Screening template for Construction and Demolition Waste management in

Italy

V2 – October 2015

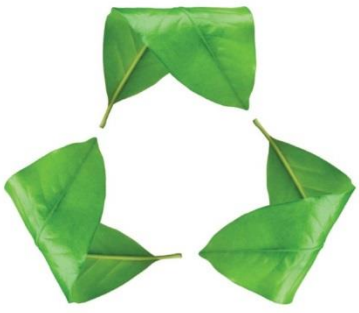


Table of contents

Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

In 2012 Italy generated almost 39 millions tonnes of non hazardous waste from construction and demolition activities according to ISPRA (2014), 10% less than in 2010. Some regions produce CDW data with a greater breakdown which gives more detailed information than the national figures. Unfortunately these data cannot be compared to national data (and across regions) as the methodology for estimation seems to differ from region to region.

Waste category	Quantity generated in 2012 (tonnes)
6.1 Ferrous metal waste and scrap	4.153.033
6.2 Non-ferrous metal waste and scrap	499.442
6.3 Mixed metal wastes	140.422
7.1 Glass wastes	60.235
7.4 Plastic wastes	34.112
7.5 Wood wastes	151.407
12.1 Construction and demolition wastes	33.756.796
Total CDW – non hazardous	38.795.447
Total CDW – hazardous	854.526

Soil (which is not included in CDW) accounted for approximately 12 millions tonnes in 2012 (ISPRA, 2014).

CDW management practices

CDW management varies considerably across territories (Italian Regions and Provincie), and many factors may affect the practices: economic trade-off between recycled and virgin materials, site size and structure, proximity to recovery/recycling/mining sites, importance of this issue for the client, ethics and importance of the issue for the construction company…

Italy did not developed a national waste management plan, as waste management plans are legally defined at regional level. While the definition of waste and the waste legislation is at national level (and it largely corresponds to the EU legislation), waste management plans and startegies are set at regional and provincial levels. This is the case also for CDW. Regional legislation is very broad and refers to several types of waste. Almost all Regions have also set specific provisions for CDW. However a detailed analysis of the different kind of programmes related to CDW, which were approved in the 20 Italian regions, has not been possible so far.

According to ISPRA (2014) figures, at national level although 76% of CDW were recycled in 2012, the amount of CDW which goes to landfill is still important (24%). Recycling rate has been steadily growing from 2010, when it stood at 68.4%.

Mineral waste from construction and demolition (W121) is mainly recovered. Landfilling amounted to only 3% of total mineral waste from construction and demolition waste treated.

Treatment of mineral waste from construction and demolition, data for Regulation 2150/2002, 2012 source: Eurostat						
Deposit onto or into land	Land treatment and release into water bodies	Incineration / disposal (D10)	Recovery other than energy recovery - Backfilling	Incineration / energy recovery (R1)	Recovery other than energy recovery - Except backfilling	**Total waste treatment**
919,503	375	2,720	160,290	0	29,782,235	**30,865,123**

More specifically, the amount of construction and demolition waste recovered in backfilling operations amounted approximately 160 thousands tonnes in 2012. ISPRA (2014) reports 102,000 tonnes of construction and demolition waste were exported in 2012.

With regards to hazardous CDW, most of it is represented by mineral waste streams containing asbestos (64% of total hazardous CDW). According to ISPRA (2015) data, almost half of the total CDW containing asbestos is landfilled after proper treatment. The rest is mainly exported. Almost all the exported CDW containing asbestos goes to Germany (where it is landfilled).

Main obstacles to sustainable CDW management

Current barriers to the development of CDW sustainable management have been identified as follows:

- Unconfidence of stakeholders in the use of products derived from waste. Due to the various origin of recycled aggregates from waste, potential users are still not confident in using it in their products.
- The good performance in terms of recycling rate for CDW is seen as a barrier to the adoption of more stringent legislation and in general for action in the domain of CDW.
- The lack of knowledge of the technical characteristics of recycled aggregates reduces the use of CDW recycled materials.
- Materials specifications in call for tenders do not support the development of a demand for recycled aggregates.
- The lack of on-site sorting as well as selective demolition practices is also a main barrier and reduces the potential quality of recycled aggregates.
- Recycled aggregates are also not always competitive compare to aggregates from virgin materials, due to the lack of taxes on mining activities.
- The current level of the tax on landfilling is not high enough for the development of the industry of recycled materials.

Main drivers to sustainable CDW management

Current drivers to sustainable CDW management practices have been identified as follows:

- One of the most important drivers of CDW sustainable management is the enforcement of green procurement law. Green public procurement rules have introduced the mandatory use of recycled materials (in particular, of recycled aggregates in infrastructure), but in fact the decree is not properly enforced.
- The development of end of waste criteria would also help in developing the market for recycled aggregates. In the case of Italy such a development would be much quicker if it was led by initiative/input from the EU Commission.
- As of today there is only one material within CDW for which EoW criteria are being developed: aggregates made from CDW for paving roads (“granulato da conglomerato bituminoso”). ANPAR (an association of producers of recycled materials from construction and demolition) is lobbying to develop EoW criteria also for aggregates to be used in building construction. According to the interviewed stakeholders, the development of end of waste criteria would be much quicker if it was led by initiative/input from the EU Commission.
- Also new and more stringent rules for selective demolition practices would greatly increase CDW sustainable management.

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

In this section the definitions of waste used in Italy are detailed.

2.1. Definition of waste

The definition of waste is specified in the Italian law in the article 183 of D.lgs. n.152/06 (http://www.camera.it/parlam/leggi/deleghe/06152dl.htm), where “waste” is defined in compliance with with the definition of the Waste Framework Directive 2008/98/EC (WFD) as follows: “rifiuto: qualsiasi sostanza od oggetto di cui il detentore si disfi o abbia deciso o abbia l’obbligo di disfarsi” (“waste: any substance or object which the holder discards or intends or is required to discard”).

2.2. Definition of construction and demolition waste (CDW)

No legal text exists with a specific definition of CDW in Italy.

CDW are considered in general as waste from construction and demolition activities. They include all waste codes from LoW (European List of Waste, 2000/532/EC) code 17.

There is no distinction between the construction and demolition waste as the LoW does not allow to make any distinction between the two activities.

Art. 185 of d.lgs. 152/2006 excludes from the definition of waste “uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for purposes of construction in its natural state on the site where it was excavated” (“suolo non contaminato e altro materiale allo stato naturale escavato nel corso di attività di costruzione, ove sia certo che il materiale sarà utilizzato a fini di costruzione allo stato naturale nello stesso sito in cui è stato escavato”). This is in line with Directive EU 2008/98/CE. Art 186 of d.lgs. 152/2006 provides a detailed discussion of how to classify these materials, treating them as waste if their use does not comply with the conditions laid down in the article.

The part of excavated soil and rocks in CDW statistics was in 2010 approximately 15,3 millions of tons (mt), in 2011 aprox. 16 mt and in 2012 approx 12,8 mt.

It must be stressed that the legislation on excavated soil and rocks has evolved rapidly in the last years. Recently further derogations for excavated soil and rocks to the legislation on waste have been set (DM n. 161 of August 10, 2012 and Article 41 of the BIS DL 69/2013). This will likely reduce drastically the amount of excavated soil and rocks which are considered waste.

Official statistics as well as numbers cited in several studies refer to LoW code 17. But the total waste generated by construction activities (NACE F) is also available (ISPRA, 2012 and 2014) and includes all types of waste (see Tabella 1.13-C – Produzione dei rifiuti speciali non pericolosi secondo la codifica del egolamento (CE) n. 2150/2002 relativo alle statistiche sui rifiuti (tonnellate), per attività economiche, anno 2010 – ISPRA 2013, pp. 46-47).

2.3. End of Waste (EoW) status

In Italy the EU Directive 2008/98/EC was implemented by the Decree. N. 205/2010, which in turn has amended Part IV of Legislative Decree. N. 152/06. In particular, art. 184-ter contains the technical criteria for the determination of end-of-waste, material flows that need to be disciplined and priority modes of procedure to be followed for the adoption of the implementing regulations.

According to this article "a waste ceases to be such when it was subjected to a recovery, including recycling and preparation for re-use, and meets the specific criteria to be adopted in accordance with the following conditions:

- The substance or object is commonly used for specific purposes;
- There is a market or demand for such a substance or object;
- The substance or object fulfills the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products;
- The use of the substance or object will not lead to overall adverse environmental or human health.

The EOW criteria can be determined through different processes:

- The first, at EU level, culminating in the adoption of a specific EU regulation;
- The second, national, provides for the adoption of a specific national measure.

The national measure is justified only where not yet been issued in this regard a Community regulation, and in any case with respect to the individual case. It is not, therefore, a real general regulation, but a determination regarding a specific case.

As for Italy, paragraph 2 of art. 184-ter of Legislative Decree. N. 152/06 refers to this source of law by providing that "in the absence of Community criteria, case by case basis for specific types of waste (it is provided) through one or more decrees of the Minister of the Environment, Land and Sea, within the meaning of 'Article 17, paragraph 3, of the Law August 23, 1988, n. 400 ".

In the interim, pending the measures above, paragraph 3 of the art. 184-ter of Legislative Decree. N. 152/06 does not affect the validity of the provisions of the Decrees of the Minister for the Environment and Territory on February 5, 1998, June 12, 2002, n. 161, and November 17, 2005, n. 269 and Art. 9-bis, letter. a) and b) of the Decree-Law November 6, 2008, n. 172, converted, with amendments by Law December 30, 2008, n. 210.

This means that in the absence of measures taken in the terms provided by the new regime the provisions on the recovery of waste that existed prior to Legislative Decree. N. 152/06 continues to apply also with regard to the production of EOW, a term that has replaced, under Italian law, the best known of "MPS" (materie prime secondary), or secondary raw materials, already present even before the adoption of the Directive 2008/98/EC.

As of today there is only one material within CDW for which EoW criteria are being developed: aggregates made from CDW for paving roads (“granulato da conglomerato bituminoso”). ANPAR is lobbying to develop EoW criteria also for aggregates used for other construction works and in particular for the construction of buildings. According to interview made with different stakeholders the development of end of waste criteria would be much quicker if it was led by initiative/input from EU Commission.

2.4. Definitions of waste treatment operations

Italian definitions for waste reatment operations are in line with the Annex II of the WFD. In Italy the definition of recovery contained in the EU directive 2008/98 / EC, is implemented by the legislative decree. n. 205/2010, where recovery is defined as follows:

- R 1 Use principally as a fuel or other means to generate energy
- R 2 regeneration / solvent recovery
- R 3 Recycling / reclamation of organic substances not used as solvents (including operations composting and other biological transformation processes)
- R 4 Recycling / reclamation of metals and metal compounds
- R 5 Recycling / reclamation of other inorganic materials
- R 6 Regeneration of acids or bases
- R 7 Recovery of components used for pollution abatement
- R 8 Recovery of components from catalysts
- R 9 refining or other reuses of oil
- R10 land treatment in benefit to agriculture or ecological improvement
- R11 use of wastes obtained from any of the operations numbered R1 to R10
- R12 Exchange of wastes for submission to any of the operations numbered R1 to R11
- R13 the storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) and
- RX any operation the principal result of which is waste serving a useful purpose, replacing other materials which would otherwise have been used to fulfill a particular function or prepared to fulfill that function, in the plant or in the wider economy.

Following ISPRA (2014) **backfilling** is a recovery operation where suitable waste are used for reclamation in excavated areas or for landscaping and where the waste replace materials that are not waste (based on d.lgs. n. 152/2006) (**Colmatazione**: un’operazione di recupero in cui i rifiuti idonei sono utilizzati a fini di bonifica in aree escavate o per interventi paesaggistici e in cui i rifiuti sostituiscono materiali che non sono rifiuti secondo il d.lgs. n. 152/2006).

As required by article 4 of the Decision 753/2011 / EU, the amount of waste used for backfilling operations is reported separately from the amount of waste prepared for reuse, recycled or used for other material recovery.

The quantities to backfilling operations do not include, for the period under review, the waste identified by codes sub chapter 19.12 (wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified).

3. Legal Framework – Waste Management Plans and Strategies

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

3.1. Legislation concerning CDW in Italy

The most important legislative pieces on CDW management are the following:

- D.Lgs 152/2006 (and amendements) « Norme in materia di ambiente (Codice ambiente)»; this is the main piece of legislation on waste.
- D.M. 5/2/98 (amended by Decreto 5/4/06 n. 186) "Individuazione dei rifiuti non pericolosi sottoposti alle procedure semplificate di recupero ai sensi degli articoli 31 e 33 del decreto legislativo 5 febbraio 1997, n. 22"; dealing with the distinction between dangerous and non-dangerous waste. It contains also EOW criteria for construction waste, that is the conditions (as set by Allegato C della Circolare del Ministro dell'Ambiente e della tutela del territorio 15/7/2005 n. 5205) for construction waste to be considered as "Materie prime secondarie" (MPS)·
- D.M. n°203 del 8/5/2003 "Norme affinchè gli uffici pubblici e le società a prevalente capitale pubblico coprano il fabbisogno annuale di manufatti e beni con una quota di prodotti ottenuti da materiale riciclato nella misura non inferiore al 30% del fabbisogno medesimo"; which sets a quota of 30% for recycled materials and products in public procurement (for all types of products, from paper to contruction materials for example). This is mandatory only when recycled materials and products exist which have the same characteristics of materials manufactured from virgin materials.
- Circolare 15/7/05 n. 5205 Green Publc Procurement – "Indicazioni per l'operatività nel settore edile, stradale e ambientale, ai sensi del Decreto Ministeriale 8 Maggio 2003 n. 203"; which sets green public procurement rules for construction activities (including roads works).·
- DM 161/2012 "Regolamento materiali da scavo" amending art. 186 Codice Ambiente; which sets the rules for re-use of excavated materials through "Piani di utilizzo" (an administrative document describing the use of excavated materials).
- Art. 41 c. 2 and Art. 41-bis c. 1 e 5 of DL 69/2013 convertito L. 98/2013 sets the rules for the "Piani di utilizzo".
- Art. 34 comma 9 D.L. 12-9-2014 n. 133 entered into force on 13 settembre 2014 and allow the re-use in situ of excavated materials whenever these materials are in line with the concentrations of pollutants as set by the legislation.
- With regards to waste management art. 196 del D.Lgs. 152/2006 sets the rules for regional plans for waste management. It makes Regions responsible for waste management planning. Provinces according to art; 197 are mainly responsible for controlling waste management activities.
- No specific (to CDW) national landfill diversion policy is in place. Inert waste for which it is allowed landfilling in specific sites without prior characterization are given in Table 3 – art. 2 of DM 13 marzo 2003.

3.2. Waste management plans (WMP) and Strategies

Italy has not developed a national waste management plan, as the legislation provides that plans are developed at regional level. However, general criteria for the implementation of regional plans are defined in article 199 of legislative decree 152/2006.

According to national criteria, regional plans on waste management must include several provisions, such as:

- measures to ensure a reduction in the quantity, volume and hazardousness of waste;
- identification of ATOs;
- number and types of waste management plants that must be built in the region to ensure the proper management of waste (within each ATO);
- provisions to avoid soil and water pollutions, arising from waste landfilling;
- criteria to be followed by provinces in order to identify the areas not suitable for the location of plants;

- measures to prevent waste production and encourage reuse, recycling and recovery;
- measures to promote waste collection and management within the regional territory.

Regional legislation is very broad and refers to several types of waste. Almost all Regions have also set specific provisions for CDW. However a detailed analysis of the different kind of programmes related to CDW, which have been approved in the 20 Italian regions, has not been possible so far.

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.

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		
National/regional sorting obligation (on-site or in sorting facility)?	NO		
National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?	NO (so far we have not find any obligation for separate collection in regional legislations)		
Obligation for separate collection and management of hazardous waste from C&D operations? Please specify	Yes	CDW hazardous waste has to be treated according to the same rules of other hazardous wastes	
Related Green public procurement requirements	Yes	Decreto Ministeriale 8 Maggio 2003 n. 203 Circolare 15/7/05 n. 5205 Green Publc Procurement - Indicazioni per l'operatività nel settore edile, stradale e ambientale, ai sensi del Decreto Ministeriale 8 Maggio 2003 n. 203	Not really implemented

3.4. Targets

The national target is the target set by the WFD and it is included in article 181 of d.lgs. n. 152/2006 ("by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70% by weight"1)

The calculation method used is as follows (ISPRA, 2014):

Target (%) = CDW recovered, recycled and prepared for reuse / CDW produced.

CDW produced = the following wastes (EWC) from NACE F : 06.1 – 06.2 – 06.3 – 07.01 – 07.4 – 07.4 and total for EWC 12.1 for all economic activities.

CDW produced does not include excavated materials and dredging spoils.

CDW recycled and treated for reuse = R3, R4, R5, R12. It does not include backfilling. Backfilling practices are explicitely mentioned, see table 3.18 of ISPRA (2014).

The figures for 2012 (from ISPRA, 2014 see tables in Annex containing the figures on generation, recovery and backfilling operations for CDW) can be summarised as follows:

Waste category	Quantity generated (tonnes)	Quantity recovered (tonnes)	% recovered
6.1 Ferrous metal waste and scrap	4.153.033	3.490.709	84%
6.2 Non-ferrous metal waste and scrap	499.442	343.546	69%
6.3 Mixed metal wastes	140.422	90.516	64%
7.1 Glass wastes	60.235	42.409	70%
7.4 Plastic wastes	34.112	7.082	21%
7.5 Wood wastes	151.407	78.533	52%
12.1 Construction and demolition wastes	33.756.796	25.245.403	75%
Total CDW for the calculation of the target of the WFD	**38.795.447**	**29.298.198**	**76%**

The rest of CDW was mostly landfilled (9.332.220 tonnes). Only a tiny amount was backfilled (165.029).

4. Non legislative instruments

In this section, any other instruments that may specify how the country is addressing the question of CDW management maybe highlighted, especially as a preliminary overview for task 3, as these instruments might be creating conditions for a sustainable management of CDW.

[1] http://ec.europa.eu/environment/waste/construction_demolition.htm

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
Sustainability standards that cover CDW (e.g. BREEAM) LEED Protocollo ITACA	Yes	-	Protocollo ITACA: http://www.itaca.org/valutazione_sostenibilita.asp
Extended producer responsibility scheme in operation?	*NO*	-	-

Protocollo ITACA (ISTITUTO PER LINNOVAZIONE E TRASPARENZA DEGLI APPALTI E LA COMPATIBILITA AMBIENTALE)

The ITACA Protocol was developed from the methodology of the GBC (Green Building Challenge) and it is directed to residential buildings newly built or subject to major renovation. The guidelines are one of the accepted methods of assessment for certain certification of energy - environmental impact of buildings.

The assessment tool allows you to estimate the level of environmental sustainability of a building (Residential) measuring its performance against 49 criteria grouped in 18 categories, which in turn are grouped into five areas of evaluation. The criteria also include some criteria on the materials used for construction as well as the waste management of the construction/demolition/rebnovation phases. For further informations please refer to the national website http://www.itaca.org/valutazione_sostenibilita.asp

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year established	National or regional (specify if regional)	Details of Public sector and Industry enforcement/ involvement/ collaboration	Levels of performance e.g. tonnes recycled,% coverage	Further information/ web-site
Requirement for pre-demolition audits	Yes but non mandatory		Only for some regions: in Veneto and Lazio for example		NA	
Standards for recycled CDW	Yes	2008	National			D.M. 14 gennaio 2008 (Suppl. Ord. n.30 G.U. 04-02-2008 n.29), Chapter 11 [2]
Selective demolition/ plan for large demolition sites/demolition standard	Yes but non mandatory		Only for some regions: in Veneto and Lazio for example			
Other CDW planning requirements						

[2] http://www.inconcreto.net/Articolo/1500/Aggregati_riciclati_nel_calcestruzzo:_le_Norme__l_evoluzione_in_Italia_e_in_Europa_e_i_pregiudizi_da_superare.html

5. CDW management performance – CDW data

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

This section refers to CDW as being all waste from LoW code 17, which is (as seen in 2.2) the current definition of CDW in Italy.

In Italy CDW data is available with a great level of detail (LoW, treatment facilities, etc.). This is due to the type of waste data collection system which has been set up in Italy (see 1.5.1). The Italian Institute for the protection of the environment (ISPRA) is in charge of producing national data related to waste. Neverthless each Region has his own waste data centre ("Osservatorio rifiuti"). Unfortunately at this moment, given the lack of human resources ISPRA only publish few data at such level of detail[3].

Year	2012	2013
Total Generated CDW (tons)	52483733	48587386
Hazardous CDW (tons)	854526	647512
Non Hazardous CDW (tons)	51629207	47939874

Figures are from ISPRA (2015). All the figures for non hazardous CDW are estimated. Figures for hazardous waste are based on MUD (see 5.1).

The CDW generated quantities correspond to the CDW produced within the country; they include exported CDW and exclude imported CDW. The decrease with respect to 2012 is explicated by two main factors: on one side the reduction of activity in the construction sector due to the persistent weakness of Italian economy and on the other side the changes in the legislation defining excavated soil as waste.

ISPRA (2015) reports also the regional breakdown for the generation of CDW. Whe regrouping the 20 Italian regions into 3 macro areas (North, Centre and South), the situation is as follows.

Year 2013	North	Centre	South
Total Generated CDW (tons)	31.880.076	8.520.658	8.186.652
Hazardous CDW (tons)	429.580	102.660	115.272
Non Hazardous CDW (tons)	31.450.496	8.417.998	8.071.380

The full regional breakdown is available in the Appendix to chapter 2 of ISPRA (2015).

Hazardous waste represents a very tiny share of total CDW. According to figures from ISPRA (2015) code 17 hazarsous waste amounted to 647 thousands of tons, which represents only 1.3% of all code 17 waste.

ISPRA (2015) does not detail all the types of hazardous CDW. Nevrtheless ISPRA (2015) gives some detailed information on the hazardous CDW containing asbestos. In 2013 approximately 413 thousands tons of this kind of hazardous waste were generated, which makes 64% of all hazardous CDW.

[3] Italy (ISPRA) will do its best to transmit some detailed figures (more detailed than WstatR figures) after the summer.

Data on CDW containing asbestos includes generation, treatment (including exports) of codes 170601 (insulation materials containing asbestos) and 170605 (construction materials containing asbestos). These figures are detailed in the table below. CDW containing asbestos is the most important waste stream containing asbestos. Almost half of the total CDW containing asbestos is landfilled after proper treatment. The rest is mainly exported. Almost all the exported CDW containing asbestos goes to Germany (where it is landfilled).

CDW (2013)	Total generated (t)	Treatment (t)					Total treated (t)	Exported (t)
		D1	D9	D13	D14	D15		
170601	24.918	15.486	105	966	1.459	651	18.667	6.831
170605	387.680	150.990	-	-	-	-	150.990	246.919

In order to have an idea of the other hazardous waste streams in construction and demolition (given the fact that ISPRA, 2015 does not report the detail of other hazardous codes in the 17 EWC code) one can have a look at the hazardous waste of NACE F, which is reported in the table below (source: Eurostat).

Hazardous Waste streams	**t**
Chemical and medical wastes (subtotal)	61.795
Spent solvents	149
Acid, alkaline or saline wastes	275
Used oils	4.335
Chemical wastes	32.201
Industrial effluent sludges	24.814
Sludges and liquid wastes from waste treatment	0
Health care and biological wastes	21
Recyclable wastes (subtotal, W06+W07 except W077)	2.968
Metal wastes, ferrous	:
Metal wastes, non-ferrous	:
Metal wastes, mixed ferrous and non-ferrous	:
Glass wastes	0
Paper and cardboard wastes	:
Rubber wastes	:
Plastic wastes	:
Wood wastes	2.968
Textile wastes	:
Equipment (subtotal, W077+W08A+W081+W0841)	6.023
Waste containing PCB	87
Discarded equipment (except discarded vehicles and batteries and accumulators waste) (W08 except W081, W0841)	1.096
Discarded vehicles	0
Batteries and accumulators wastes	4.840

5.1. CDW generation data

CDW are estimated based on Modello Unico di Dichiarazione ambientale (MUD).

MUD must be presented annually by producers, by anyone carrying on a professional collection and transportation of waste, the traders, businesses and institutions carrying out recovery operations and waste disposal.

It is worth noting that some exceptions and exemptions are allowed; in particular, businesses and organisations that produce non-hazardous waste with less than ten employees are not obliged to submit the MUD. The latter exemption, in fact, prevents the exact determination of the amount of waste products from construction and demolition activities in view of the fact that the companies operating in this field are small entreprises for the

majority. Thus the total quantity of CDW resulting from MUD statements of producers is greatly underestimated compared to reality.

As the MUD is mandatory also for waste treatment operators, official CDW statistics have been estimated using this information. However the information is not accurate (free of double counting), as it is possible that the same waste is computed in multiple treatment operations (eg. R13 and R5). The total quantity of waste managed derived from the MUD are therefore higher than the actual amount of waste produced.

ISPRA (2012) specifies that for the quantification of the waste generated by construction and demolition sector (NACE F) has been applied to an estimation methodology aligned with previous reports. In particular, for this sector since the production of non-hazardous waste was derived from MUD on treatment operations, estimations were carried out to eliminate the intermediate steps of the waste management cycle in order to avoid duplication of data. Punctual mass balances were made to exclude from the data for the year n inventory at December of the year n-1.

Nevrtheless Fondazione Sviluppo Sostenibile (2014) finds that the quantity of CDW is still underestiamated. This is also due to the fact that a part of CDW is treated in illegal landfilling sites. ISPRA acknoledges the possibility of underestimation but estimates that this should be limited in magnitude.

MUD are managed at provincial and regional level. Thus every Region can calculate its own waste figures. Although the only official national figures are those from ISPRA, regional data might be more detailed and precise than national data. Unfortunately data is available only for few regions and they are not comparable given differences in methodologies. The following table from ARPA Veneto (2013) gives the detailed production of CDW (non hazardous) by LoW 4 digits for Veneto Region in 2012.

Table: Generation of non-hazardous CDW, by LoW 4 digits, tons and % of total LoW code 17, Veneto Region, 2012 (17 01 concrete, bricks, tiles and ceramics, 17 02 wood, glass and plastic, 17 03 bituminous mixtures, coal tar and tarred products, 17 04 metals, 17 05 soil, stones and dredging spoil, 17 06 insulation materials and asbestos-containing construction materials, 17 08 gypsum-based construction material, 17 09 other construction and demolition wastes)

SOTTOCAPITOLO	T (2012)	% SUL TOTALE 17
1701- cemento, mattoni, mattonelle e ceramiche	793.303	14,4
1702- legno, vetro e plastica	11.181	0,2
1703 - miscele bituminose	636.902	11,5
1704 - metalli e loro leghe	835.878	15.1
1705 - terra, rocce e fanghi di dragaggio	862.203	15.6
1706 - isolanti	5.655	0.1
1708 - a base di gesso	8.859	0.2
1709 - misti da C&D	2.363.442	42.8
TOTALE	**5.517.423**	**100%**

Tab 1.3.1: Produzione regionale stimata (dalla gestione) di rifiuti speciali non pericolosi da C&D per sottocapitolo CER Anno 2012 - Fonte: ARPAV - Osservatorio Regionale Rifiuti.

5.2. CDW treatment data

With regards to treatment, 2.778.780 (which is around 6% of CDW generated in 2013) was landfilled. Energy recovery, backfilling and incineration only account for a tiny amount of treated CDW. No detail on the recycling treatment for 2013 are available.

More specifically, the amount of construction and demolition waste recovered in backfilling operations amounted approximately 337,000 tonnes in 2010, to nearly 240,000 tons in 2011 and about 165,000 tons in 2012.

5.3. CDW exports/imports data

For the following EWC from NACE F (06.1 – 06.2 – 06.3 – 07.01 – 07.4 – 07.4) and EWC 12.1 for all economic activities ISPRA (2014) reports the following data for exports: 110.000 t in 2010, 101.000 t in 2011 and 102.000 t in 2012.

5.4. CDW treatment facilities data

Data on CDW landfilling facilities is available from ISPRA (2015). The table below reports the number of landfilling sites and the quantities landfilled in 2013 by macroarea. ISPRA (2015) details these data at regional and provincial level.

Year 2013	North	Centre	South
Total landfilled CDW (tons)	1.628.574	532.592	627.614
Landfilling sites (total)	231	59	114
Landfilling sites for inert waste	122	14	50

Although most of the CDW landfilled are treated in landfilled sites specifically dedicated to inert waste, CDW are also landfilled in other landfilling sites both for hazardous and non-hazardous waste.

5.5. Future projections of CDW generation and treatment

No projections studies are available so far. Nevtheless ISPRA (2015) clerly shows that the correlation between non-hazardous CDW generation data and GDP is very good, much higher than for other waste streams.

5.6. Methodology for CDW statistics

Most of the necessary methodological precisions were given in paragraphs 5.1

6. C&D waste management in practice

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

6.1. CDW management initiatives

Description of initiative	Scope	Year established	National, regional, local (specify which local area/region)	Public sector and/or Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
RECinert: the placement on market of recovered product called "Re-inert" (recycled aggregates), meeting the standards required by Circular No. Minambiente UL / 5205 for use in the construction sector	collection, transport, recovery and reuse of CDW	NA	National	The program is aimed to: municipalities, which have to meet the obligations imposed by ministerial decree 08.05.2003 n. 203 (rules for the use of recycled materials); to construction companies; to prodction units in the industry of building materials.	NA	www.RECinert.it
SIMULATORE SNAP-SEE	Quantify demand and offer	2013	Regional		-	http://www.snapsee.it/.
APPRICOD	Separate collection of Plastic maetrials in CDW	2005	Provianci al			http://www.provincia.ancona.it/ecologia/Engine/RAServePG.php/P/253610090300/M/256610090300/T/Progetto-Life-APPRICOD

SNAPSEE Simulator: The Emilia-Romagna Region has published a preliminary version of a "SNAP-SEE" simulator online, aimed to quantify demand and offer in a country/region. The simulator estimates the amount of aggregates required for a given infrastructure and provide details on transportation costs and the amount of recycled aggregates that can be used to substitute part of natural aggregates.

6.2. Stakeholders' engagement

As not many CDW management experiences were found for Italy, stakeloders' engagement is limited to the most involved parties in CDW management (contruction sector associations, recycled aggregates associations, public authorieties involved with waste management in particular at regional level).

6.3. Waste legislation enforcement

In Italy the responsibility of monitoring and enforcing waste legislation is scattered across a large number of authorities at different administrative levels, from national to regional and provincial levels. This is due to the fact that waste legislation is responsibility of different government levels.

With regards to CDW the monitoring of waste legislation is done mainly at regional and provincial level with regards to compliance with sound waste management as defined in the WFD (all the monitoring of treatment sites for example). Monitoring of sound practices of CDW management at building (demolition) sites is also responsibility of counties authorities.

No data/information is available on the details of the means allocated to the enforcement of waste legislation.

No pending infringement procedures for CDW management legislation have been found. Illegal dumping of CDW is a problem although it is perceived as less important than illegal dumping of other waste materials.

6.4. Drivers / barriers to increase CDW recycling

Which are the main drivers and barriers that affect (directly/indirectly) the recycling efforts and boost/impede CDW recycling rates and overall performance in Italy? Please fill in the following table.

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Diffidence in the use of products derived from waste.	Recycled aggregates guarantee the same performance characteristics of natural aggregates	The origin of recycled aggregates from waste leads in potential user an instinctive diffidence,
CDW DATA	The availability of data of good quality is important for better understanding the problematic issues related to CDW. Quality of CDW data (both generation and treatment) is perceived by some actors as not being reliable.	The good score in terms of recycling rate for CDW is seen as a barrier to the adoption of more stringent legislation and in general for action in the domain of CDW.

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Green Public Procurement	The DM 203/03 introduced the mandatory use of recycled materials by the government (and, in particular, of recycled aggregates in infrastructure),	Not correct enforcement of the legislation.
Requirement for CE labelling for recycled aggregates.	The CE labelling of recycled aggregates as well as other labelling clarifying the technical comparability to natural aggregates would reinforce the use of materials from CDW	Lack of knowledge of the technical characteristics of recycled aggregates reduce the use of CDW recycled materials
Specifications of call for tender in the buildings sector	The public administration must make sure that the particular specifications are updated based on the latest European technical standards, which does not distinguish the aggregates by their nature, but because of their characteristics	Materials specifications in call for tenders do not support the development of a demand for recycled aggregates
Publication of a technical standard specification for the construction of infrastructure	Full assimilation of natural and recycled aggregates has been already introduced in the technical guidelines relating to the field of road construction. The impact on recycled aggregates use should be evalued and eventually revision of technical standards for other costruction works can be pursued.	Lack of knowledge of the technical characteristics of recycled aggregates reduce the use of CDW recycled materials
Inclusion of recycled aggregates prices in the price lists	The inclusion of recycled aggregates prices in the price lists would highlight the price competitiveness os such products with regards to natural aggregates	Lack of knowledge of recycled aggregates prices: recycled aggregates are seen as more expensive
Lack of separation at the source of waste and lack of use of selective demolition practices	The use of selective demolition practice would increase the quality and reduce the costs for recycled aggregates	Lack of separation at the source of CDW waste reduce the quality of recycled aggregates
Lack of taxation of mining activities.	Taxation of mining activities would increase the competitiveness of recycled aggregates	Mining activities are not taxes, thus aggregates from virgin materials have a “competitive” advantage
Lack of prohibition to landfill inert waste	A ban on landfilling of CDW would be more effective than the current tax in pushing the industry of recycled materials from CDW	The current level of the tax on landfilling is not high enough for the development of the industry of recycled materials

Diffidence in the use of products derived from waste. Although it is well established that recycled aggregates guarantee the same performance characteristics of natural aggregates, their origin from waste leads in potential user an instinctive diffidence, unfortunately, based on the unlawful practices that have occurred in the country (i.e. illegal use of waste not correctly treated in construction works).

Data. The availability of data of good quality is important for better understanding the problematic issues related to CDW. Current quality of CDW data (both generation and treatment) is perceived by some actors as not sufficient. The good score in terms of recycling rate for CDW is seen as a barrier to the adoption of more stringent legislation and in general for action in the domain of CDW. Better data through data collection campaign and not estimation procedures is advocated by several stakeholders.

Green Public Procurement. The DM 203/03 introduced the mandatory use of recycled materials by the government (in our case, in particular, of recycled aggregates in infrastructure), but in fact the decree was never been applied.

Regardless of the application of the DM 203/03 public authorities could play an important role in the market for recycled aggregates directing and stimulating demand.

The adoption of Green Public Procurement could provide a significant boost to the market of recycled aggregates. In 2010 it was established at the Ministry of the Environment working group for defining the minimum environmental criteria to be included in the contract for the construction and maintenance of roads (Working Group "Green road").

Requirement for CE marking for recycled aggregates. The green public procurement legislation is based on the possibility of substituting products with recycled products with the same characteristics. One way to show the respect of such requirement is to have the recognitiaon of standardisation bodies as for example the CE marking. The requirement for CE labelling is not observed by manufacturers or required by the market. In truth already the application of a proper system of labelling by the manufacturer could solve most of the problems of the market of recycled aggregates.

“Capitolati d’appalto”. Among the reasons for the reduced diffusion and use of large-scale production of recycled aggregates can be counted the absence or deficiency of specific tools such as the particular specifications of call for tenders (“capitolati di appalto”). It is therefore appropriate that the public administration must make sure that the particular specifications are updated based on the latest European technical standards, which does not distinguish the aggregates by their nature, but because of their characteristics (obviously declared in the CE labelling of product).

Recycled aggregates in the price lists. The introduction also of "recycled aggregates" in the price lists of the construction works would help to facilitate the use of such materials.

Publication of technical standard specifications for the construction of infrastructure and buildings. The field of road construction has been identified as the most suitable area of use of recycled aggregates. Following the withdrawal of the UNI 10006/2002, in 2004, technical guidelines relating to the field of road construction were lacking. This issue, however, should be resolved soon because the UNI has published a new revision of the standard UNI10006. See UNI 11531-1 on the construction of roads: Full assimilation of natural and recycled aggregates from C & D. The impact of this norm on the recycled aggregates production needs to be assessed and could provide a good example of how technical standards can help the development of the recycled aggregates industry.

Lack of separation at the source of waste and lack of use of selective demolition practices. Traditionally the demolition in Italy does not provide for a particular commitment in using selective demolition practices. Larger construction sites tend to separate the fraction of hazardous wastes (including asbestos-containing materials and man-made vitreous fibers), the ferrous fraction and sometimes even the wood (because the activity is remunerated by the sale of processed material), while little is done on the remaining waste. In the everyday practice selective demolition which involves the design of the demolition with an important initial phase of disassembly and separation of the main building components (which should be directed mainly to the reuse) is almost non-existent. This means that CDW waste from construction sites are particularly heterogeneous and that recycled aggregates produced by their treatment can contain unwanted materials in excessive amounts than allowed by the technical standards of the construction industry.

Lack of taxation of mining activities. Among the economic instruments used abroad to promote the market of so-called secondary raw materials , the tax on the extraction of virgin materials has a very important role. The resulting increase of cost of the latter may in fact facilitate their use for the applications where there are required greater performance characteristics (such as concrete) leaving to recycled aggregates other uses (such as road building).

Lack of prohibition to landfill inert waste. Another instrument which showed great effectiveness in the countries in which it was adopted, is the introduction into the national legislation of the ban on landfilling of inert waste. In Italy the legislator has opted for a more flexible instrument, that is a tax on landfilling.

7. CDW sector characterisation

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

7.1. Sector characteristics

In 2000 the National Association of Manufacturers of Recycled Aggregates (ANPAR) was founded with the aim of spreading the culture of recycling of inert waste as well as to promote the quality of recycled aggregates. ANPAR aims to be a point of reference for companies in the sector and for companies in the construction industry who decide to demolish and start recycling CDW.

ANPAR: http://www.anpar.org/

7.2. Exports / imports of CDW

In Italy there is enough capacity to treat CDW. Exports and imports of CDW are tiny amount with respect to total waste generated/treated (exports equalled 110.000 tons in 2010, 101.000 tons in 2011 and 102.000 tons in 2012. (ISPRA 2013)

7.3. CDW as landfill cover

CDW is used as covering materials for landfills and for road construction. In particular ISPRA (2014) reports that 370.000 t were used for landfill cover in 2010, 455.000 t in 2011, and 720.000 t in 2012.

7.4. Market conditions / costs and benefits

No financial incentives have been found for recycling CDW. In some regions (as Veneto) it is part of the waste management strategy to offer reduction or simplification of the administrative burden on construction activities if these comply with sound management of CDW (pre-demolition plans, audits, on-site recycling, etc.).

7.5. Recycled materials from CDW

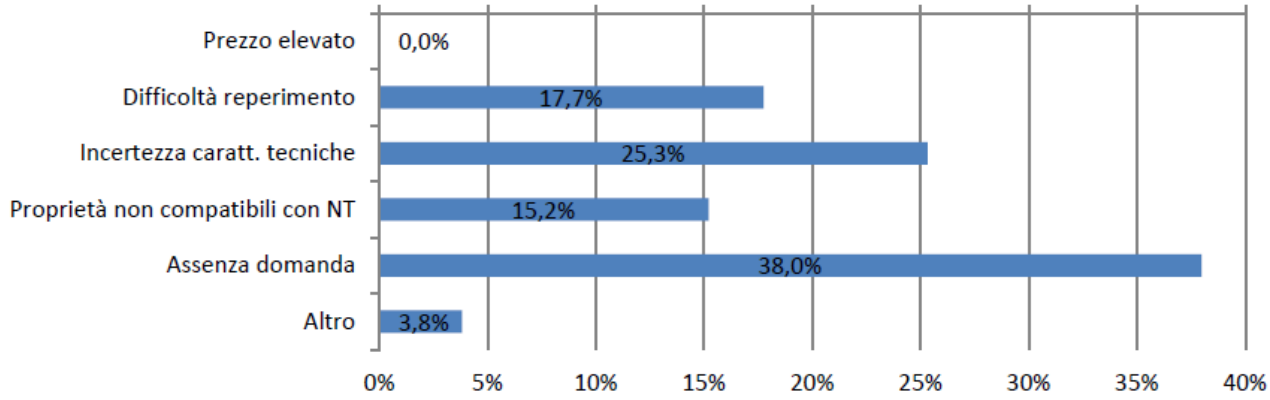
In 2013 Atecap (the Italian associations for concrete - http://www.atecap.it/) has produced a report on the evaluation of recycled aggregates used for the production of concrete (ATECAP, 2013). The report describes the use of recycled aggregates in concrete manufacturing but also the reasons for difficulties in increasing the share of recycled aggregates in this industry.

The report shows that only 11% of the respondents of the sample use recycled aggregates for the production of concrete. The most important factors limiting the use of recycled aggregates which emerged from the survey are:

- A very limited demand for concrete produced using recycled aggregates;
- 25% of respondendts reported a limited knowledge of the technical characteristics of recycled aggregates and their impact on the characteristics of concrete;
- 15% of respondents reported uncompatible properties of recycled aggregates with technical standards for concrete production;

As reported in the figures below, price is not at all a factor limiting the use of recycled aggregates.

Figure: reasons for not using recycled aggregates in the concrete production industry (prezzo elevato: high price; difficoltà reperimento: very fragmented offer, products available not everywhere; incertezza carat. Techniche: limited knowledge of the technical characteristics ; proprietà non compatibili con NT: uncompatible properties of recycled aggregates with technical standards; assenza domanda: no demand; altro: other), source: Atecap (2013).

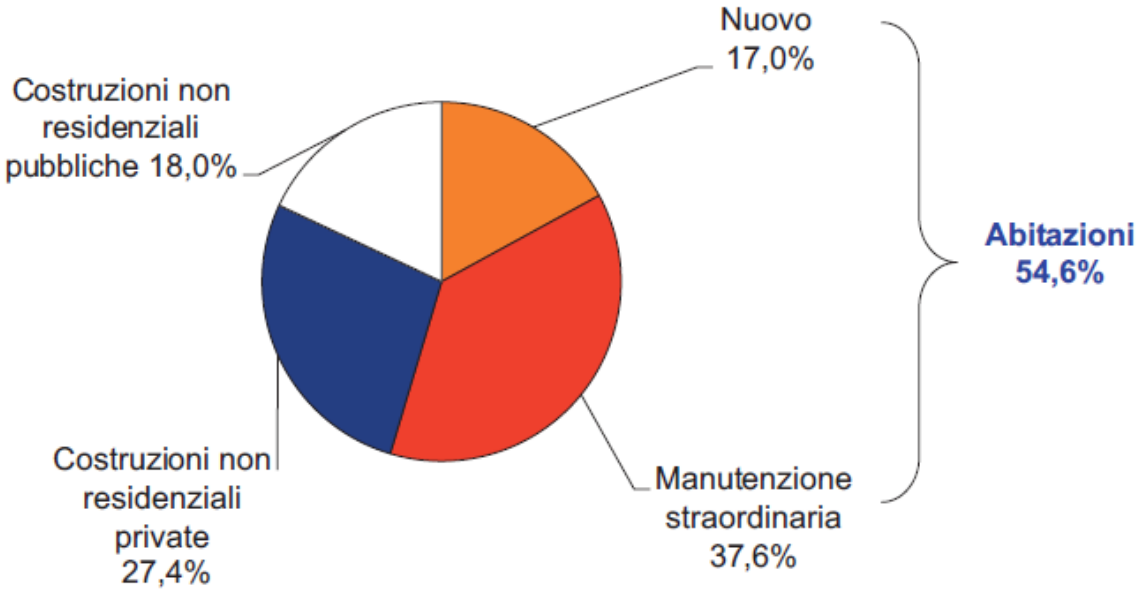


7.6. Construction sector make up[4]

The Italian economy has experienced two consecutive recessions, characterised by a decline in exports between 2008 and 2009, and a decline in domestic demand from 2011 onwards. The first quarter of 2015 marked a halt in the decline in GDP with a first positive sign in GDP change since the summer of 2011.

The construction sector accounts for 9% of Italy's GDP and employs 1.5 million people.

Constructions' investments are distributed among the different susectors as showed in the figure below. Non residential constructions works accounted (in 2013) for 45.4% of all constructions' investments. Residential buildings' renovation accounted for 37.6% and new residential buildings accounted for 17% of total investments.



At the end of 2014 after seven year of crisis, the real value of investments in construction has dropped of 31.7%. Investments in public construction works dropped by 48% from 2008 to 2013. The only positive sign was in investments in renovation of residential buildings which went up 20% in the period 2008-2014

With regards to employment: ANCE calculates that, from the beginning of the crisis in 2008, construction lost about 500,000 jobs. The number of people working in the sector has fallen from two million to 1.5 million.

ANCE does not expect any improvement next year. In fact, the sector will keep sliding in 2015, by 2.4%, with another 8.8% dip in new residential construction and a 3.3% fall in non-residential private construction. The only upward trend is for renovation (which includes everything from renovations to structural overhauls) which

[4] Figures are according to federcostruzioni (2014) and Istat (www.istat.it)

is seen to constinue in 2015. Nevertheless it will be too moderate to spur the whole sector (+2% in 2015). There will be no recovery in the public works sector, which is seen to further decrease by 4.3%.

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Annex

The detailed data and the original tables from ISPRA (2014) on production and treatment of CDW for the calculation of targets of WFD included in article 181 of italian d.lgs. n. 152/2006:

Production of CDW (2010-2012)

Tabella 3.15 - Produzione dei rifiuti da costruzioni e demolizioni secondo la codifica del Regolamento (CE) n.2150/2002 relativo alle statistiche sui rifiuti, anni 2010 - 2012

Aggregazione delle categorie dei rifiuti di cui all'allegato 1, sezione 2 del Regolamento (CE) n. 2150/2002		Aggregazione delle attività economiche secondo la classificazione NACE Rev. 2 di cui al Regolamento (CE) n. 1893/2006		
		F: Costruzioni		
		2010	2011	2012
Voce	Descrizione	(tonnellate)		
6.1	Rifiuti metallici ferrosi	5.223.552	4.686.681	4.153.033
6.2	Rifiuti metallici non ferrosi	638.436	441.016	499.442
6.3	Rifiuti metallici misti, ferrosi e non ferrosi	183.157	170.948	140.422
7.1	Rifiuti in vetro	47.623	53.797	60.235
7.4	Rifiuti in plastica	20.113	24.989	34.112
7.5	Rifiuti in legno	263.111	197.956	151.407
12.1	Rifiuti minerali della costruzione e della demolizione	35.739.806	36.520.989	33.756.796
Totale nazionale		**42.115.798**	**42.096.376**	**38.795.447**

Fonte: ISPRA

CDW recovered (exluding energy recovery)

Tabella 3.16 - Recupero di materia dei rifiuti da costruzioni e demolizioni secondo la codifica del Regolamento (CE) n.2150/2002 relativo alle statistiche sui rifiuti, anni 2010 - 2012

Aggregazione delle categorie dei rifiuti di cui all'allegato 1, sezione 2 del Regolamento (CE) n. 2150/2002		Aggregazione delle attività economiche secondo la classificazione NACE Rev. 2 di cui al Regolamento (CE) n. 1893/2006		
		F: Costruzioni		
		2010	2011	2012
Voce	Descrizione	(tonnellate)		
6.1	Rifiuti metallici ferrosi	3.288.619	3.452.115	3.490.709
6.2	Rifiuti metallici non ferrosi	253.986	294.416	343.546
6.3	Rifiuti metallici misti, ferrosi e non ferrosi	116.604	111.635	90.516
7.1	Rifiuti in vetro	23.165	36.038	42.409
7.4	Rifiuti in plastica	9.150	9.001	7.082
7.5	Rifiuti in legno	101.684	133.020	78.533
12.1	Rifiuti minerali della costruzione e della demolizione	25.043.296	27.173.772	25.245.403
Totale nazionale		**28.836.504** [a b]	**31.209.997** [a b]	**29.298.198** [a b]

a) *circa 370.000 tonnellate avviate a copertura di discarica nel 2010, oltre 455.000 tonnellate avviate a copertura di discarica nel 2011, circa 720.000 tonnellate avviate a copertura di discarica nel 2012.*

b) *comprese le esportazioni pari a oltre 110.000 tonnellate nel 2010, circa 101.000 tonnellate nel 2011 e quasi 102.000 tonnellate nel 2012.*

Fonte: ISPRA

CDW backfilled

Tabella 3.18 - Quantità di rifiuti da costruzioni e demolizioni recuperata in operazioni di colmatazione (R10)

	Anno 2010	Anno 2011 (tonnellate)	Anno 2012
Totale nazionale	**337.069**	**239.589**	**165.029**

Fonte: ISPRA

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