 22§2 of the Ordonnance on waste (Ordonnace du 14 juin 2012 relative aux déchets). -
Walloon Region	The basis of the waste legislation is in the waste decree of 27 June 1996[22]. This text was modified several times especially to transpose the EU waste directive[23]. This text gives definitions, EoW criteria, by-product etc. It also gives the objective by 2020, for non-hazardous construction and demolition waste, excluding naturally occurring material defined in category 17 05 04 of the Waste Catalogue. The aim is that these wastes should be prepared for re-use, either for recycling or other material recovery, including backfilling operations using waste to substitute

[17] 9 MAI 1995. - Circulaire relative à la réutilisation de débris dans les travaux routiers et d'infrastructure.
[18] http://www.bruxellesmobilite.irisnet.be/partners/professionnels/cct-2011
[19] 21 JUIN 2012. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale déterminant les règles de mise en oeuvre de l'obligation de tri pour les producteurs ou détenteurs de déchets autres que ménagers
[20] Types of packaging collected and recycled in Belgium. P for plastic bottles and flasks, M for metal packaging and C for beverage cartons
[21] Brussels Capital Region
[22] 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm
[23] 10 mai 2012 Décret transposant la Directive 2008/98/CE du Parlement européen et du Conseil du 19 novembre 2008 relative aux déchets et abrogeant certaines directives and Arrêté du Gouvernement wallon du 10 mai 2012 modifiant divers arrêtés du Gouvernement wallon en matière de déchets.

other materials, all at a competitive minimum of 70% of their weight.

Source : Article 18, 27 juin 1996 – Décret relatif aux déchets + modifications, consolidated version : http://environnement.wallonie.be/legis/dechets/degen019.htm

The environment permit (EP)[24] describes conditions for waste management on building sites. It can impose to register for in- and outcomes, storage and management of waste and the submission of data to the Walloon Waste Office (OWD).

A new legal text establishes a certain waste sorting obligation[25]. This obligation concerns waste batteries, used tires, vehicles, waste oils, photographic wastes, frying oils and fats, WEEE, packaging glass waste , packaging waste PMC[26], industrial packaging waste, waste paper and cardboard, metal waste, vegetable waste, uncontaminated textile waste and waste wood produced in a specific quantity.

Several legal texts exist about the management of CDW. The following texts are about 'recovery':

- 14 juin 2001 - Arrêté du Gouvernement wallon favorisant la valorisation de certains déchets : this text lists the category of waste and the possible recovery for each waste and describes the conditions needed to enable recovery of waste. It defines the possibility of backfilling.
- Arrêté du Gouvernement wallon du 27 mai 2004 fixant les conditions intégrales d'exploitation relatives aux stockages temporaires sur chantier de construction ou de démolition de déchets […] 1 visés à la rubrique 45.92.01 : this text describes the conditions for the storage of waste on building sites.
- 18 mars 2004 - Arrêté du Gouvernement wallon interdisant la mise en centre d'enfouissement technique de certains déchets [et fixant les critères d'admission des déchets en centre d'enfouissement technique] + modifications : This text establishes progressive landfill bans of waste. Moreover, it defines criteria to landfill inert waste. According to this text the following waste are banished from landfills.

- 17 04 Metals (including their alloys)
- 17 04 01 Copper, bronze, brass.
- 17 04 02 Aluminium.
- 17 04 03 lead
- 17 04 04 Zinc.
- 17 04 05 Iron and steel.
- 17 04 06 Tin.
- 17 04 07 Mixed metals.
- 17 04 09 Metal waste contaminated with dangerous substances.
- 17 04 10 Cables containing oil, coal tar and other dangerous substances.
- 17 04 11 Cables other than those mentioned in sections 17 04 10.
- l) waste containing free asbestos, and taken under the following 6 digit codes:
- 17 Waste from construction and demolition waste (including excavated soil from contaminated sites).
- 17 06 Insulation materials and construction materials containing asbestos.
- 17 06 01 Insulation materials containing asbestos
- 17 06 05 Building materials containing asbestos.
- 17 01 Concrete, bricks, tiles and ceramics.
- 17 01 01 Concrete.
- 17 01 02 Bricks.
- 17 01 03 Tiles et céramics.
- 17 01 07 Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06.
- 17 03 Bituminous mixtures, coal tar and tarred products.
- 17 03 02 bituminous mixtures.
- 17 07 Mixed waste from construction and demolition.
- 17 07 95 Demolition waste from residential character buildings, services, or related to unmixed putrescible materials

[24] 11 mars 1999 - Décret relatif au permis d'environnement

[25] Article 2, 5 MARS 2015. – Arrêté du Gouvernement wallon instaurant une obligation de tri de certains déchets

[26] Types of packaging collected and recycled in Belgium. P for plastic bottles and flasks, M for metal packaging and C for beverage cartons.

	or fuels. ▪ 17 02 Wood, glass and plastics. ▪ 17 02 03 Plastics. This text also obliges to sort waste in separate fractions that could be further recovered before landfilling. Only final wastes from sorting and treatment of such waste may be accepted in a landfill site. Waste accepted in a class 3 or 5.3 corresponds to inert waste defined in the table in Annex I of the Order of the Walloon Government of 10 July 1997 establishing a catalogue of waste. The text defines the leaching limit values. In addition to these legal texts, technical specificities are defined in the technical specifications. For buildings, these specifications are called CCTB[27] and QUALITOURE[28] for road applications. These two documents are very complete and describe the obligations of contractors concerning the management of waste before and during the construction.

3.2 Waste management plans (WMP) and Strategies

Flemish Region	Over the past 25 years the waste policy evolved towards a well-structured and regulated frame for prevention, re-use, recycling, other recovery and final treatment of waste materials. MINA plan 4 [29] gives the guidelines for environmental policy, amongst others, on waste and material strategies/policy (see section 8.5). The environmental program[30] executes this plan with a special focus on the organisation, timeframe and defining priorities for the different actions. The MINA plan 4 proposes a first direction towards a maximum stimulation of recycling, increased selective collection and increased markets for recycled products. The second direction is to guide current remaining waste fractions or leaks (after maximal recycling and re-use treatments have been applied) towards most effective treatment methods. Several sectorial implementation plans were adopted for the management of CDW and were successful, amongst others, in diverting waste from landfilling. In 2014, a new policy programme called “resource conscious construction in cycles” was launched[31]. This prevention programme for the sustainable management of materials in the construction sector for the period 2014-2020 deepens and expands the approach adopted in previous implementation plans. The action programme “Resource conscious construction 2014-2016” [32] describes the steps undertaken in the frame of the prevention programme. It focuses on five crucial fields of action: ▪ **Encouraging selective demolition and dismantling** is considered a key aspect in the efforts to reach sustainable management of resources in the construction sector. ▪ **Closing the loop of the stony materials** (which represents approximately 95% in weight of total CDW) is a second theme in this policy programme and focusses on producing high quality recycled granulates and stimulate marketing options for these resources/materials. Selective demolition is considered as a precondition to close this loop. ▪ **Closing the loop of the non-stony fraction** is another central aspect of the programme. Economic and logistic aspects represent important constraints for closing the loop of non-stony materials. Producer responsibility schemes are seen as a possibility to stimulate the development of a logistical chain for end-life materials. It could also boost the efforts for improved design of non-stony construction materials. Selective demolition is also considered as a precondition for closing this loop.

[27] http://batiments.wallonie.be/home/iframe-html.html
[28] http://qc.spw.wallonie.be/fr/qualiroutes/
[29] LNE, *MINA Plan 4*, 2011, p. 170 <http://www.lne.be/themas/beleid/mina4/leeswijze/publicaties/Milieubeleidsplan2011-2015.pdf>.
[30] LNE, *Milieujaarprogramma 2014* (Brussels, 2014), p. 92 <http://www.lne.be/themas/beleid/mina4/leeswijze/publicaties/mjp2014def.pdf>.
[31] OVAM, *Materiaalbewust Bouwen in Kringlopen. Preventieprogramma Duurzaam Materialenbeheer in de Bouwsector 2014-2020* (Mechelen: OVAM, 2013) <http://www.ovam.be/sites/default/files/2014-DEF-Milieuverantwoord-milieugebruik-bouw-3luik-LR.pdf>.
[32] OVAM, *Actieprogramma Materiaalbewust Bouwen 2014-2016* (Mechelen: OVAM, February 2015), p. 21 <http://www.ovam.be/sites/default/files/atoms/files/Actieprogramma-Materiaalbewust-Bouwen-2014-2016-Beleidsprogramma-bouw.pdf>.

	▪ **Improving the overall material performance of buildings** through their whole life cycle (from exploitation of the resources, production, assembling, use and maintenance, until the demolition phase) is a fourth important theme in the action programme. ▪ Finally, **building or renovating dynamically** focuses on a more fundamental and conceptual shift regarding building design, building concepts and construction techniques, which consider more flexible, adaptive and demountable structures (buildings).
Brussels Capital Region	The 4th Waste Plan in BCR dates from 2010. (Plan de prévention et de gestion des déchets, Mai 2010, http://documentation.bruxellesenvironnement.be/documents/PlandechetsFR_2.PDF. This plan is not specific to CDW. CDW are treated in chapter 6 - industrial waste, specific or hazardous. In this plan, the specific section on prevention measures of CDW is on page 39. The main prescriptions for CDW are: ▪ Encourage green building via various mechanisms ▪ Support selective demolition and encourage the establishment of a social economy for selective dismantling of buildings ▪ Explore opportunities to include an inventory of demolition waste ▪ Intensify checks on compliance with the obligation to recycle ▪ Organize awareness campaigns about the proper disposal of hazardous waste, including PCBs and asbestos ▪ Promote the sorting and recycling on small sites via pilot projects ▪ Establish an acceptable solution for the collection of construction waste containing asbestos from small domestic projects. This waste management plan is not binding. The Brussels government is currently evaluating this plan and intends to draw a new plan for 2016.
Walloon Region	The new waste plan is in preparation. It should be published soon. The older plan took end in 2010. The main objectives of the old plan for CDW are: ▪ Prevention: prevention must lead to the use of easily removable and recyclable materials. In addition, the recycled products must have a guaranteed re-use. ▪ Recovery: the objective for 2000 was 1.500.000 tons (75% of the total production). For 2010, the objective was a recovery rate of 87 %. In addition, a well geographically dispersed network of centres was created to strengthen existing recycling centres. Sorting of waste should also be developed. ▪ Elimination: the landfill development should be minimized to approach 10% of landfilling in 2010. For more information about this plan (e.g. specific measures) see page 10 of: http://environnement.wallonie.be/rapports/owd/pwd/catflux1.pdf

3.3 Legal framework for sustainable management of CDW

This section aims at identifying specific legislation that would create good conditions for a sustainable management of CDW as a preliminary overview for task 3. For this section, three different tables present the conditions for the three regions in Belgium.

Brussels Capital Region			
Description	**Level of occurrence (Yes/No) Key Scope/Exemptions**	**Year established and policy reference**	**Further detail, information source, related web-site**
National/regional obligation for selective demolition?	No, not yet but government relies on the fact that it is economically favorable. Moreover an inventory of pre-demolition is mandatory. It lists hazardous wastes, reuse and recyclable wastes expressed in meters etc.		http://www.environnement.brussels/uploadedfiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/S%C3%A9minaire_b%C3%A2timent_durable_2012_(actes)/SEMI_15_140124_4_JV_FR.pdf http://documentation.bruxellesenvironnement.be/documents/IF_DECHETS_Inventaire_dechets_FR.PDF
National/regional sorting obligation (on-site or in sorting facility)?	Yes, Reuse inert waste on-site or send it to a sorting centre.	16 Mars 1995 - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relative au recyclage obligatoire de certains déchets de construction ou de démolition.	Obligation to sort out inert waste
National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?	Yes, but not for building site wastes which do not fall under the environmental permit legislation.	21 JUIN 2012. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale déterminant les règles de mise en œuvre de l'obligation de tri pour les producteurs ou détenteurs de déchets autres que ménagers	
Obligation for separate collection and management of hazardous waste from C&D operations? Please specify	Yes, but not specific to C&D operations except for asbestos.	Arrêté du 10 avril 2008 management of asbestos Arrêté du 19 septembre 1991 management of hazardous waste 25 AVRIL 2002. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale établissant la liste de déchets et de déchets dangereux. 19 SEPTEMBRE 1991. - Arrêté de l'Exécutif de la Région de Bruxelles-Capitale réglant l'élimination des déchets dangereux.	

Brussels Capital Region			
Description	**Level of occurrence (Yes/No) Key Scope/Exemptions**	**Year established and policy reference**	**Further detail, information source, related web-site**
Related Green public procurement requirements	Yes, contracting authorities may include environmental clauses in the special specifications for their procurement. Clauses may include measures such as: - reducing production waste, especially hazardous waste. - The integration of recycled materials or goods, in a logic of circular economy ; - The use of services, products and supplies with a reduced environmental impact.	8 MAI 2014. - Ordonnance relative à l'inclusion de clauses environnementales et éthiques dans les marchés publics	

Walloon Region			
Description	**Level of occurrence (Yes/No) Key Scope/Exemptions**	**Year established and policy reference**	**Further detail, information source, related web-site**
National/regional obligation for selective demolition?	Not for selective demolition but obligation to plan the management of waste on site and to make an inventory. Information available in CCTB for buildings and in QUALITOURE for road.		http://batiments.wallonie.be/home/iframe-html.html Required document: • The waste prevention plan • the waste management plan, • good drainage and waste receiving reports , • the register of waste. The particular waste management plan communicated will include at least the following points: - Identification of the company - Project identification - Identification of collectors / transporters - Identification of waste processing centers - In Tables 6.1 , 6.2 and 6.3 of the waste management: • the types of waste that will be produced by the yard • the origin of the waste under the activity (Excavation, Construction , Demolition, Renovation) • the means used for the storage of waste • the intended destination of waste (CTR, CTA , CET, others) by type of waste .
National/regional sorting obligation (on-site or in sorting facility)?	Yes, for waste batteries, used tires, vehicles, waste oils, photographic wastes, frying oils and fats, WEEE, packaging glass waste, packaging PMC[33] waste, industrial packaging waste, paper and cardboard waste, metal waste, vegetable waste, textile waste not contaminated and waste wood produced in a specific quantity.	2015	Article 2, 5 MARS 2015. – Arrêté du Gouvernement wallon instaurant une obligation de tri de certains déchets https://wallex.wallonie.be/PdfLoader.php?type=doc&linkpdf=29150-30653-20376

[33] Types of packaging collected and recycled in Belgium. P for plastic bottles and flasks, M for metal packaging and C for beverage cartons.

Walloon Region			
Description	**Level of occurrence (Yes/No) Key Scope/Exemptions**	**Year established and policy reference**	**Further detail, information source, related web-site**
National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?	Yes, for paper, metal, plastic and glass	Later in 2015	Article 16. 10 mai 2012 Décret transposant la Directive 2008/98/CE du Parlement européen et du Conseil du 19 novembre 2008 relative aux déchets et abrogeant certaines directives: https://wallex.wallonie.be/index.php?doc=22398&rev=23475-14164
Obligation for separate collection and management of hazardous waste from C&D operations? Please specify	Yes, in CCTB, obligation to separate hazardous waste at the minimum. Objective: By 2020, non-hazardous construction and demolition waste, excluding 170504 waste, are subject to either a preparation for their re-use, either recycling, either another material recovery operation (including backfilling operations using waste instead of other materials) , all at a competitive minimum of 70% of weight.	Legislation from 2012, target for 2020.	http://batiments.wallonie.be/home/iframe-html.html CCTB, 07.23 Article 16. 10 mai 2012 Décret transposant la Directive 2008/98/CE du Parlement européen et du Conseil du 19 novembre 2008 relative aux déchets et abrogeant certaines directives - https://wallex.wallonie.be/index.php?doc=22398&rev=23475-14164
Related Green public procurement requirements	Yes, concerning sustainable purchasing.		28 NOVEMBRE 2013. – Circulaire relative à la mise en place d'une politique d'achat durable pour les pouvoirs adjudicateurs régionaux wallons *(M.B. du 17/12/2013, p. 99196)*

Flemish Region			
Description	**Level of occurrence (Yes/No) Key Scope/Exemptions**	**Year established and policy reference**	**Further detail, information source, related web-site**
National/regional obligation for selective demolition?	No, in Flanders, only obligation for making a selective demolition inventory for non-residential buildings with an enclosed construction volume over 1000 m^3	2012, VLAREMA Since May 2009 in VLAREA	VLAREMA, article 4.3.3
National/regional sorting obligation (on-site or in sorting facility)?	Yes, in Flanders, sorting obligation on-site for certain CDW from enterprises and households	2012, VLAREMA	VLAREMA, articles 4.3.1 and 4.3.2
National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?	Yes, in Flanders, households and enterprises have to offer/deliver specific waste streams separately (glass, hazardous waste, rubble, paper, metallic waste, plastics, etc.)	2012, VLAREMA	VLAREMA, articles 4.3.1 and 4.3.2
Obligation for separate collection and management of hazardous waste from C&D operations	Yes, in Flanders the separate collection of hazardous waste, such as waste containing asbestos, is mandatory. Main part of waste containing asbestos is landfilled, another fraction of hazardous waste is treated abroad (e.g. tar asphalt thermal treatment in the Netherlands).		VLAREMA, art. 6.1.1.1 http://www.ovam.be/selectief-slopen-ontmantelen VLAREMA, art. 5.3.3.4 provides that tar containing asphalt may be reused in foundations of large scale works (>1500m^3). This won't be possible after May 2019 and will be modified in VLAREMA accordingly.
Related Green public procurement requirements	Yes, it starts on a voluntary basis in Belgium in the requirements specification for instance.		

3.4 Targets

Flemish Region	In 2000, the recycling target of 75% for CDW set at the regional level was outperformed with a recycling rate of 85%. In 2013, more than 95% of the stony fraction of CDW was recycled to granulate and about 50% of the non-stony fraction was recycled, even though with important differences between the non-stony fractions types of waste[34]. The non-recycled fraction consists of recycling residues, some non-stony fractions and remaining fractions which are not recyclable. http://www.ovam.be/sites/default/files/2014-DEF-Milieuverantwoord-milieugebruik-bouw-3luik-LR.pdf
Brussels Capital Region	According to the Waste Plan, the target for CDW is a recycling rate of 90 % of weight. This target is not binding. The legal target is 70% as in the Waste Framework Directive and currently the rate is about 80 % of weight (mostly inert, metal and wood). No specific target for re-use, recycling and recovery. The estimation of the re-use rate is only 1 % for BCR[35].
Walloon Region	By 2020, non-hazardous construction and demolition waste, excluding naturally occurring material defined in category 17 05 04 of the Waste Catalogue, should be either prepared for re-use, either for recycling or other material recovery formulas, including backfilling operations using waste to substitute other materials, all at a competitive minimum 70% of their weight. The previous target was a recycling rate of 87 % in 2010, and a landfilling rate of less than 10 % (the Walloon Plan of Waste). The next plan is under development thus new target should be available soon.

4. Non legislative instruments

In this section, other instruments are highlighted.

[34] OVAM, *Materiaalbewust Bouwen in Kringlopen. Preventieprogramma Duurzaam Materialenbeheer in de Bouwsector 2014-2020*.
[35] Brussels Capital Region

Key waste management and sustainable building non legislative instruments

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site	Flemish/Brussels Capital or Walloon Region?
Sustainability standards that cover CDW - BREEAM - LEED - DNGB	YES, are growing, but not widespread. They represent more or less 300 projects of the 50.000 construction projects in Belgium. Important construction works are usually using these sustainability standards. • REF-B: it is a kind of BREEAM but adapted to Belgium • Sustainable building guide: guide based on REF-B.	On a voluntary basis, usually used for big office buildings • REF-B has been under preparation for several years and should be available soon • Established in 2006 and updated in 2013	http://www.breeam.org/page.jsp?id=146 According to experts, waste and recycled materials are often only a very small or inexistent part reported by such methods. They often just have to comply with 70% of the checklist of the method. Waste management is an aspect often left out when applying the method for a construction project. • http://www.ref-b.be/ • http://guidebatimentdurable.bruxellesenvironnement.be/fr/guide-batiment-durable.html?IDC=49&IDD=4571	Belgium Brussels Capital Region
CEN TC 350 standards for the Sustainability assessment of buildings	YES, CEN TC 350 is responsible for the development of voluntary horizontal standardized methods for the assessment of the sustainability aspects of new and existing construction works and for standards for the environmental product declaration of construction products. It seems to be a stricter method than the BREEAM voluntary method.	Voluntary, but mandatory when producers want to add an environmental message on their product(s) (*KB milieuboodschappen of 22/05/2014*)	CEN/TC 350 standards provide a system for the sustainability assessment of buildings using a life cycle approach for assessing the environmental, social and economic performance of buildings. Quantitative and qualitative indicators are used and this series of European Standards aims at enabling comparability of the results of assessments. http://portailgroupe.afnor.fr/public_espacenormalisation/CENTC350/index.html KB milieuboodschappen (22/05/2014): http://health.belgium.be/eportal/Environment/CommercialisationOfProducts/ConstructionProducts/EnvMessagesAndEPDs/19094508_NL?ie2Term=Environment?&fodnlang=nl#.VS5nMfA73MI	Belgium

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site	Flemish/Brussels Capital or Walloon Region?
Extended producer responsibility scheme in operation?	YES, for the three regions, but not for CDW (see next table). Moreover in Flanders, they are considered as a possibility to stimulate the closing of the non-stony material loop of CDW (flat glass in particular), but are not established yet.	-Article 21 of the Material Decree of 2012 -Action programme for resource conscious construction 2014 - 2016	http://www.ovam.be/producentenverantwoordelijkheid-samen-besturen http://www.ovam.be/sites/default/files/atoms/files/Actieprogramma-Materiaalbewust-Bouwen-2014-2016-Beleidsprogramma-bouw.pdf Duurzaam beheer van vlakglas in de bouw - Een stand van zaken: http://steunpuntsumma.be/docs/rapport-summa-vlakglas-7-1.pdf This report presents some lines of thoughts for the future management of flat glass waste. It also sets the legal framework in Flanders on CDW and the current situation of sorting and treatment of flat glass, its potential to decrease energy use and emissions compared to the production of primary flat glass.	Belgium Flemish Region

Extended producer responsibility (EPR) table for each voluntary or mandatory scheme operating in Belgium

Material/ product type	Mandatory or Voluntary	Year established	National or regional (specify if regional)	Public sector and Industry lead organisation	Levels of performance e.g. tons recycled	Further information/ web-site
Plastic Packaging waste in the construction sector falls under the responsibility of Val-I-Pac	Voluntary	2005	National	Clean sites system by VAL-I-PAC	2013: 1.800 tons of recycled plastic packaging waste and used by more than 7.000 contractor	http://www.cleansitesystem.be/fr/ + ppt presentation http://www.valipac.be/Belgique/publications/valipac-une-valeur-ajoutee-pour-entreprises-belges/files/assets/basic-html/page9.html
PVC from construction (tube, chassis, …)	Voluntary	2003	European	Recovinyl, initiative of the European PVC industry	recycling up to 240 000 tons per year in Europe	http://www.recovinyl.com
Thermoplastics pipes	Voluntary	2001	National	EMSO - KURIO Recycling, at the initiative of piping systems manufacturers Thermoplastics and Febelplast		http://www.emso.be/recyclage.htm

Key CDW management requirements and standards

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. tons recycled,% coverage	Further information/ web-site
Requirement for pre-demolition audits	YES – NO Pre-demolition audits are not mandatory in Flanders, but a pre-demolition inventory of the types/quantities of materials present in buildings is mandatory for non-residential buildings with an enclosed volume over 1000 m^3. This enables to identify hazardous and other waste fractions. Only on a voluntary basis. The Guide "Reuse of building materials", described below in the tools, explains the different steps for an audit. An inventory of pre-demolition and an asbestos inventory are also available. A "re-use" vademecum should also be available soon.	2009	Flemish Region Brussels Capital Region – Walloon Region	Flemish government	In practice, it seems that there is little enforcement concerning the inventory obligation. It is estimated that 2-10% of these pre-demolition inventories are actually performed. However, in general, it appears that selective demolition does often occur (at least a selection of 4-5 waste streams).	VLAREMA, art. 4.3.3 TRACIMAT is an interesting voluntary initiative that has been developed in order to help with selective demolition and increase traceability of CDW (explained in section 1.3 and below in the table on the initiatives). Reuse of building materials – Practical guide http://www.cifful.ulg.ac.be/images/stories/Guide_reemploi_materiaux_lecture_2013.pdf
Technical standards for construction products	YES – YES It specifies the properties of aggregates and filler aggregates obtained by processing natural, manufactured or recycled		National			BS EN 12620:2013 COPRO is an impartial certification organism that controls construction products. In particular, it has to organise, coordinate and improve the control of

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. tons recycled,% coverage	Further information/ web-site
COPRO/BENOR and QUAREA certification	materials and mixtures of these aggregates for use in concrete in conformity with BS EN 206-1 and concrete used in roads and other pavements and for use in precast concrete products.					construction products' quality and their treatment. According to the Belgian Decree on general building conditions, the quality control task is delegated to COPRO. http://www.copro.eu/Index.aspx?page=Doel http://www.copro.eu/3_30_0.aspx
Environmental Standards for recycled CDW **COPRO standards**	YES Voluntary, but mandatory if requested for waste that will be used as secondary raw materials or new resources	1996	Flemish Region but waste exported from Brussels Capital Region can fall under this legislation too.	Independent organism	In 2014:Copro certified more than 11 million tons of recycled granulates	COPRO is an impartial certification organism that controls construction products. In particular, it has to organise, coordinate and improve the control of construction products' quality and their treatment. The regulation "eenheidsreglement" sets the basis for certification procedures by the two certification organisms for recycled granulates, COPRO and CERTIPRO. http://www.copro.eu/Index.aspx?page=Doel http://www.copro.eu/3_30_0.aspx
Environmental Standards for recycled CDW **CERTIPRO (Quarea standards)**	YES Voluntary, but mandatory if requested for waste that will be used as secondary raw material or new resource	2007	Flemish Region		1.5 million tons	CERTIPRO is another certification organism managed by VITO for the following products: waste water treatment plants and septic tanks, and recycled granulates. http://www.certipro.be/NL/Pages/default.aspx

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. tons recycled,% coverage	Further information/ web-site
Selective demolition certificate	YES – NO Voluntary Only on a voluntary basis. Some tools are available to help. Guide and worksheet (see in next paragraph).	2009	Flemish region Brussels Capital Region	Flemish government	Under development	VLAREMA art. 4.3.5

Key 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
The **MEDECO tool** (MEtré des DEchets de Construction), aims to assist and facilitate construction actors (architects / contractors, etc.) to make a quick and reliable diagnosis. This tool details each waste and enables to take into account the full cost of waste management.	CDW		Walloon region	BBRI (Belgian Building Research Institute), CCW (Walloon Construction Confederation), Tradecowall and public administration	Not updated and not really used	available on the website of MARCO guide Construction (http://www.marco-construction.be/medeco/index.html)
Construction and Demolition Waste Management Guide		2009	Brussels Capital Region	IBGE => Public sector		http://documentation.bruxellesenvironnement.be/documents/Guide_Dechets_construction_FR.PDF?langtype=2060
RecyHouse: BBRI has developed a pilot project to build a house with recycling materials only. The website allows searching for existing recycled materials on the market by type of product / company / branding ... and it presents a complete data sheet for each material.	Materials from recycling	1996-2001	National	BBRI		www.recyhouse.be
IRGT website presents a set of products from recycling			National	IRGT (Royal Institute for the sustainable management of natural resources and the promotion of clean technologies)		www.produitrecycle.info
Practical Guide Green building - this publication highlights specific information on the construction market of Eco- Labels	labels		Brussels Capital Region	IBGE		(http://www.bruxellesenvironnement.be/soussites/guide/(S(vr4e4b45vvcjdn45mn4mi355))/Guide.aspx?langtype=2060)
Reuse of building materials –		2013	Walloon Region	OWD, IBGE, CCW,		http://www.cifful.ulg.ac.be/images/st

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
Practical guide			Brussels Capital Region	CCB, RESSOURCES asbl, CIFFUL		ories/Guide_reemploi_materiaux_lecture_2013.pdf
Re-use VADEMECUM: this tool explains how to sell materials before they reach the waste status for the public sector.		ongoing	Brussels Capital Region	Rotor for IBGE		Not yet available
Sustainable building guide: it is a website created by IBGE with plenty of explanations, useful links and a specific chapter on materials.		Established in 2006 and updated in 2013. The section on waste is however only available in the 2010 version.	Brussels Capital Region Not updated	IBGE		http://guidebatimentdurable.bruxellesenvironnement.be/fr/index?IDC=3
Guidance document for drawing up a demolition inventory - This guide aims at identifying the amounts and types of wastes that will appear when dismantling a building		2012	Flemish Region	Public sector		[36] https://www.ibeve.be/documents/10810/11421/OVAM+Handleiding+voor+de+opmaak+van+een+sloopinventaris/83158482-778c-48c5-8896-bedeb4b06a78?version=1.1
Guidance on defining the end-of-waste phase of materials, waste		n.a.	Flemish Region	Public sector		[37] http://www.ovam.be/sites/default/file

[36] OVAM, *Leidraad Bij de Opmaak van Een Sloopinventaris* (Mechelen: OVAM, 2012), p. 42 <https://www.ibeve.be/documents/10810/11421/OVAM+Handleiding+voor+de+opmaak+van+een+sloopinventaris/83158482-778c-48c5-8896-bedeb4b06a78?version=1.1>.

[37] OVAM, *Handleiding Bij de Afbakening van de Afvalfase: Materialen, Afvalstoffen En Grondstoffen in de Kringloop*, n.a., p. 14 <http://www.ovam.be/sites/default/files/FILE1335259183661ovhl200424_Handleiding_afbakening_afvalfase.pdf>.

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
and resources - This document helps interpreting the conditions for a material to be considered as a resource and not waste						s/FILE1335259183661ovhl200424_Handleiding_afbakening_afvalfase.pdf

Little tools are developed in Flanders. Other international tools are being used such as the SMART waste tool from BRE.

Key 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
Eco -Construction - Management of construction and demolition waste - 2010: "Drafting and monitoring specifications "	specification	2010	Brussels Capital Region	CERAA for IBGE		Eco-Construction – Gestion des déchets de construction et de démolition - 2010 : « La rédaction et le suivi du cahier des charges » - CERAA
Training circle : “Green construction – CDW management”		2010	Brussels Capital Region	IBGE	???	http://www.ibgebim.be/uploadedFiles/Contenu_du_site/Professionnels/Formations_et_s%C3%A9minaires/Gestion_des_d%C3%A9chets_de_construction_et_de_d%C3%A9molition/F-DECHETS_Memento_FR.pdf
MARCO Guide - Management of environmental risks in the construction trades		2004	Walloon Region	Ministère de la Région Wallonne, DGARNE	Not updated	http://www.marco-construction.be/guide/acces/g_depart.html

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
Catalogue on granular materials (for the stony fraction of CDW and for ashes and slags) with legal and technical aspects related to these materials as well as some practical examples.	This catalogue was developed in the frame of a study from OVAM to analyse the current status of the different possibilities of use for materials to be used as construction resources, as defined in VLAREMA.	2014	Flemish region	VITO and BBRI		***Catalogus grondstoffen, toepassingen en praktijkvoorbeelden:*** **http://www.ovam.be/sites/default/files/atoms/files/Catalogus_Finaal.pdf** *Gebruiksmogelijkheden van grondstoffen volgens VLAREMA in of als bouwstof - een stand van zaken:* **http://www.ovam.be/sites/default/files/Afzet_granulaten-VLAREMA-DEF-2014.pdf**

CDW management initiatives

Standard specifications for road works in the 3 regions (Standaardbestek 250, CCT (cahier des charges type-Typebestek) 2011, QualiRoutes) have played an important role in the uptake of recycling in Belgium: these are governmental prescriptions that can/should be used in governmental road construction works. Since they 'allow' the use of recycled aggregates in several applications, the clients are confident in the use, and thus apply them (since cheaper).

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. tons recycled	Further information/ web-site
Cluster Ecobuild						www.brusselsgreentech.be
Cluster éco-construction wallon						Clusters.wallonie.be/ecoconstruction
OPALIS 1: Study done for IBGE by ROTOR: ▪ Website with a list of companies engaged in the purchase and resale of re-using materials and tips for people who want to work with reused materials. ▪ Test the viability of a brick recovery company	BCR	2012	Brussels Capital Region	IBGE, ROTOR		www.opalis.be; http://documentation.bruxellesenvironnement.be/documents/STUD_2014_FinalPublic.PDF
OPALIS 2: Study done to replace and improve OPALIS 1. ▪ Update and promotion of the website. ▪ Establish clauses for specifications ▪ Make feasibility and market study for companies working with reusing materials.		2013	Brussels Capital Region	IBGE, ROTOR,		www.opalis.be; http://documentation.bruxellesenvironnement.be/documents/STUD_2014_FinalPublic.PDF
Sustainable Building Portal – Platform with links for technical tools, trainings, etc.			Brussels Capital Region	IBGE, RW, Alliance emploi environnement.		http://www.portailconstructiondurable.be/thematics/matiere
Alliance Emploi Environnement - it aims to mobilize and coordinate public, private and community actors		2012 ?	Brussels Capital Region		Evaluation ongoing	http://www.aee-rbc.be/

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. tons recycled	Further information/ web-site
around concerted actions. Two of the main goals are sustainable construction and waste as resources.						
NIB project on **ready-mixed concrete for the future** It concerns: self-compacting concrete, fibre reinforced concrete and “green” concrete (concrete with recycled aggregates).	The purpose of this project is to help spreading known – notwithstanding innovating – technologies among the interested actors (concrete plants, architects, builders/contractors) by actually applying the concrete in real projects.	2013	Flemish region	Initiative from BBRI in collaboration with the association of Flemish architects (NAV), FEDBETON (Belgian association for concrete) and FPRG (Federation of producers of recycled granulates)	ongoing	http://www.betonica.be/stortbeton *Nieuw Industrieel Beleid (NIB) project: stortklaar beton voor de toekomst:* http://www.fedbeton.be/newsletter.asp?id=804&lng=nl In the coming three years, for the three types of concrete, 15 building sites (of which one in Brussels and the others in Flanders) will be followed up during five days. This guidance is free and covers the design phase until the launch of the building site (technical regulation and preparation of the site) and the completion of the construction activities. During these guidance, it is explained how granulates are produced, which are the conditions for using these granulates and it is shown that it is possible to use recycled granulates in construction works.
BBRI technical report on concrete and recycling (in DRAFT)	The rapport gives an overview of all technical knowledge & experience on the subject of ‘concrete with recycled aggregates’ and should allow construction partners to easily use		National	BBRI with BRRC (Research Centre for roads)	draft document, not yet published	

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. tons recycled	Further information/ web-site
	recycled aggregates in construction projects.					
TRACIMAT vzw Voluntary initiative to do controlled demolition in order to improve the traceability of waste streams (especially rubble).	This organisation will be responsible for: - Controlling pre-demolition inventories; - Seeing whether hazardous wastes have been dismantled and transported correctly; - Monitoring and attesting the demolition process from the demolition site where waste is produced until the treatment facility.	2014	Flemish region	Collaboration between: ▪ VCB (Flemish construction confederation) ▪ CASO (Confederation of contractors for demolition and dismantling works) ▪ FPRG (Federation of producers of recycled granulates) ▪ ORI (Belgian Organisation of Consulting engineers, Consultancy and Engineering bureaus)	Not functioning yet	FPRG: http://www.fprg.be/regelgeving/ CASO: http://www.confederatiebouw.be/Default.aspx?alias=www.confederatiebouw.be/sloopenontmantelingswerken This organisation was set up during the summer 2014 as a demolition management organisation as stated in VLAREMA art. 4.3.5 et seq. It is intended to start functioning from January 1st 2016.
Gypsum recycling factory built next to an existing gypsum producing factory nearby Antwerp (Kallo)	Recycling gypsum from construction and demolition waste	2008 In function since 2009	Flemish region	Partnership between the gypsum factory and a recycling specialist.	40.000 tons of recycled gypsum in 2011 40.000 tons in	http://www.ovam.be/afval-en-materialen/materiaalkringlopen/materiaalbewust-bouwen-in-kringlopen/niet-steenachtige-kringloop/gips-en-gipskartonplaten http://www.duwobo.be/media/gipsrecyclage.pdf http://www.nwgypsum.com/material-from-new-west-gypsum-recycling-plant-heralded-as-unmatched/

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. tons recycled	Further information/ web-site
					2010	NWGR (New West Gypsum Recycling) Canadian company, has 9 recycling units in the world, Gyproc Kallo is the 3rd unit in Europe
A study on high-grade **applications of aerated concrete wastes** was carried out in 2011 for closing the loop of this material.	The study identified few existing recycling initiatives for autoclaved aerated concrete. These processes however require a pure aerated concrete stream. Other possible technical recycling options were analysed. Follow-up routes and issues were also included in the study.	2011	Flemish region	BBRI (Belgian Building Research Institute) and VITO (independent research and technology organisation) On behalf of OVAM	The initial target was recycling 30.000 tons of aerated concrete in 2014	Study on applications of aerated concrete: http://www.ovam.be/sites/default/files/FILE1305033641683ovor110510_Onderzoek_hoogwaardige_toep_cellenbetonafval.pdf Legal frame for the recycling of aerated concrete: http://www.ovam.be/cellenbeton#inzamelen Existing industry related initiatives: http://www.chapyt.eu/Chap-Yt.html http://www.jacobsbeton.be/ekprecycling/ http://www.xella.be/nl/content/actueel_3874.php http://www.xella.be/nl/content/milieu_1335.php In Xella (2011) 20.000 tons were recycled, but mainly from production waste and only a small fraction from construction sites (if quality of waste is very pure). http://fr.cellumat.be/nouvelles/14-de-croissance-pour-cellumat
Roof bitumen recycling initiative by Derbigum in Wallonia The company invested 2,5 million € over the last three years in this recycling facility.	Company that recycles roof bitumen in close collaboration with the demolition sector and waste collectors.		Walloon region	Industry - Derbigum	2.000 tons	http://www.derbigum.be/fr/a-propos/recyclage-2 http://www.ovam.be/afval-en-materialen/materiaalkringlopen/materiaalbewust-bouwen-in-kringlopen/niet-steenachtige-kringloop/dakbitumen
PVC recycling initiative by Deceuninck in Diksmuide.	A rigid PVC (post-industrial or post-consumed) recycling	2009	Flemish region	Industry - Deceuninck	Maximal capacity of 20	http://www.deceuninck.be/fr/deceuninck-recycling.aspx

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. tons recycled	Further information/ web-site
The company invested 3 million € in this recycling facility.	installation was built. This facility is the leader rigid SPVC recycler in Benelux.				000 tons is expected to be reached by 2016	
Study on **closing the loop of flat glass**	This report shows the legal framework in Flanders on CDW and the current situation of sorting and treatment of flat glass, its potential to decrease energy use and emissions compared to the production of primary flat glass. It finally presents some lines of thoughts for the future management of this waste stream.	2013	Flemish Region	Universities (Leuven, Ghent, Antwerp, Hasselt and Brussels) and a research institute (Vito) on behalf of OVAM	N.a.	Duurzaam beheer van vlakglas in de bouw - Een stand van zaken: http://steunpuntsumma.be/docs/rapport-summa-vlakglas-7-1.pdf http://www.ovam.be/producentenverantwoordelijkheid-samen-besturen http://www.ovam.be/afval-en-materialen/materiaalkringlopen/materiaalbewust-bouwen-in-kringlopen/niet-steenachtige-kringloop/vlakglas
Initiatives on colour sorting of mixed CDW using optical scanning and air pulses.	It enables separating the clay fraction from the concrete fraction. Both fractions can be used for		Belgium			[38] http://www.claisse.info/2010%20papers/p19.pdf

[38] Johan Vyncke and Jeroen Vrijders, *Recycling of C&D Waste in Belgium: State-of-the-Art and Opportunities for Technology Transfer* (Brussels: BBRI, 2010) <http://www.claisse.info/2010%20papers/p19.pdf>.

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. tons recycled	Further information/ web-site
	closing the loop.					
BBRI Case study on selective collection on-site of a building site.						More information in presentation p.12: http://www.ie-net.be/sites/ie-academie.be/files/uploads/01_vrijders_jereoen_wtcb.pdf This presentation was part of workshop on CDW: Day 1: (stony fraction) http://www.ie-net.be/content/bouw-en-sloopafval-dag-1-steenachtig-afval-van-puin-naar-product-van-goed-naar-beter Day 2 (non-stony fraction) http://www.ie-net.be/content/bouw-en-sloopafval-dag-2-niet-steenachtig-afval-naar-afvalvrij-bouwen-slopen
Inventory of practices in BCR		2015	Brussels Capital Region	Rotor for IBGE		
Update of website of IBGE enumerates the 10 good practices in BCR.		2015	Brussels Capital Region	IBGE		

Within these initiatives, the following ones could be selected as interesting case studies for task 2:

- NIB project on ready-mixed concrete for the future: the idea is to show to builders/contractors, architects, concrete plants, etc. that green concrete can be used in construction works, how it should be used and produced.
- The Flemish regional legal framework and strategies with a holistic approach to close the materials' cycles for the stony and non-stony fraction of CDW has overall been successful in the management of CDW.
- The Gypsum recycling factory is the thirds unit in Europe and could also be an interesting case study.
- TRADECOWALL: is a collaboration between the private and the public sector established as a cooperative society. The main objective of this society is to manage inert waste. At the beginning it was a network of landfill facilities, but since 1994, with the introduction of recycling, it evolved in a real network of treatment facilities for inert waste. Thanks to this association, there are semi-public recycling centers in each province of the region. The public sector, created the SPAQUE (Public Aid

Society of Environmental Quality) which is included in TRADECOWALL. Through public funds, these organizations were created and they are the basis of inert waste recycling in Wallonia at present.

- OPALIS: Several Studies done for Brussels Environment (IBGE) by ROTOR. These studies are focussing on re-use of CDW.
    - The OPALIS39 website is open to all individuals, contractors and architects who want to buy, sell or implement reuse materials. This site contains an updated list of professional dealers of reuse materials and some tips about reuse and implementation of materials. Moreover particular clauses of the specifications are provided for five recycled materials40.
    - Activation of network of reuse of building materials project in the Brussels- Capital Region (2012-2013, ROTOR). These two reports are linked to the website and explain the work of rotor to identify building materials dealers and describe the detail in the sector. The second report describes the issues of technical clauses of specifications and presents in detail the re-employment of materials in the offices sector, particularly the guidelines for starting a business in this sector. They make feasibility and market study for companies working with reusing materials. Particularly, they test the viability of a brick recovery company

Management of hazardous CDW

Overall Belgium has a good capacity to recycle almost all its hazardous CDW. A pre-demolition inventory is required in the three regions.

Waste containing asbestos is collected and transported separately. It is then treated with a binder before being disposed of in specialised landfills (which are capped directly) with reduced landfill taxes. In some specific cases, a vitrification treatment in France was adopted.

Roofing materials, which do not contain asphalt, are selected and recovered in Belgium. However, in practice, it is not always easy to distinguish the different kinds of roofing used. When roofing is made of asphalt it is sent for thermal treatment in the Netherlands.

Hazardous wood from the C&D sector are all treated in Belgium in specialised incineration or co-incineration facilities. Belgium also imports this kind of waste.

Lightning rods and ionic smoke detectors could also contain radioactive substances such as (radium and americium). These hazardous substances should also appear in the pre-demolition inventory.

The highly composite nature of new building materials such as insulation will affect the future management of CDW as it increases the complexity of the treatment of these materials. To date, there are no appropriate treatment facilities for these substances.

Flemish Region	Hazardous waste, such as waste containing asbestos, is collected separately and mainly landfilled. Another fraction of hazardous waste is treated abroad (e.g. tar asphalt undergoes thermal treatment in the Netherlands). Also, VLAREMA, art. 5.3.3.4 provides that tar containing asphalt may be reused in foundations of large scale works (>1500m^3). This won't be possible after May 2019 and will be modified in VLAREMA accordingly.
Brussels Capital Region	In BCR, on building site, it is mandatory to submit its hazardous waste to an authorized collection or to remove it oneself under certain conditions[41]. It is also mandatory to hold a hazardous waste register for 5 years. Finally, special conditions of storage of hazardous waste

39 Opalis.be

40 http://www.opalis.be/fr/materiaux/paves-bordures-et-klinkers
http://www.opalis.be/fr/materiaux/bois-de-construction
http://www.opalis.be/fr/materiaux/briques

41 AGRBC du 25avril 2002 et du 19 septembre 1991.

	are defined to protect the environment.
Walloon Region	CCTB: http://batiments.wallonie.be/home/iframe-html.html Sorting obligation for hazardous waste on site. Main hazardous wastes are: solvent, paint and varnish, used oils, treated wood, waste or materials contaminated by hazardous substances, asbestos. All the hazardous wastes are reported in a hazardous waste declaration.

5. CDW management performance – CDW data

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

Summary – CDW generation and recovery official statistics (WStatR)

Year	2008	2009	2010	2011	2012
Generated CDW (tons)	1,086,625 [42]	NA	8,998,025	NA	6,945,480
Recycled CDW (tons)	NA	NA	NA	NA	14,542,374
Backfilled CDW (tons)	NA	NA	NA	NA	0
Landfilled CDW (tons)	NA	NA	NA	NA	270,868
Energy recovery if any (tons)	NA	NA	NA	NA	30,782

5.1 CDW generation data

Flemish Region	Since 2010, data is collected every two years according to the European and international reporting obligations (even years). The production of waste and of new resources from enterprises is estimated from data reported by businesses in their annual integrated environment report (Integraal Milieujaarverslag campagne or IMJV)[43]. This IMJV campaign is extensive during even years, including an analysis across more than 60 sectors, 60 types of waste or resources and 8 types of waste treatment facilities. Since 2007, these extensive campaigns also include data from waste treatment facilities and enterprises which have PRTR (Pollutant Release and Transfer Register) reporting obligations. The sample includes more or less 15000 enterprises of which approximately 2000 enterprises with PRTR reporting obligations and 2000 waste treatment facilities. During uneven years, only enterprises that have to report data for PRTR are taken into account for the data collection. This data is available on the PRTR website from the European Union. Therefore for 2011 and 2013 no data are available for waste generation and treatment. Data in Flanders is collected according to the LoW codes (which enterprises report in their IMJV). The economic sectors are however slightly different from the NACE codes used in the WStatR. Flemish publications with CDW data are based on the specific definition of CDW as mentioned in section 1.2.2 (including 16 LoW codes), for all economic activities, excluding

[42] For this reporting year, no mineral waste from construction and demolition (W121) are included.

[43] OVAM, *Bedrijfsafvalstoffen Productiejaar 2004-2012 (uitgave 2014)* (Mechelen: OVAM, 2014), p. 39 <http://www.ovam.be/sites/default/files/Publicatie%20bedrijfsafvalstoffen%202004-2012%20%28uitgave%202014%29.pdf>.

<table>
<tr><td></td><td>households.

CDW data from households and municipal waste are reported in another publication [44]. In 2012, 433.043 tons of CDW were produced by households. This data is not included in the table above.

For the Flemish region, Mieke Vervaet from OVAM is our contact person.

<u>Source</u>: http://www.ovam.be/sites/default/files/Publicatie%20bedrijfsafvalstoffen%202004-2012%20%28uitgave%202014%29.pdf</td></tr>
<tr><td>Brussels Capital Region</td><td>Data on CDW generation are not collected on a yearly basis. The estimation of CDW is based on two different sources. The first source is the register of waste (2008). Data is gathered by collecting, sorting and treating facilities and by producers of waste, who send their waste to another region. This register uses LoW codes so the CDW can easily be selected in this register (17XXXX + paper and green waste). Limitations of this source: real and reported data can be different; some data are missing; problem of double counting. For more explanation read: http://documentation.bruxellesenvironnement.be/documents/Etude_dechets_construction_CERAA_Rotor.PDF, page 125.

The second source is another one shot estimation of CDW produced. This estimation is based on building typologies. Data come from statistics and surveys and are treated to have an idea of global CDW. The following steps are undertaken to estimate the total amount of CDW:

▪ Estimated constructed surfaces, renovated and demolished a year in BCR m²
▪ Estimated waste generated during construction in t / m² (with ratio).
▪ Estimations of the total quantities of waste generated BCR in tons
▪ Mass in tons per fraction
▪ Distribution of the total amount of construction and demolition waste on the basis of statistical survey conducted in France in 2008
▪ Comparison of overall results
▪ Discussion for each fraction of waste
▪ Synthesis

This methodology is based on many hypotheses and as a consequence data suffer from a lack of completeness. Therefore data are to be taken with caution.

The available data are:

<table>
<tr><td>Inert</td><td>383.008</td></tr>
<tr><td>Mixt waste</td><td>144.905</td></tr>
<tr><td>asphaltic</td><td>10.702</td></tr>
<tr><td>asphaltic (roads)</td><td>30.628</td></tr>
<tr><td>Plastic</td><td>7</td></tr>
<tr><td>Paper</td><td>0</td></tr>
<tr><td>Metal</td><td>25.000</td></tr>
<tr><td>Wood</td><td>5.450</td></tr>
<tr><td>Green waste</td><td>1.500</td></tr>
</table>
</td></tr>
</table>

[44] OVAM, *Inventarisatie Huishoudelijke Afvalstoffen 2013* (Mechelen: OVAM, 2013), p. 65 <http://www.ovam.be/sites/default/files/atoms/files/Inventarisatie-HA-2013.pdf>.

	<table><tr><td>Hazardous</td><td>41.492</td></tr><tr><td>Other CDW</td><td>1.748</td></tr><tr><td>TOTAL</td><td>644.440</td></tr></table> For BCR, the contact person is SCHERRIER Nicolas. No data were sent to Eurostat. The register from sorting facilities contains data but they are not available and contain many inconsistencies.
Walloon Region	Data on CDW generation are not collected on a yearly basis. Last estimation dates from 2008. The estimated total of CDW excluding excavated soils was 4,4 Mt. The Walloon region is aware of the lack of CDW data and of the impossibility to check if the recovery target is reached. A new reporting methodology is under development. The first data will be available soon. According to TRADECOWALL[45], the 2008 estimation was biased and the production of inert CDW in Wallonia should be around 5 million tons. The Walloon production of recycled aggregates is more than 3 million tons.

5.2 CDW treatment data

Flemish Region	The methodology for data collection is explained in the previous section (5.1). Distinction between hazardous and non-hazardous waste allocated to the different treatment operations is not available yet in the regional data. There is no backfilling in Flanders, so zero values are reported in the corresponding spreadsheets. On-site recycling is often missing in reported data, as constructors sometimes directly re-use waste material in construction of a road for instance. Internal recycling is not included in the reported data to Eurostat. Temporary storage is allowed for facilities with a permit (e.g. mobile crushers).
Brussels Capital Region	No data available, some trends are known. ▪ 80% of CDW are sorted directly on site. ▪ There would still remain around 150.000 tons of mixed waste from Brussels construction sites. It seems also that half of the 150.000 tons would be sorted in a sorting centre. Source: http://documentation.bruxellesenvironnement.be/documents/Etude_dechets_construction_CERAA_Rotor.PDF, p159. There are only three sorting facilities in BCR. Waste is sent to other regions for treatment.
Walloon Region	The only information available is a valorisation rate of 85 % in 2008. Plan déchets horizon 2010: http://environnement.wallonie.be/rapports/owd/pwd/catflux1.pdf:

5.3 CDW exports/imports data

Flemish Region	Exports/imports of CDW are very limited as CDW consists of an important stony fraction which is very heavy. Therefore rubble is primarily processed and used within a maximum radius of 20-

[45] TRADECOWALL: Société Coopérative pour le TRAitement des DEchets de COnstruction en WALLonie- Cooperative Society for the treatment of construction waste in Wallonia. http://www.tradecowall.be/

	30 km, sometimes even directly processed and used on-site with a mobile crusher. In 2011, 116kt of recycled granulates, mainly coming from Brussels were imported (MDO, p.137) and 399 kt of recycled granulates were exported mainly to Wallonia (90%) and the remaining fraction (10%) to Brussels (MDO, p.141)[46]. A limited amount of exports to the Netherlands take place for tar asphalt for thermal cleaning.
Brussels Capital Region	No data available. Import is not really possible because there are only sorting facilities in BCR. So if waste comes into the region it leaves after its pre-treatment. Wastes are always exported to be treated and thus export data are the same as generation data.
Walloon Region	No data available.

5.4 CDW treatment facilities data

Flemish Region	Flanders has four landfills for inert waste (category 3) with a total remaining capacity of 1.046.515 tons in 2013. In 2013, 38.313 tons of waste were brought into category 3 landfills[47]. At the beginning of 2014, there were 197 fixed locations (sorting of mixed CDW, crushing of rubble, sometimes also mixing of lean concrete) and 50 mobile installations working under the COPRO-certification in Flanders[48]. Certipro has more or less 35 certified facilities[49]. 13 million tons of recycled aggregates are certified in Flanders (of which more than 11 million tons from Copro certified crushers).
Brussels Capital Region	There are no landfills in BCR (too small territory). There are only three sorting facilities. CDW are exported to other regions. There are mobile treatment units like the company Mobius green but this company is not in activity for the moment, thus no data available.
Walloon Region	For the moment there are 5 landfills for inert waste in activity in Wallonia. These landfills are compliant with the EU legislation. The total capacity of these landfills is 3.093.419m³. The planned dates of end of activities are: 2023, 2020, 2022, 2015, and 2022. According to OWD, 99 % of the waste landfilled is soil. From this observation it is not pertinent to open new landfills for inert waste. The necessity is to create a legal text for the backfilling of soil. This text is in preparation. A meter of soil is necessary for the covering of landfills. For the rehabilitation see legal text: 14 juin 2001 - Arrêté du Gouvernement wallon favorisant la valorisation de certains déchets 242 Centers authorized to perform the sorting / recycling of inert construction waste and demolition. But 150 of them are building contractor who can store their waste. There are 28 asphalt plants and concrete plants authorized to perform the incorporation of construction and demolition waste in their production.

[46] LNE, OVAM and Vito, *Monitoringsysteem Duurzame Oppervlaktedelfstoffenbeleid (MDO) - Resultaten van 2011*, 2012, p. 168 (pp. 137, 141) <http://www.ovam.be/mdo-jaarverslag>.
[47] OVAM, *Tarieven En Capaciteiten Voor Storten En Verbranden - Actualisatie Tot 2011* (Mechelen: OVAM, 2012), p. 35 <http://www.vlaanderen.be/nl/publicaties/detail/tarieven-en-capaciteiten-voor-storten-en-verbranden-actualisatie-tot-2011>.
[48] COPRO, *Activiteitenverslag 2013*, 2013, p. 118 <http://www.copro.eu/content/Vaste_doc/jaarverslagen/2013%20NL/index.html>.
[49] Certipro, 'Gerecycleerde Granulaten', *Certipro*, 2015 <http://www.certipro.be/NL/Pages/granulates/recycledaggregates.aspx> [accessed 24 April 2015].

	More information about treatment facilities in activity in Wallonia on this website: http://environnement.wallonie.be/owd/entagree/

5.5 Future projections of CDW generation and treatment

Flemish Region	No satisfactory information could be retrieved on future projections of CDW generation and treatment.
Brussels Capital Region	No projections available. Maybe in the next waste plan.
Walloon Region	This kind of projections will be available in the new Walloon waste plan. According to Tradecowall, the generation of CDW is linked to the construction sector's conditions. For the moment, the production is stable from year to year.

5.6 Methodology for CDW statistics

Flemish Region	Explained in section 2
Brussels Capital Region	For the moment, there is no statistic available for this region.
Walloon Region	For the moment, there is no statistic available for this region. This should be better next year because a new system of data collection is under development.

6. C&D waste management in practice

In this section the CDW management "on ground" in Belgium is explored. Specific CDW obligations, initiatives, voluntary agreements and any other management practice if available currently in Belgium are described.

Flemish Region	In **Flanders** the focus is set on recycling CDW streams. In a first stage the focus was on recycling the stony-fraction (which represents 95% of the CDW stream), but since 2007 (in the executing plan for CDW) Flanders shows an increasing interest in the non-stony material fraction (flat glass, bitumen, gypsum, etc.).
Brussels Capital Region	In Brussels the focus is mainly on dismantling and re-use of CDW (e.g. Opalis). Recycling is mainly done in the other regions.
Walloon Region	In Wallonia the focus is set on recycling of inert waste of CDW.

6.1 CDW management initiatives

These initiatives are already listed in the table "CDW management initiatives" page 36.

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 Belgium. 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
RecyHouse: BBRI has developed a pilot project to build a house with recycling materials only. The website allows searching for existing recycled materials on the market by type of product / company / branding ... and it presents a complete data sheet for each material.	Materials from recycling, 1996-2001, BBRI	Pilot projects are really good initiaves. This type of projets encourages transition.	This project is quite old and did not imply a really important change in inert waste recovery rates.	www.recyhouse.be
OPALIS 1: Study done for IBGE by ROTOR: ▪ Website with a list of companies engaged in the purchase and resale of re-using materials and tips for people who want to work with reused materials.	BCR, 2012, BCR and ROTOR	This is a good platform for information about where to sell and where to find recycled materials. It is an essential link for the promotion of reuse.	This platform can improve, for example, by integrating the quantity and availability aspects.	www.opalis.be;
Reuse of building materials – Practical guide	2013, OWD, IBGE, CCW, CCB, RESSOURCES asbl, CIFFUL	This guide has a more structured approach than others and is based on projects that have integrated this issue. It is interesting to be based on past projects and collect maximum information on what was done, how, advantages and barriers and to communicate these results.	The selected projects can sometimes seem ' anecdotal ', or unambitious.	http://www.cifful.ulg.ac.be/images/stories/Guide_reemploi_materiaux_lecture_2013.pdf
Re-use VADEMECUM: this tool explains how to sell materials before they reach the waste status for the public sector.	Ongoing, Not yet available, Rotor for BCR	The Vade Mecum will propose concrete solutions to remove certain obstacles related to reuse.		

Description of initiative	Scope, year established, actors involved	Advantages/ Enabling factors	Disadvantages/ Obstacles	Further information/ web-site
Guidance document for drawing up a demolition inventory - This guide aims at identifying the amounts and types of wastes that will appear when dismantling a building	2012, Flemish Region	Very good reference site, includes lots of interesting information, has a longer-term vision for waste management		[50] https://www.ibeve.be/documents/10810/11421/OVAM+Handleiding+voor+de+opmaak+van+een+sloopinventaris/83158482-778c-48c5-8896-bedeb4b06a78?version=1.1
Guidance on defining the end-of-waste phase of materials, waste and resources - This document helps interpreting the conditions for a material to be considered as a resource and not waste	Flemish Region	Very good reference site, includes lots of interesting information, has a longer-term vision for waste management		[51] http://www.ovam.be/sites/default/files/FILE1335259183661ovhl200424_Handleiding_afbakening_afvalfase.pdf
MARCO Guide - Management of environmental risks in the construction trades	2004, not update, Walloon Region DGARNE	basic information is quite sufficient at first	need to be updated	http://www.marco-construction.be/guide/acces/g_depart.html
Alliance Emploi Environnement - it aims to mobilize and coordinate public, private and community actors around concerted actions. Two of the main goals are sustainable construction and waste as resources.	2012, BCR	good leverage, lots of complementary projects		http://www.aee-rbc.be/

[50] OVAM, *Leidraad Bij de Opmaak van Een Sloopinventaris*.OVAM, *Leidraad Bij de Opmaak van Een Sloopinventaris* (Mechelen: OVAM, 2012), p. 42 <https://www.ibeve.be/documents/10810/11421/OVAM+Handleiding+voor+de+opmaak+van+een+sloopinventaris/83158482-778c-48c5-8896-bedeb4b06a78?version=1.1>.

[51] OVAM, *Handleiding Bij de Afbakening van de Afvalfase: Materialen, Afvalstoffen En Grondstoffen in de Kringloop*, n.a., p. 14 <http://www.ovam.be/sites/default/files/FILE1335259183661ovhl200424_Handleiding_afbakening_afvalfase.pdf>.

Description of initiative	Scope, year established, actors involved	Advantages/ Enabling factors	Disadvantages/ Obstacles	Further information/ web-site
Gypsum recycling factory built next to an existing gypsum producing factory nearby Antwerp (Kallo)	2008 In function since 2009, Partnership between the gypsum factory and a recycling specialist.	To promote. Good example of relocation of recycling units and waste management in the territory. Before all these gypsum waste were transported to Germany. Decreases the dependence of the region and enhances the valuation of gypsum waste.		http://www.nwgypsum.com/material-from-new-west-gypsum-recycling-plant-heralded-as-unmatched/
Eco -Construction - Management of construction and demolition waste - 2010: "Drafting and monitoring specifications "	2010, CEERA for BCR	Interesting work because, in general, it lacks for architects in particular, practical examples of "how they can incorporate requirements for waste recovery".		Eco-Construction – Gestion des déchets de construction et de démolition - 2010 : « La rédaction et le suivi du cahier des charges » - CERAA

Flemish Region	The different actors of the C&D sector are active and communicate well with each other. The legal framework and the technical opportunities provided by governmental authorities in collaboration with research institutes, industries and local authorities enabled to achieve the current high recycling rates in Flanders, especially for recycled granulates.
Brussels Capital Region	Thanks to the AAE initiative (Environment and employment alliance) many stakeholders have met each other. They communicate regularly and some actions are taking place.
Walloon Region	The different federations are active and they communicate with each other and with the region. Thanks to the “accords de branches”, a technic comity composed by all the actors was created. This comity meets regularly and is a meeting place for all the actors and the government.

6.3 Waste legislation enforcement

Flemish Region	Enforcement is experienced by the actors of the sector as a bottleneck. The competent authorities for supervising the enforcement of CDW related activities are: ▪ LNE-AMI (department Environment, nature and energy, unit environmental inspection) and ▪ The local supervisors in cities and municipalities.
Brussels Capital Region	The competent authorities for supervising the enforcement of CDW related activities are the waste inspection from Brussels Environment. They have not the adequate capacity to make a high number of controls. There are a lot of infractions on private land (illegal flytipping). Moreover, with the knowledge of Brussels's building and the number of renovation, it is known that more asbestos should be sent in landfilling and so there are frauds. For more information: VAN NIEUWENHOVE Catherine cvannieuwenhove@leefmilieu.irisnet.be
Walloon Region	The Walloon Waste Office is responsible for the legislation and the DPC is the department of the Walloon Region which is responsible for the inspection. The inspection authorities have no adequate capacity to make fields controls. It is known that there is illegal flytipping and that more controls are needed.

6.4 Drivers / barriers to increase CDW recycling

Flemish Region		
Factor / characteristic / element in CDW recycling chain	**Drivers**	**Barriers**
Legislation	• The adoption of several sectorial implementation plans for CDW management • The technical framework allowing the use of recycled granulates in the building of roads (Standaardbestek 250) • Taxes on landfilling	• Differences in legislation among the Belgian regions
Treatment facilities	• Several treatment facilities for different CDW streams exist or are under development	
Standards		• Insurers might require certain technical standards for materials (such as BENOR standards) which are not always applicable to recycled granulates.

Design and materials	• The use of natural products could facilitate the recycling (e.g. natural insulation), because it might have a less complex composition, which is easier to separate and recycle.	• Modern construction materials have a more complex structure (composite nature of construction materials) and different components are glued together. These wastes are more difficult to recycle and might end up in a landfill…
		• Logistical aspects related to the recycling of smaller streams might complicate the recycling
		• Challenges related to Insulation materials:
		  ○ Enough volume to recycle?
		  ○ Is transportation worth it (just transporting « air »)?
		  ○ Technical challenge
		  ○ Economically expensive to recycle (who will pay?)?

Key stakeholder involvement	The combination of stimulating both practical and technical solutions (use of granulates in road construction) with economic benefits (landfill taxes) drove the stony-fraction recycling rate at 95% in Flanders.	

Brussels Capital Region		
Factor / characteristic / element in CDW recycling chain	**Drivers**	**Barriers**
Economy	• The cost of treatment for sorted waste is less expensive than for mixed waste (treatment cost of mixed waste is 3 to 10 times more expensive). (	• The Joint Committee for the workers of the building is quite high, implying relatively expensive labor cost. This makes spending time sorting the waste too expensive. • the containers take up space on construction sites and are expensive • In Flanders, legislation is different. To send inert waste from Brussel in recycling facilities in Flanders, contractors have to prove that there is no hazardous waste in the inert waste. To prove it, contractors have to pay a lab test which is expensive. • Small construction contractors cannot send waste in public container parks. They have to pay a private collector which is more expensive. • For private CDW, there is a maximum volume allowed into the public containers parks. Private have to lend a container to a private collector which is really expensive.
Legal	• The legal text: 9 MAI 1995. - Circulaire relative à la réutilisation de débris dans les travaux routiers et d'infrastructure. This text not only allows but also encourages the use of the recycling materials. • The legal text: 16 JUILLET 2010 – Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif à l'agrément et au subvention des associations sans but lucratif et des sociétés à finalité sociale active dans le secteur du réemploi et du recyclage. This text specifies that government provides subsidies to nonprofit or social organizations that are active in the area of reuse and preparation for reuse.	• The procedures for approval to sorting containers on public roads are taking a lot of time. • Once the license of environment received, people have to respect a deadline to begin construction of the building. This time to begin the work does not encourage people to make selective deconstruction and material reuse. • The soil ordonnance is too strict and does not encourage the recovery in soils. Moreover this ordonnance is in opposition with the EoW status of concrete waste.

Walloon Region		
Factor / characteristic / element in CDW recycling chain	**Drivers**	**Barriers**
Economy	• Treatment costs for sorted waste is less expensive than for mixed waste • Landfilling prices •	•
Legal	• The legislation is strict and obliges to a high recycling rate for CDW. • The progressive landfill bans of waste. • Government[52] provides subsidies to nonprofit or social organizations that are active in the area of reuse and preparation for reuse.	• Qualiroute 2012: the public specifications for roads: This legislation is too strict. The technical specification are really high compared to the all the European specifications. This fact results from a study of Tradecowall. The main reason to be stricter in Wallonia is that there are a lot of quarries and so many sources of naturel aggregates. The region should impose a minimum percentage of recycled aggregate. • No EoW criteria for recycling aggregates and other recycling materials from CDW. •

7. CDW sector characterisation²

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

7.1 Sector characteristics

Flemish Region	List of main actors: ***Governmental authorities***: ▪ OVAM: Public Flemish waste agency ▪ LNE (AMI): Flemish department Environment, nature and energy, unit environmental inspection ***Sectorial federations and unions:*** ▪ VCB: Flemish construction confederation ▪ CASO vzw: confederation of contractors for demolition and dismantling works ▪ FPRG: Federation of producers of recycled granulates ▪ FEBEM/FEGE : Federation of enterprises for environmental management (sorting facilities) ▪ Belgisch-Luxemburgse Gipsvereniging (BLGV) ▪ FEDBETON: Belgian association for concrete ▪ VVSG: Union of towns and municipalities ***Research institutes:***

[52] 3 avril 2014 : Arrêté du Gouvernement wallon relatif à l'agrément et à l'octroi de subventions aux associations sans but lucratif et aux sociétés à finalité sociale actives dans le secteur de la réutilisation et de la préparation en vue de la réutilisation

	▪ BBRI: Belgian Building Research Institute ▪ BRRC: Belgian Road Research Centre ▪ VITO: Independent research and technology organisation ▪ ORI: Belgian Organisation of Consulting engineers, Consultancy and Engineering bureaus ▪ KULeuven university ***Certification organisms:*** ▪ COPRO ▪ CERTIPRO ▪ Be-Cert ***Some agreements between actors:*** ▪ In the frame of the regulation "eenheidsregelement" art . 3.3.5, there is regular consultation with the actors from the sector of recycled granulates: VCB, CASO vz, FPRG, FEBEM and VVSG. ▪ Agreement in the sector of aerated concrete: between industry, federations, and governmental authorities. Existent actors involved in CDW management are adequate to drive increased recycling and recovery of CDW. The WFD target had been achieved before the target was actually set at European level.
Brussels Capital Region	<u>List of actors:</u> Public actor: ▪ Waste Department of Brussels Environment (IBGE) ▪ Waste Inspection of Brussels Environment **Federations:** ▪ Confédération Construction Bruxelles-Capitale **-** Construction Confederation Brussels Capital Region. This Confederation is the regional entity of Construction. Their main mission is the defence of the interests of the construction sector, as a spokesperson with the Government of the Brussels- Capital Region. ▪ CDR – BRC: The Brussels Professional Reference Centre for the Construction Sector (CDR) with the objectives of the Plan for the Economy and Employment of the Government of Brussels. It aims to facilitate the matching of training courses and business needs, providing interfaces between the actors of employment, training and education, and the Brussels professional sector. ▪ BBRI: Belgian Building Research Institute **Sorting facilities:** ▪ De Meuter Recycling : waste sorting and grouping ▪ Van Pachtenbeke & Fils : small family company focused on fine inert sorting ▪ Sita Recycling Center: mainly a collection center, very little sorting. The waste is gathered to be driven in large quantities to the main sorting center of Sita, in Tienen. ▪ Schanks Brussels: consolidation of waste and first relatively fine sorting. The fractions are sent to other sorting centers Shanks group or to specialized companies. In BCR, there is no treatment facility for inert waste, soil, etc. There are sorting but no crushing facilities, so these wastes have to be exported to neighboring regions. There are however, several mobile crushers. ▪ The main actors of inert waste sector assets in Brussels are Amacro (south of the city), Marc de Smet, ABR (De Meuter, Vilvoorde), Star (Grimbergen) Verhaeren and J. Lemaire. **Reuse:** ▪ All-in-Build, a Brussels-based pre-demolition project responsible for dismantling buildings to allow for demolition. When destroying a structure, they have a ringside seat to retrieve reusable items. Their expertise in this area is very valuable. ▪ Rotor, a Brussels-based design and research collective, developed, through Rotor

	Deconstruction, a service in order to connect existing offer and demand of building components available for reuse. http://rotordeconstruction.be ▪ Ellis & Moore Llp, a British engineering firm composed mainly of engineers. They were included in the BedZED project in London, built for a good part with recycled materials. They looked more closely on issues related to the certification of second hand building materials. ▪ Kringwinkel Zuiderkempen, a used everyday objects shop that works within the social economy. With their experience in re-employment, they have started to work in the resale sector of construction materials.
Walloon Region	For the management of all CDW, except the inert fraction, the system is the same as for the same flow from other sectors. Wastes are often sorted on the building site and treated by the different facilities. Sorting waste is economically more interesting for companies because facilities ask a much higher price for mixed waste. Inert waste is the biggest flow of CDW. This waste is either treated and reused on site or sent to a sorting and treating centre. There are 250 approved facilities in Wallonia. A part of these facilities are contractors which can store waste during the construction period. The sorting and treating facilities are represented by several institutions described in the next sections. The recycling centres are called CTA (centre de traitement autorisé). The cooperative TRADECOWALL for waste treatment Construction in Wallonia was founded in February 1991 in order to implement: ▪ Construction waste management policies and demolition products in the Walloon Region. ▪ Practical and reliable solutions for the disposal of inert waste and surplus excavated earth from construction and demolition sites. ▪ Valuation methods and channels for this waste. TRADECOWALL is the result of a partnership between: ▪ Confederation of Construction in Wallonia (CCW) ▪ the Walloon Region (via the public company SPAQuE) ▪ Scientific Centre and Building Technique (CSTC/BBRI) ▪ the Road Research Centre (RRC) ▪ 230 construction sector companies of all specialties and sizes across Wallonia. FEREDECO: Formally established on 15 February 1999, the Federation of Construction Waste Recyclers, abbreviated FEREDECO is a non-profit association. Currently, the Federation comprises 34 inert waste recycling companies representing 44 recycling centers. SPAQuE (Society for Environmental Quality) is also a founding member. Each of these companies has one or more facilities (recycling centers = CTA) across Wallonia. The employment in Wallonia for inert CDW is about 50 persons. A recycling centre employs between 2 and 5 persons. FEBEM/FEGE : Federation of enterprises for environmental management (sorting facilities) ▪ Scientific Centre and Building Technique (CSTC/BBRI) ▪ Confédération Construction Wallonne (CCW) ▪ Office Wallon des Déchets (OWD)

7.2 Exports / imports of CDW

Flemish Region	Very little CDW is exported. As mentioned in section 5.3, rubble is primarily processed and used within a maximum radius of 20-30 km, sometimes even directly processed and used on-site with a mobile crusher. A small fraction of hazardous waste is treated abroad (e.g. tar asphalt for thermal treatment in the Netherlands).
Brussels Capital Region	The territory of Brussels Capital Region is too small to have the capacity to treat the CDW. Wastes are recovered on site or exported to other regions.
Walloon Region	Enough capacity in Wallonia. In Wallonia, there are more imports than exports of inert CDW. But for polluted soil there is more export. Indeed, the legal text of 14 June 2001 is

	stricter for these soils, which makes it more interesting to export them.

7.3 CDW as landfill cover

Flemish Region	The main fraction of CDW (90%) is used as sub-base and base layers in road construction. About 10% are used in road-like applications on construction sites. Less than 1% is used in high-grade applications. Further research is carried out by Vito in collaboration with BBRI and OVAM on this topic. For more information: www.ovam.be/gerecycleerdegranulaten CDW is not used as landfill cover. How a landfill cover should be applied is established in the environmental permit of the landfill.
Brussels Capital Region	There is no landfill in BCR. Inert waste can be used in the road construction. 9 MAI 1995. - Circulaire relative à la réutilisation de débris dans les travaux routiers et d'infrastructure. For more information of the use of inert waste see paragraph 3.
Walloon Region	According to Order of the Walloon Government promoting the recovery of certain waste[53], CDW can be used as: ▪ Backfilling, with the exception of existing and designated CET in the plan ▪ Riprap ▪ Subgrade work ▪ Foundation work ▪ Layers of coating ▪ Shoulders ▪ Construction or renovation of structures or buildings ▪ Abandoned polluted or contaminated sites remediation following a process approved by the Region ▪ Upgrading and rehabilitation of landfills (CET) These materials don't change of status and stay wastes. The covering of landfill is not the main destination of this waste because there are only 5 landfills in activity in Wallonia.

7.4 Market conditions / costs and benefits

Flemish Region	Taxes on landfilling have played a major role in Flanders as an incentive to recycle CDW. The average landfill operational cost for landfills for inert waste was 53,35 euros/tonne in 2013 [54]. The average landfill tax for inert landfills was of 12,73 euros/tonne. Aside from the inert fraction of CDW, a differentiated tax system is applied to waste streams. It depends on whether they come from a certified crushing facility and on whether the waste stream is inflammable[55]:

Landfill tax	Type of waste	Euros/tonne

[53] **14 juin 2001 Arrêté du Gouvernement wallon** favorisant la valorisation de certains déchets

[54] OVAM, *Tarieven En Capaciteiten Voor Storten En Verbranden - Actualisatie Tot 2011*.

[55] OVAM, 'Milieuheffingen', 2015 <http://www.ovam.be/afval-materialen/storten-verbranden-en-landfill-mining/milieuheffingen> [accessed 16 April 2015].

<table>
<tr><td></td><td>
<table>
<tr><td>Residues from certified crushers</td><td>Flammable</td><td>2,45</td></tr>
<tr><td></td><td>Not flammable</td><td>1,35</td></tr>
<tr><td>Delivered by others</td><td>Flammable</td><td>61,11</td></tr>
<tr><td></td><td>Not flammable</td><td>32,59</td></tr>
</table>
http://www.ovam.be/sites/default/files/atoms/files/tarieven%20milieuheffingen%202015_0.pdf
</td></tr>
<tr><td>Brussels Capital Region</td><td>
As regard of market price, from a study made in 2010 the treatment cost for waste in sorting centres is about:

20 €/t for inert waste
25 to 100 €/t of ordinary waste sorted
160€/t of non-sorted
1 to 2€/kg for toxic waste

According to CSTC, these prices are far from reality.
There is no landfill in BCR so waste falls under other region’s legislation.
Container for metal are usually free.
</td></tr>
<tr><td>Walloon Region</td><td>
In Wallonia, there are a lot of restrictions for landfilling. Only few wastes can be landfilled. It is the biggest incentive. Another incentive is the price of treatment. Landfilling is ten times more expensive than sending it to recycling centres. The most sorted the waste are, the cheaper the treatment. Price of transport has also an important role in the allocation game of waste. Indeed, the product has a negative value and is heavy and not so easy to transport.
<table>
<tr><td>Price by tons excluding VAT</td><td>Soils with max 5% of stones</td><td>Land sorting with 5 to 30 % of inert waste</td><td>Land sorting with more than 30 % of inert waste</td></tr>
<tr><td>CAT (recycling)</td><td>5,40€ / 6,40€</td><td>8,60€ / 9,60 €</td><td>10,90€ /11,90 €</td></tr>
<tr><td></td><td>Soils</td><td>Ultimate inert waste</td><td>Other waste are not authorized in CET</td></tr>
<tr><td>CET (landfill)</td><td>7, 23 €</td><td>85,96 € (including taxes)</td><td>/</td></tr>
</table>
Source: TRADECOWALL
In Wallonia CDW recycling is well established (Partly due to legislation). There is an obstacle already reported, the high technical product specifications for road. Wallonia is a territory with a lot of quarries, so there is no specific scarcity of resource. But the region is implementing more and more the concepts of circular economy so this might change in the near future.
In Wallonia the conditions to use recycled granulates in road construction are more restrictive. This is due to the presence of quarries producing primary granulates. http://qc.spw.wallonie.be/fr/qualiroutes/
</td></tr>
</table>

7.5 Recycled materials from CDW

In 2012, an estimated 15 million tons of recycled aggregates were produced (from 82 million tons of total aggregates' production)[56].

Flemish Region	The main CDW products are recycled granulates, mainly used for road construction and similar activities. As explained in section 1.2.3, some **EoW criteria** are applicable to CDW. Recycled granulates complying with these criteria are no longer considered as waste, but as a product. The **standard specifications** (standaardbestek 250) in place in the Flemish region allow the use of recycled granulates in the building of roads, which strongly incentivised the recycling of granulates (along with **landfill taxes**). Flanders produces approximately 14-15 million tons of recycled granulates (2014). Other recycled materials from CDW exist: ▪ gypsum recycling company (Gyproc Kallo) ▪ 2-3 companies that recycle aerated concrete ▪ Roof bitumen recycled by Derbigum in Wallonia (capacity of 2000 tons) ▪ PVC recycling by Deceuninck The price of recycled products depends from one product to another. Most of them have the same price or are a little cheaper than the equivalent primary resource. Recycled granulates are usually 20 to 25 % cheaper[57].
Brussels Capital Region	Only sorting centers in BCR, see other regions for more information.
Walloon Region	In Belgium, market conditions are Federal and thus the same for the three regions. In Wallonia the certified recycling facilities which produce recycled aggregates all respect the CE 2+ norm for their products.

7.6 Construction sector make up

General data on the construction sector:

The construction sector includes (NACE codes 41, 42 and 43) the following activities:

(411) development of building projects, (412) construction of residential and non-residential buildings, (42) construction of roads, railways, utility projects and other civil engineering projects, and (43) specialised construction activities.

- In volume, the gross added value from the construction sector represents 5,6 % of total GAV for Belgium in 2013, which is 19.641 million euros in absolute terms.

Year	2009	2010	2011	2012	2013
Gross added value of construction sector (million euros in volume)	17.937,2	18.111,9	19.539,2	19.901,8	19.640,6

Source: http://stat.nbb.be/

- The turnover of the construction sector reached 59 billion euros in 2013.

[56] UEPG, *Annual Review 2013-2014* (Brussels: European Aggregates Association, 2013), p. 40 <http://www.uepg.eu/uploads/Modules/Publications/uepg-ar2013-2014_v28.pdf>.
[57] IBGE, *Fiche 4.1: Het Gebruik van Recyclagegranulates* (Brussels, December 2010), p. 25 <http://documentatie.leefmilieubrussel.be/documents/IF_BATEX_Fiche4.1._Recyclinggranulaten_NL.pdf>.

Year	2009	2010	2011	2012	2013
Turnover Construction sector (in 1000 euros)	49.327.054	51.966.927	57.641.161	58.271.586	59.428.565

Source :
http://economie.fgov.be/nl/statistieken/cijfers/economie/ondernemingen/omzet_en_investeringen/omzet/historiek/

The sector has:

- more than 75.000 companies, mostly SMEs, which corresponds to more than 10 % of Belgian enterprises;
- more than 200.000 employees and 50.000 self-employed persons, which represents more than 7 % of global employment.

Sources: http://economie.fgov.be/nl/ondernemingen/specifieke_domeinen/Diensten/#.VSqRF2b9d6l and http://economie.fgov.be/nl/ondernemingen/specifieke_domeinen/kwaliteit_bouw/#.VSqTL2b9d6l

Housing and non-residential construction

- In 2014, 25.548 residential building permits were issued (+7,2 % compared to 2013).
- The number of housings also increased by 9,8%.
- The refurbishment of residential buildings saw a year-on-year increase of 1% in 2014.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
New construction										
Number of residential buildings	31.518	30.687	27.529	27.703	24.526	27.110	23.624	24.772	23.823	25.548
Number of housings	59.384	61.083	53.923	52.651	45.456	49.872	44.352	46.811	48.999	53.821
Number of non-residential buildings	4.221	4.508	4.521	4.778	4.426	4.753	4.593	4.536	4.455	4.485
Refurbishment										
Number of transformations in residential buildings	28.014	28.734	27.792	28.555	27.750	28.888	27.016	26.560	27.273	27.541
Number of transformations in non-residential buildings	5.988	6.073	5.968	5.861	5.226	5.252	5.185	4.913	4.726	4.662

Source: http://economie.fgov.be/fr/statistiques/chiffres/economie/construction_industrie/permis/

Construction products and materials market data

Granulates extracted in Belgium amounted to 66,2 million tons in 2013. This is a 3 % decrease compared to 2012 (with 68,5 million tons of extracted granulates) and a cumulated decrease of 9,4 % compared to 2011 (Fediex, 2013). http://www.fediex.be/fediex/upload/files/RA-Fediex-2013.pdf

At least 15 million tons of recycled aggregates are produced in Belgium (UEPG Annual review 2013-2014). During consultation of regional experts we reach at least 18 million tons of recycled granulates (more than 14 million tons in the Flemish region and more than 3 million tons in the Walloon region).

http://www.uepg.eu/uploads/Modules/Publications/uepg-ar2013-2014_v28.pdf

Additional data of the construction sector in the Walloon Region:

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of employees	56.379	59.479	61.869	63.880	63.239	63.064	64.025	64.458	63.059	60.309

Number of building enterprises	22.276	23.150	24.229	26.470	26.910	27.112	27.749	28.338	28.398	28.352
Housing – new construction	12.595	14.096	14.602	14.029	12.784	12.139	11.179	10.539	10.319	9.381
Housing – refurbishment	9.965	11.101	10.779	10.629	10.387	10.839	9.813	9.582	9.689	8.762
Non-residential new construction	827	872	858	837	772	771	791	731	796	712
Non-residential - refurbishment	1.457	1.539	1.569	1.603	1.487	1.557	1.474	1.374	1.293	1.212

Source: http://www.confederationconstruction.be/Portals/28/documents/Rapport%20Annuel%202014.pdf

Rapport annuel 2014 Confédération construction wallonne

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- Interview with Baudouin SKA, Secretary General FERVER aisbl (European Federation of Glass Recyclers) and
- Mireille BERBOVEN, Technical advisor, FEBEM-FEGE (Fédération des Entreprises de Gestion de l'Environnement), August 25, 2015.

For Flanders:

- Interview with Mieke Vervaet, Policy Team Europe | Division of Waste and Materials Management OVAM, March 19, 2015.
- Written comments and phone call with Koen De Prins, Department Waste and Materials Management, processing and construction OVAM, April 24 and 29, 2015.For Brussel Capital Region:
- Interview with Nicolas SCHERRIER, Project Manager, Brussels Environment, March 8, 2015.
- Written comments from Rodolphe PATERNOSTRE, Project Manager, Brussels Environment, August 17, 2015.

For Walloon Region:

- Interview with Thibault Mariage, Quality - Safety - Environment Manager, TRADECOWALL, March 21, 2015.
- Phone call with Alain GHODSI, Director, Walloon Waste Office WWO - OWD, April 27, 2015.
- Phone call with Marilyne STEELS, Landfills manager, Walloon Waste Office WWO - OWD, April 27, 2015.
- Written comments and phone call with Emilie Gobbo, Architect and Research Assistant Architecture et Climat, Faculty of Architecture, Architectural Engineering and Urban Planning UCL, May 14, 2015.

Other consulted stakeholders

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

- Kris BROOS, Team Leader Sustainable Materials Management, VITO.
- Jean-Pierre LIEBAERT, Economic department, Belgian Construction confederation.
- Philippe VAN DE VELDE, Flemish Department Waste and Materials Management, OVAM.
- Steven DUBAERE, Environmental statistician, Federal Public Service of Economy

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Annex

Annex 1 :

European LoW	BCR LoW
17 DÉCHETS DE CONSTRUCTION ET DE DÉMOLITION (Y COMPRIS LA CONSTRUCTION ROUTIÈRE)	17 DECHETS DE CONSTRUCTION ET DE DEMOLITION (Y COMPRIS DEBLAIS PROVENANT DE SITES CONTAMINES)
17 01 béton, briques, tuiles, céramiques et matériaux à base de gypse	17 01 béton, briques, tuiles et céramiques
17 01 01 béton	17 01 01 béton
17 01 02 briques	17 01 02 briques
17 01 03 tuiles et céramiques	17 01 03 tuiles et céramiques
17 01 04 matériaux de construction à base de gypse	
17 01 05 matériaux de construction à base d'amiante	
	17 01 06* mélanges ou fractions séparées de béton, briques, tuiles et céramiques contenant des substances dangereuses
	17 01 07 mélanges de béton, briques, tuiles et céramiques autres que ceux visés à la rubrique 17 01 06
17 02 bois, verre et matières plastiques	17 02 bois, verre et matières plastiques
17 02 01 bois	17 02 01 bois
17 02 02 verre	17 02 02 verre
17 02 03 matières plastiques	17 02 03 matières plastiques
	17 02 04* bois, verre et matières plastiques contenant des substances dangereuses ou contaminés par de telles substances
17 03 asphalte, goudron, bitume et produits goudronnés	17 03 mélanges bitumineux, goudron et produits goudronnés
17 03 01 asphalte contenant du goudron, du bitume	17 03 01* mélanges bitumineux contenant du goudron
17 03 02 asphalte (sans goudron, bitume)	17 03 02 mélanges bitumineux autres que ceux visés à la rubrique 17 03 01
17 03 03 goudron et produits goudronnés	17 03 03* goudron et produits goudronnés
17 04métaux (y compris leurs alliages)	17 04 métaux (y compris leurs alliages)
17 04 01 cuivre, bronze, laiton	17 04 01 cuivre, bronze, laiton
17 04 02 aluminium	17 04 02 aluminium
17 04 03 plomb	17 04 03 plomb
17 04 04 zinc	17 04 04 zinc
17 04 05 fer et acier	17 04 05 fer et acier
17 04 06 étain	17 04 06 étain
17 04 07 métaux de mélange	17 04 07 métaux en mélange
17 04 08 câbles	
	17 04 09* déchets métalliques contaminés par des substances dangereuses
	17 04 10* câbles contenant des hydrocarbures, du goudron ou d'autres substances dangereuses
	17 04 11 câbles autres que ceux visés à la rubriques 17 04 10
17 05 terres et boues de dragage	17 05 terres (y compris déblais provenant de sites contaminés), cailloux et boues de dragage

17 05 03* terres et cailloux contenant des substances dangereuses	17 05 03* terres et cailloux contenant des substances dangereuses
17 05 04 terres et cailloux autres que ceux visés à la rubrique 17 05 03	17 05 04 terres et cailloux autres que ceux visés à la rubrique 17 05 03
17 05 05* boues de dragage contenant des substances dangereuses	17 05 05* boues de dragage contenant des substances dangereuses
17 05 06 boues de dragage autres que celles visées à la rubrique 17 05 05	17 05 06 boues de dragage autres que celles visées à la rubrique 17 05 05
	17 05 07* ballast de voie contenant des substances dangereuses
	17 05 08 ballast de voie autre que celui visé à la rubrique 17 05 07
17 06 matériaux d'isolation	17 06 matériaux d'isolation et matériaux de construction contenant de l'amiante
17 06 01* matériaux d'isolation contenant de l'amiante	17 06 01* matériaux d'isolation contenant de l'amiante
17 06 02 autres matériaux d'isolation	17 06 03* autres matériaux d'isolation à base de ou contenant des substances dangereuses
	17 06 04 matériaux d'isolation autres que ceux visés aux rubriques 17 06 01 et 17 06 03
	17 06 05* matériaux de construction contenant de l'amiante
17 07 déchets de construction et de démolition en mélange	
17 07 02* déchets de construction et de démolition en mélange ou fractions séparées contenant des substances dangereuses	
17 07 03 déchets de construction et de démolition en mélange autres que ceux visés à la rubrique 17 07 02	
	17 08 matériaux de construction à base de gypse
	17 08 01* matériaux de construction a base de gypse contaminés par des substances dangereuses
	17 08 02 matériaux de construction à base de gypse autres que ceux visés à la rubrique 17 08 01
	17 09 autres déchets de construction et de démolition
	17 09 01* déchets de construction et de démolition contenant du mercure
	17 09 02* déchets de construction et de démolition contenant des PCB (par exemple, mastics, sols à base de résines, double vitrage, condensateurs, contenant des PCB)
	17 09 03* autres déchets de construction et de démolition (y compris en mélange) contenant des substances dangereuses
	17 09 04 déchets de construction et de démolition en mélange autres que ceux visés aux rubriques 17 09 01, 17 09 02 et 17 09 03

Annex 2 :

European LoW	Walloon LoW	
17 DÉCHETS DE CONSTRUCTION ET DE DÉMOLITION (Y COMPRIS LA CONSTRUCTION ROUTIÈRE)	17 DECHETS DE CONSTRUCTION ET DE DEMOLITION (Y COMPRIS DEBLAIS PROVENANT DES SITES CONTAMINES)	
17 01 béton, briques, tuiles, céramiques et matériaux à base de gypse	17 01	Béton, briques, tuiles et céramiques.
17 01 01 béton	17 01 01	Béton.
17 01 02 briques	17 01 02	Briques.
17 01 03 tuiles et céramiques	17 01 03	Tuiles et céramiques.
17 01 04 matériaux de construction à base de gypse		
17 01 05 matériaux de construction à base d'amiante		
	17 01 06	Mélanges ou fractions séparées de béton, briques, tuiles et céramiques contenant des substances dangereuses.
	17 01 07	Mélanges de béton, briques, tuiles et céramiques autres que ceux visés à la rubrique 17 01 06.
17 02 bois, verre et matières plastiques	17 02	Bois, verre et matières plastiques.
17 02 01 bois	17 02 01	Bois.
17 02 02 verre	17 02 02	Verre.
17 02 03 matières plastiques	17 02 03	Matières plastiques.
	17 02 04	Bois, verre et matières plastiques contenant des substances dangereuses ou contaminés par de telles substances.
17 03 asphalte, goudron, bitume et produits goudronnés	17 03	Mélanges bitumeux, goudron et produits goudronnés.
17 03 01 asphalte contenant du goudron, du bitume	17 03 01	Mélanges bitumeux contenant du goudron.
17 03 02 asphalte (sans goudron, bitume)	17 03 02	Mélanges bitumeux.
17 03 03 goudron et produits goudronnés	17 03 03	Goudron et produits goudronnés.
17 04métaux (y compris leurs alliages)	17 04	Métaux (y compris leurs alliages).
17 04 01 cuivre, bronze, laiton	17 04 01	Cuivre, bronze, laiton.
17 04 02 aluminium	17 04 02	Aluminium.
17 04 03 plomb	17 04 03	Plomb.
17 04 04 zinc	17 04 04	Zinc.
17 04 05 fer et acier	17 04 05	Fer et acier.
17 04 06 étain	17 04 06	Etain.
17 04 07 métaux de mélange	17 04 07	Métaux en mélange.
17 04 08 câbles		
	17 04 09	Déchets métalliques contaminés par des substances dangereuses.
	17 04 10	Câbles contenant des hydrocarbures, du goudron ou d'autres substances dangereuses.
	17 04 11	Câbles autres que ceux visés à la rubriques 17 04 10.
17 05 terres et boues de dragage	17 05	Terres (y compris déblais provenant de sites contaminés), cailloux et boues de dragage.
17 05 03* terres et cailloux contenant des substances dangereuses	17 05 03	Terres et cailloux contenant des substances dangereuses.
17 05 04 terres et cailloux autres que ceux visés à la rubrique 17 05 03	17 05 04	Terres et cailloux autres que ceux visés à la rubrique 17 05 03.

17 05 05* boues de dragage contenant des substances dangereuses	17 05 05	Boues de dragage contenant des substances dangereuses.
17 05 06 boues de dragage autres que celles visées à la rubrique 17 05 05	17 05 06	Boues de dragage autres que celles visées à la rubrique 17 05 05.
	17 05 07	Ballast de voie contenant des substances dangereuses.
	17 05 08	Ballast de voie autre que celui visé à la rubrique 17 05 07.
17 06 matériaux d'isolation	17 06	Matériaux d'isolation et matériaux de construction contenant de l'amiante.
17 06 01* matériaux d'isolation contenant de l'amiante	17 06 01	Matériaux d'isolation contenant de l'amiante.
17 06 02 autres matériaux d'isolation		
	17 06 03	Autres matériaux d'isolation à base de ou contenant des substances dangereuses.
	17 06 04	Matériaux d'isolation autres que ceux visés aux rubriques 17 06 01 et 17 06 03.
	17 06 05	Matériaux de construction contenant de l'amiante.
17 07 déchets de construction et de démolition en mélange	17 07	Déchets de construction et de démolition en mélange.
17 07 02* déchets de construction et de démolition en mélange ou fractions séparées contenant des substances dangereuses		
17 07 03 déchets de construction et de démolition en mélange autres que ceux visés à la rubrique 17 07 02		
	17 07 95	Déchets de démolition provenant des bâtiments à caractère d'habitation, de services ou assimilés non mélangés à des matières putrescibles ou combustibles
	17 08	Matériaux de construction à base de gypse.
	17 08 01	Matériaux de construction à base de gypse contaminés par des substances dangereuses.
	17 08 02	Matériaux de construction à base de gypse autres que ceux visés à la rubrique 17 08 01.
	17 09	Autres déchets de construction et de démolition.
	17 09 01	Déchets de construction et de démolition contenant du mercure.
	17 09 02	Déchets de construction et de démolition contenant des PCB (par exemple, mastics, sols à base de résines, double vitrage, condensateurs, contenant des PCB).
	17 09 03	Autres déchets de construction et de démolition (y compris en mélange) contenant des substances dangereuses.
	17 09 04	Déchets de construction et de démolition en mélange autres que ceux visés aux rubriques 17 09 01, 17 09 02 et 17 09 03.

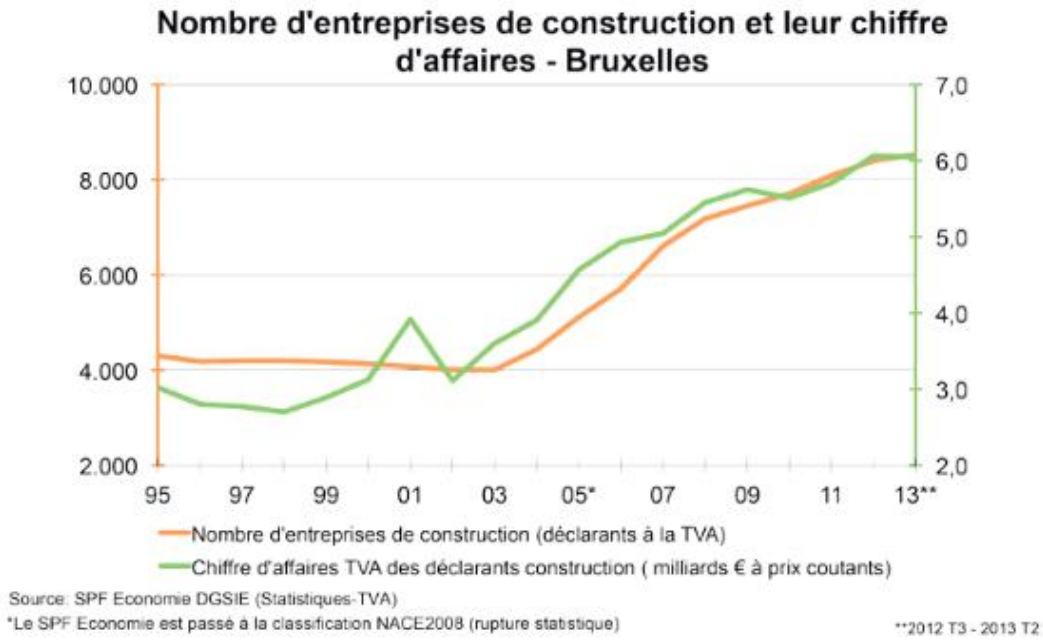
Annex 3:

- 9 MAI 1995. - Circulaire relative à la réutilisation de débris dans les travaux routiers et d'infrastructure.
- Annexe 1 :

	Authorized recycling materials
Embankments	- Screening Sands debris
	- Crushing debris Sands
	- Crushed by concrete debris
	- Debris of crushed masonry
	- Mixed broken (concrete debris and masonry)
	- Debris of crushed asphalt hydrocarbons
Sub-foundations	- debris crushing Sands
	- concrete debris Crushed
	- Debris of crushed masonry
	- Mixed broken (concrete debris and masonry)
	- Debris of asphalt hydrocarbons crushed
Foundations in riprap	- debris crushing Sands
	- crushed concrete debris of (ground dry density of at least 1950 kg / m3)
Foundations in riprap stabilized with cement, lean concrete	
	- debris crushing Sands
	- concrete debris crushed
	- debris of asphalt hydrocarbons crushed
	- debris crushing Sands
	- concrete debris Crushed
	- Mixed broken (concrete debris and masonry)
Asphalt coatings pavements	- debris crushing Sands
	- debris of asphalt crushed
Paving	- debris crushing Sands

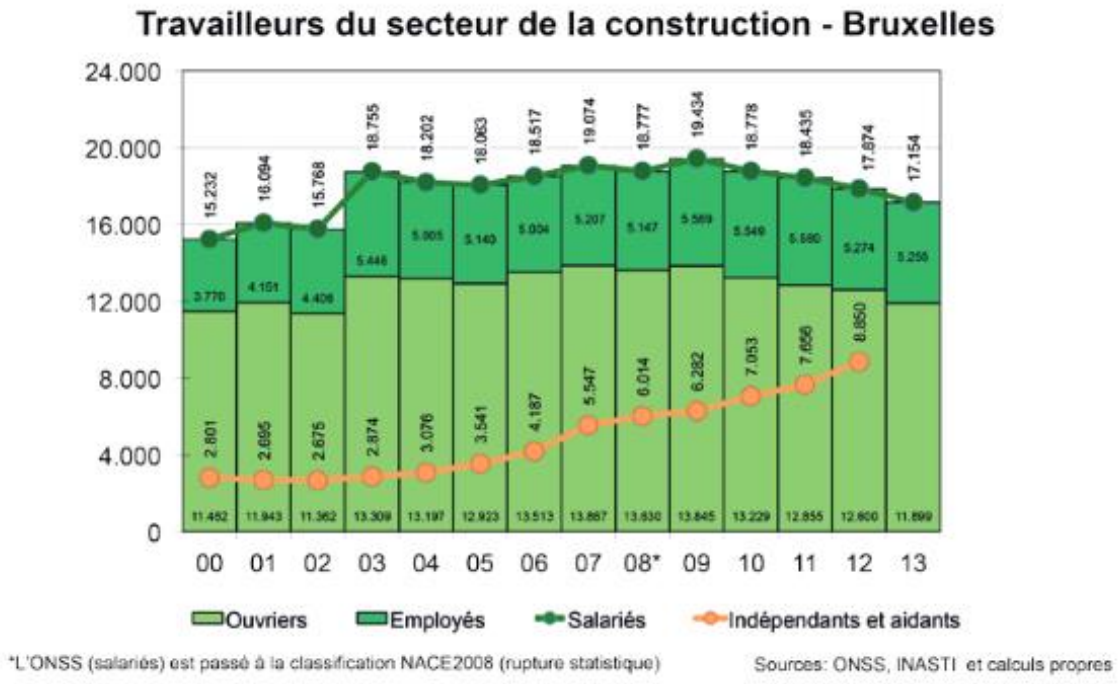
Annex 4: Additional data of the construction sector in the Brussels Capital Region:

Figure 1 Number of construction companies and their turnover – Brussels



Source: Rapport annuel 2013 Confédération de la construction de la Région Bruxelles Capitale : http://www.confederationconstruction.be/Portals/19/publication/Rapport%20annuel%202013%20CCB-C.pdf

Figure 2 Number of workers in the construction sector - Brussels



Source: Rapport annuel 2013 Confédération de la construction de la Région Bruxelles Capitale : http://www.confederationconstruction.be/Portals/19/publication/Rapport%20annuel%202013%20CCB-C.pdf

Figure 3 Building permits in the Brussels Capital Region from 2000 to 2009

Permis de bâtir (2000-2009)		RESIDENTIEL						NON RESIDENTIEL		
		NOUVELLES CONSTRUCTIONS					RENOVATION	NOUVELLES CONSTRUCTIONS		RENOVATION
		Nombre de bâtiments	Nombre de logements	Nombre d'appartements	Nombre de bâtiments avec un seul logement	Superficie habitable (m²)	Nombre de bâtiments	Nombre de bâtiments	Volume(m³)	Nombre de bâtiments
2000	REGION DE BRUXELLES-CAPITALE	297	2.322	2.158	164	202.902	1.031	59	799.154	189
2001	REGION DE BRUXELLES-CAPITALE	333	2.069	1.854	215	185.125	867	51	1.793.096	142
2002	REGION DE BRUXELLES-CAPITALE	287	2.107	1.948	159	169.615	733	47	906.094	176
2003	REGION DE BRUXELLES-CAPITALE	400	2.742	2.476	266	245.759	916	40	791.843	183
2004	REGION DE BRUXELLES-CAPITALE	401	2.844	2.599	245	257.098	1.211	44	1.936.033	144
2005	REGION DE BRUXELLES-CAPITALE	339	3.013	2.843	170	259.433	1.293	37	966.896	165
2006	REGION DE BRUXELLES-CAPITALE	309	3.599	3.472	127	303.786	1.378	45	1.294.653	142
2007	REGION DE BRUXELLES-CAPITALE	244	2.522	2.437	85	210.602	1.211	37	1.167.226	156
2008	REGION DE BRUXELLES-CAPITALE	298	2.669	2.514	155	215.195	1.332	52	1.267.419	158
2009	REGION DE BRUXELLES-CAPITALE	237	2.383	2.265	118	205.202	1.390	37	1.044.954	149
TOTAL REGION DE BRUXELLES-CAPITALE (2000-2009)		**3.145**	**26.270**	**24.566**	**1.704**	**2.254.717**	**11.362**	**449**	**11.967.368**	**1.604**

Illustration 9: Permis de bâtir en Région de Bruxelles-Capitale pour la période de 2000 à 2009. Données extraites des dossiers de demande de permis d'urbanisme. (Source : Direction Générale Statistique et Information Economique)

Source : Etude sur l'analyse du gisement, des flux et des pratiques de prévention et de gestion des déchets de construction et démolition en BCR, mai 2012, CEERA et ROTOR.