

Construction and Demolition Waste management in

FRANCE

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Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

In 2012, 246.7 million tonnes of construction and demolition waste (CDW) were officially generated in France, as reported by the Ministry of Ecology, Sustainable Development and Energy¹. It represents a 5.4% decrease compared to 2010 (260.7 million tonnes), but only a 2.5% decrease compared to 2008 (253 million tonnes). The amount of non-hazardous CDW excluding naturally occurring materials (soil) is around 65 million tonnes (sum of below “Other inert waste” and “Non-inert non-hazardous waste”).

Waste category	Quantity generated in 2012 (million tonnes)
Soil	180.1 ²
Other inert waste	51.1 ²
Total inert waste	231.2
Non-inert non-hazardous waste	13.1
Hazardous waste	2.4
Total CDW	246.7

Focusing on recovery and recycling of these non-hazardous CDW excluding soil, official statistics show a total of at least 40.4 million tonnes including backfilling in 2012¹. Taking these generation and treatment figures into account, France 2012 CDW recovery and recycling rate of non-hazardous CDW excluding soil can be estimated to about 63%.

Regarding soil, out of the generated 180.1 million tonnes, 112.9 million tonnes were recycled or recovered, mainly backfilled, which also represents a 63% recycling and recovery rate.

Some key points raised by several stakeholders should be highlighted about CDW recovery and recycling national performance and about its measurement:

- By excluding soil of the 70% CDW recovery and recycling objective, the Waste Framework Directive (WFD) conceals the fate of almost 75% of CDW.
- Under the current definitions, if a backfilling operation, e.g. a quarry or landfill cover, is performed in the framework of an inert waste storage facility (ISDI), it will be recorded as landfill. If not, the same operation will be recorded as recovery. This bias distorts the reported inert CDW recycling rate by underestimating it.
- In 2012 inert wastes represented around 80% of non-hazardous CDW excluding soil (51.1 Mt out of 64.2 Mt). Therefore, the non-inert non-hazardous waste recovery and recycling performance is obscured by the performance of inert waste. Given the fact that non-inert non-hazardous CDW are

¹ Observation and Statistics Service (SOeS) of the Ministry of Ecology, Sustainable Development and Energy (2015), 2012 Review of the production of waste in France

² Since the distribution between soil and other inert waste generated is not available, these figures were estimated considering that the 171.1 Mtonnes of soil that were treated (recovery/recycling + landfill) in 2012 represent 95% of the generated soil, which would then amount 180.1 Mtonnes. We chose this 95% ratio as in the SOeS 2012 report the amount of treated soil + treated non-hazardous CDW is 95% of the total inert waste + Non-inert non-hazardous waste generated.

the most difficult to recycle, it would be relevant to introduce a separate target for non-inert non-hazardous waste.

CDW management practices

CDW management vary considerably from one site to another and many factors may affect the practices: economic trade-off between outlets, site size and structure, proximity to recovery/recycling and storage facilities, importance of this issue for the client, ethics and importance of the issue for the construction company...

Looking at CDW destination gives an interesting insight on CDW management by construction and demolition companies. Below figures are the latest detailed CDW treatment data, coming from the 2008 SOeS survey:

CDW destination (2008)	Waste total quantity (Mt)	Waste collection, grouping and/or sorting site	Material recovery		Incineration	Landfill	Other	Total (%)
			Re-use, recycling, recovering on another site, including by another company	Backfilling				
Inert waste	238.9 Mt	31%	32%	17%	0%	15%	4%	99%
Non-inert non-hazardous waste	13.2 Mt	73%	9%	0%	1%	5%	11%	99%
Hazardous waste	2.5 Mt	20%	34%	0%	1%	40%	5%	100%
Total	254.6 Mt	33%	31%	16%	0%	15%	5%	100%

- About 30% of inert CDW and 75% of non-inert non-hazardous CDW is first sent to a collection/sorting site. The final destination of these wastes is not provided by national statistics.
- Considering only the CDW that is sent directly to its final destination (recovery/recycling or landfill sites), about 75% of inert CDW (including soil) is recycled or backfilled;
- About 40% of hazardous waste is directly sent to landfill.

Even if illegal landfill is acknowledged to be extended and widespread in all regions of France (roughly estimated to a very minimum of 5 to 6% of the total CDW generated quantity³), one notes that, excepting hazardous waste, landfill rate is rather low. This is due to the fact that many clients, contractors and recyclers are involved in sustainable CDW management. Indeed, several best practices can be pointed out:

- Good cooperation between the public authorities and the professionals, in particular via the National Waste Council;
- Some clients and local authorities (still quite few though) are at the leading edge of CDW sustainable management and require an exemplary CDW management from their contractors and/or the use of recycled CDW in new constructions;

³ We based this estimation on the difference between the total quantity of CDW generated and the total quantity of CDW reported as treated in a 2012 in a study run by the Rhône-Alpes Economic Cell (CERA) (see annex 1). This study shows that out of 21.4Mt produced and imported in Rhône-Alpes, 1.2Mt were missing in the end, which represents a 5.6% rate. This rate should be regarded as a minimum since it would not be surprising that the major part of CDW illegally landfilled is not declared as generated.

- Strong commitments on sustainable CDW management by several professional federations and construction companies: on-site sorting, no illegal landfill, waste book regulation fulfilment...;
- Some innovative CDW collection solutions such as the partnership between Paprec and Raboni, which enables building craftsmen to bring CDW to construction materials distributors and get new construction materials in return;
- Many R&D programs on recycled materials from CDW and great financial and technical support by Agency for the Environment and Energy Management (ADEME).

Overall, as will be seen below, CDW management is an emerging issue, very dynamic in terms of technical innovation, but which suffers from the lack of political will and clients' interest in general and which also depends heavily on logistics, cost conditions and tax policy.

Main obstacles to sustainable CDW management

- Lack of political will and legal loopholes
 - All interviewed stakeholders pointed out the fact that financial and human resources allocated to CDW legislation enforcement are hardly significant in respect to the needs, especially the means allocated against illegal landfills. Moreover, although departmental CDW prevention and management plans were made mandatory by Grenelle II law in 2010, only about 25% of these plans exist as of today^{Error! Bookmark not defined.}.
 - Backfilling and ground raisings are not sufficiently regulated in the Town planning Code: ground raisings of a height less than 2 meters (or depth for backfilling) or which total area is lower than 100 m² are exempted of any formality. According to some stakeholders this may leads to any practices, unprofitable to sustainable CDW management.
- Not a priority for the clients
 - Most clients don't plan CDW management prior to the start of the projects (it is estimated that only 10% of waste related pre-audits on demolition sites are actually performed, even though these pre-audits are mandatory above a certain surface).
 - CDW sorting and recycling costs are most often subsumed under the global budgets.
 - The actual final destination of CDW is rarely tracked.
- Lack of treatment facilities and low territorial network
 - CDW are bulky goods: transporting aggregates costs from 8 to 10€ / tonne / 100km⁴ on average. Without enough recovery/recycling facilities all over the territory, it automatically increases storage and illegal landfills instead of recovery and recycling.
 - Certain types of treatment facilities (mainly the ones subject to authorisation and/or in difficult environments) can be very long and complicated to open.
- CDW storage facilities: not expensive nor selective enough
 - CDW recovery/recycling and storage costs are highly variable depending on the type of facilities, the type of waste, the distance... but it is widely acknowledged that the current level of landfill tax, even if steadily increasing, is not high enough to be a sufficient deterrent. It is estimated that the landfill tax only represents 10 to 30% of the total landfill prices, mainly because 90% of storage facilities benefit from tax reductions rewarding their environmental and energetic performance⁵. It is also to be noted that France is one of the few countries in Europe with no tax on inert waste landfill.
 - It is also hard for storage facilities to control that only final wastes are submitted (landfills and recycling plants are mainly private).

⁴ Interview with Jean-Yves Burgy, Recovering, 2 September 2015

⁵ Journal de l'Environnement (2013), Waste landfill: a cheap operation

Main drivers to sustainable CDW management

CDW management in France benefits from a powerful legal and regulatory framework: pre-audits on demolition sites, national and departmental CDW prevention and management plans... Nonetheless, it could be enforced more firmly and further developed. The following recommendations summarize the main suggestions of the interviewed stakeholders in order to address the above mentioned obstacles:

- Binding regulation
 - Reserve land to recovery/recycling facilities in local urban planning schemes as to override mayors reluctance to develop these facilities on their territory.
 - Require public procurement to include a quantified target of recycled materials from CDW in new public sites plus recycling as a GPP criterion for deconstruction/demolition projects
- Deterrent storage taxation system
 - As stated above the current level of landfill tax is not high enough to discourage CDW storage. However, some stakeholders pointed out that, given the lack of recovery and recycling facilities and the insufficient law enforcement, a too important tax raise might result in an increase of illegal landfills. Nonetheless, on a long term basis, recycling may increase only if it's economically valuable compared to storage.
- Commitment of more resources on legislation enforcement
 - Fight against illegal landfill, efficient CDW management planning at local level, pre-audits on demolition sites... all these aspects need a strong reinforcement of financial and human resources in order to ensure their enforcement.
- Generalisation of the practice of allotment in call for tenders
 - Currently, as seen above, CDW sorting and recycling costs are most often subsumed under the global budgets. Developing allotment, at least in public call for tenders, would enable to secure the budget and time actually allocated to waste management.
- Robust set of statistics
 - A great majority of the interviewed stakeholders mentioned the work performed by the Construction Regional Economic Cells (CERC) and especially the Rhône-Alpes cell (CERA) which conducted a comprehensive survey and collected very precise statistics as regards CDW generation and treatment. As things stand, CERC statistics are more robust than SOeS statistics and the only ones able to precisely measure the CDW recovery and recycling performance as defined by the WFD. CERC work at departmental level should be encouraged and eventually consolidated in order to get national statistics.
 - Several stakeholders also pointed out that inert, non-hazardous and hazardous waste categories should be harmonised between all Member States so as to enable comparisons. For instance glass wool wastes are considered as non-hazardous in France while they are hazardous wastes in Germany.

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

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

2.1. Definition of waste

In France waste is officially defined as “any substance or object which the holder discards or intends or is required to discard.” This definition is given by Article L541-1-1 of the Environmental Code.

This definition complies with the definition of the Waste Framework Directive 2008/98/EC (WFD).

2.2. Definition of construction and demolition waste (CDW)

There is no official definition for Construction and Demolition Waste (CDW) in France.

However, the CDW classification used in France (Annex 2 of Article R-541-8 of the Environmental Code) corresponds to the European List of Waste (LoW) (2000/532/EC).

No codes of the European LoW are excluded from the French classification.

It should be noted that the definitions of hazardous, non-hazardous and inert waste of Article R541-8 of the French Environmental Code follow the official European definitions (Directive 2008/98/EC, Decision 2000/532/EC and Decision 2001/573/EC).

2.3. End of Waste (EoW) status

Article L541-4-3 of the Environmental Code, created by Order 2010-1579 of 17 December 2010, defines the conditions under which certain waste shall cease to be waste. Those conditions are similar to the ones defined in article 6 (1) and (2) of the WFD.

Article L541-4-3 of the Environmental Code was supplemented by Government decree 2012-602 of 30 April 2012 related to the end of waste procedure. This decree specifies the terms according to which the EoW criteria are adopted, as well as the procedure that applies to the EoW:

- These criteria apply to waste categories for which EoW criteria were defined at EU level.
- Any operator of an ICPE⁶ or IOTA⁷ classified installation may request a waste change of status. An application file must be submitted to the competent authority, detailing how the EoW conditions are met. The Minister Order of 3 October 2012 related to the content of the EoW request application file specifies the list of required documentation. After a thorough examination of the applicant file, if the competent authority considers that the EoW conditions might be met, a decree is established detailing the criteria should be verified.

As of today, there is only one material within CDW for which EoW criteria are under development in France: aggregates made from CDW for on-road applications. The Ministerial Order project was put into consultation from 01/08/2014 to 12/09/2014⁸.

⁶ Installation Classified for the Protection of the Environment (ICPE)

⁷ Facilities, structures, works and activities impacting water resources (IOTA)

⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), Decree stating the exit requirements which define the status of waste of the elaborate aggregates coming from construction wastes for road use

But according to different interviewed stakeholders the Ministerial Order is unenforceable as it is. Two main reasons are provided:

- The Order requires several technical analyses to be run a priori, which is not possible on small sites with an important stock rotation. The time needed for the required analyses would not enable the continuous operation of such sites.
- The Order requires for every transaction a contract signed by the Prefecture (this to prove that there is an existing market for this type of products), which is clearly not enforceable.

2.4. Definitions of waste treatment operations

The French official definitions of re-use, recycling and recovery comply with WFD definitions. Article L541-1-1 of the French Environmental Code defines these operations as follows:

- **Re-use:** “any operation by which substances, materials or products that are not waste are used again for the same purpose for which they were conceived”.
- **Recycling:** “any recovery operation by which waste, including organic waste, is reprocessed into substances, materials or products whether for the original or other purposes. Energy recovery operations, those related to the reprocessing into materials that are to be used as fuels and the backfilling operations cannot be described as recycling operations”.
- **Recovery:** “any operation the principal result of which is waste serving a useful purpose as substitute to other substances, materials or products which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, including by the waste producer”.

*Those definitions don't mention the recovery operations categorisation of WFD Annex II. Nonetheless, this categorisation appears in the official form (CERFA N°14132*01) about waste transboundary movements/transfers⁹.*

- **Backfilling** was defined by the European Commission Decision of 18 November 2011 as: “a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping and where the waste is a substitute for non-waste materials”. This definition applies in France but there has been no official translation into French law.

Official French CDW statistics include backfilling¹⁰.

3. Legal Framework – Waste Management Plans and Strategies

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

3.1. Legislation concerning CDW in France

First pieces of legislation on waste

- **The Law of 15 July 1975 is the first French legal text that states the definition of waste.** It also sets the waste producer responsibilities (towns became responsible of the collection and treatment of domestic waste) and specifies the provisions concerning waste disposal and materials recovery. It also prohibits dumping.
- **The Law of 13 July 1992 adapts the framework law of 15 July 1992 and introduces the concept of ultimate waste,** stating that from 2002 only ultimate waste could be landfilled. The law also requires the reduction of waste production, toxicity and transport. It requires the rehabilitation of

⁹ Cerfa (2015), Movement document for the cross-border movement/transfer of waste

¹⁰ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), 2012 Review of the production of waste in France

disposal sites, introduces the principle of a landfill tax (future tax on polluting activities, i.e. TGAP) and makes waste disposal departmental plans mandatory.

Waste Framework Directive transposition

- The Waste Framework Directive 2008/98/EC (legislative part) was transposed into French law by Order n°2010-1579 of 17 December 2010 that amends the Environment Code accordingly. It specifies the definition of waste, enforces waste prevention, introduces a hierarchy in treatment operations with a priority for re-use, recycling and recovery. This Order also makes the establishment of a national waste prevention plan mandatory.
- **Decree n°2011-828 of 11 July 2011 finalizes the transposition of the WFD (regulatory part) into French law.** It also enforces Grenelle 2 law by reforming waste territorial planning, limiting the quantities of waste that can be incinerated or landfilled, and imposing separate collection for recovery on the large biowaste producers.¹¹

Waste producer's responsibility

- **Article L542-2 of the Environmental Code** stipulates that any person who produces or holds waste must dispose of them or have them disposed of.
- **Article L541-23 of the Environmental Code** stipulates that any person who gives waste belonging to the categories referred to in Article L541-22 of said Code, or has them given to any person other than the operator of an authorized disposal facility is severally liable with him for the damage caused by this waste.

Other French legislation on waste that impact CDW management

- **Article L541-1-1 of the Environmental Code defines waste prevention** as all the measures taken before a substance, material or product has become waste, that reduce:
 - the quantity of waste, including through the re-use of products or the extension of the life span of products;
 - the adverse impacts of the generated waste on the environment and human health; or
 - the content of harmful substances in materials and products.
- **Decree n°2011-828 of 11 July 2011 makes waste traceability compulsory.** It is supplemented by the Ministerial Order of 29 February 2012 and the Ministerial Order of 27 July 2012 which lays down the content of the registers referred to in Articles R. 541-43 et R. 541-46 of the Environmental Code.
- **Article L 1311-2 of the French Public Health Code** introduces the principle of Departmental Health Regulations. These regulations might contain provisions regarding construction materials and CDW.

Focus on hazardous waste

- Except for some exceptions, **main hazardous CDW streams** (i.e. asbestos, PCB, lead based paint, ozone depleting substances, wood treatment substances, PAH, etc.) are submitted to same regulations and obligations than the other hazardous waste:
 - Obligation to have these waste collected and treated through adapted schemes;
 - Hazardous waste tracking through a hazardous waste tracking document, the BSDD (Article L541-7 of the Environmental Code);
 - Transport: authorization requested and preliminary declaration to the Prefecture for quantities above 0.1t;
- The main regulations applying to hazardous waste management are the following:
 - Order of 20 September 2002 related to hazardous waste incineration facilities;
 - Order of 30 December 2002 related to hazardous waste storage.
- Asbestos: waste containing asbestos are subject to a very strict regulatory framework. The use of asbestos is forbidden in France since 1997 and the identification of asbestos containing materials is mandatory for all buildings constructed before 1997.

¹¹ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), Reference texts

- Asbestos-containing waste must be conditioned in leak-proof containers, stored in an isolated, marked, closed and monitored area.
- Asbestos-containing waste must be accompanied by a specific waste tracking document, the BSDA, from their production site until their final elimination.
- Bound asbestos can be eliminated in non-hazardous or hazardous waste treatment facilities.
- Free asbestos must be eliminated in hazardous waste treatment facilities.
- The main regulations applying to asbestos are the following:
 - Order of 12 March 2012 related to asbestos-containing waste storage;
 - Order of 22 February 2005 related to the elimination of bound asbestos waste;
 - Order of 12 March 1997 related to the consequences of asbestos ban and to waste elimination;
 - Order of 19 July 1996 related to the elimination of free asbestos flocking and insulation waste;
 - Decree n°96-1133 of 24 December 1996 related to the ban of asbestos.

National legislation on CDW management

- **Articles 46 of Law 2009-967 of 3 August 2009** (known as Grenelle 1 law) and 190 of Law 2010-788 of 12 July 2010 (known as Grenelle 2 law) make pre-audits compulsory on demolition sites. These pre-audits aim to characterize all materials present on-site and to plan the CDW management.
- **Decree n°2011-610 of 31 May 2011** states this obligation, named “diagnosis on waste arising from demolition works”, from March 2012 for certain categories of buildings by creating the articles R. 111-43 to R. 111-48 of the French Construction and Housing Code. Supplemented by the Ministerial Order of 19 December 2011, this decree specifies the concerned buildings, the obligations of the developers regarding the diagnosis content and methodology, the obligation to disclose the document and to fill a tracking form after demolition work completion.
- Departmental CDW management plans were established by the Ministerial Circular of 15 February 2000. Ten years later, those **departmental CDW management plans were made mandatory by Article 202 of Law 2010-788 of 12 July 2010 (known as Grenelle 2 law)**. Decree n°2011-828 of 11 July 2011 addresses specific requirements regarding the content, the elaboration rules, the monitoring and assessment of those plans.
- **Decree n°2014-1501 of 12 December 2014 submits inert waste storage facilities (ISDI) to ICPE legislation from 1 January 2015.** The objective is to improve the status consistency of waste storage facilities and penalise more easily illegal landfill, thanks to the controls of ICPE inspectors who may sanction.
- **CDW storage and transportation are also regulated:**
 - All storage facilities are establishments classified for environmental protection (ICPE).
 - Waste transportation must be registered at the local authorities (“Prefecture”) if the transported quantities exceed 100 kg of hazardous waste or 500 kg of non-hazardous waste, except for inert waste transportation.
- **CDW regulation infringement (illegal CDW dumping, CDW incineration on site...) is punishable by law.** Sanctions may extend as far as 2 years imprisonment and a fine of 76 000 €.
- **Backfilling and ground raising are not sufficiently regulated in the Town planning Code.** Inert waste can be used to raise the ground or backfill it for redevelopment or restoration purposes provided the local urban planning scheme (PLU) does not forbid it and provided the wastes were sorted as to remove all polluted ones:
 - Ground raisings of a height less than 2 meters (or depth for backfilling) or which total area is lower than 100 m² are exempted of any formality.
 - Ground raisings of a height more than 2 meters (or depth for backfilling) and which total area is larger than 100 m² are subject to prior notification (Article R. 421-23 of the Town planning Code).
 - Ground raisings of a height more than 2 meters (or depth for backfilling) and which total area is larger than 2 hectares must obtain a conversion permit (Article R. 421-19 of the Town planning Code).

The main issue is thus the lack of procedures for ground raisings of a height less than 2 meters. According to some stakeholders it may lead to any practices, going against the regulation applying to other work, and against sustainable management of CDW.

End of Waste legislation

- As stated in paragraph 2.3, the EoW status was defined by **Order n°2010-1579 of 17 December 2010** based on the WFD definition and supplemented by **Decree n° 2012-602 of 30 April 2012** that

specifies the terms according to which the EoW criteria are adopted as well as the procedure applicable to the EoW. **The Order of 3 October 2012** specifies the list of required documents for an EoW request.

- At French national level there is only one material for which EoW criteria have been defined: wood packing millings (**Order of 29 July 2014**).
- Another EoW procedure is in progress concerning aggregates made from CDW for on-road applications (the ministerial order project was put into consultation from 01/08/2014 to 12/09/2014). The **Order of 19 June 2015** defines the quality management system applicable to EoW procedures, thereby completing the regulatory framework applicable to such procedures.

Law 2015-992 of 17 August 2015, related to the energy transition for a green growth

- Article 70 sets numerical targets regarding CDW prevention and recovering (see Paragraph 1.3.4 Targets).
- The same article stipulates that public procurement should be used to reach the above mentioned targets and to promote circular economy through the use of recycled materials.
- Article 78 prohibits inert waste storage on agricultural lands.
- Article 93 stipulates that starting January 1, 2017, construction materials, products and equipment distributors shall take back the waste arising from the same type of materials, products and equipment they sell.
- Article 94 stipulates that any person who receives on a land he owns waste destined for refurbishment, rehabilitation of construction works may not be remunerated for using this waste.
- Article 96 forbids and sanctions any discrimination against recycled materials offering the same performance level.

Legislation or regulatory that are work in progress

- European Directive 2014/24/UE of 26 February 2014 on procurement by public entities operating in the water, energy, transport and postal services sectors will have a very important impact on the importance given to recycled materials in public procurement. The bill related to the transposition of this directive was the subject of a consultation procedure in December 2014.

3.2. Waste management plans (WMP) and Strategies

National level

- The first waste action plan adopted in France was addressing waste prevention. After the introduction of the concept of waste prevention in French law in 1975, **the first waste prevention plan was adopted in February 2004**¹². This plan initiated several actions as raising households and companies' awareness to waste prevention, drawing up methodological guides and creating economic instruments as eco-contribution modulation and incentive pricing policy.
- Issued in September 2009, **the 2009-2012 Waste action plan** concerned both prevention and management. It was meant to implement the requirements of the WFD and the commitments of the "Grenelle de l'Environnement". The 5 main objectives of the plan were:
 - Reduce waste production;
 - Increase and facilitate recycling;
 - Improve organic waste recovery;
 - Reform planning and treat the residual part of waste;
 - Improve management of CDW.
- 7 specific actions were planned, among which 3 were specific to CDW:
 - Promote prevention in Building and Public Works through examples and recommendations factsheets;

¹² Ministère de l'écologie et du développement durable (2004), Waste prevention

- Think of an economic instrument to encourage CDW prevention and recycling, especially by taxing landfilled inert waste;
- Support construction developers in order to reduce the quantities and the toxicity of the produced waste (financial and logistical assistance).
- However, the latter two actions were not implemented:
 - The second one (economic instrument) because there was not enough reliable information on the CDW produced quantities and introducing a tax on CDW landfill might have increased illegal dumping.
 - The third one (developers support in reducing CDW quantities and toxicity) because it was finally decided to focus on recycling and recovery instead of prevention. It was also pointed out that developers rarely ask for public financial support for several reasons: restrictions that go with a selective deconstruction approach, low economic interest, lack of knowledge of such support..
- The following waste action plan (**2020 Waste Plan defined in 2014**) would separate waste prevention and management:
 - **The National framework for waste prevention**¹³, drawn up in April 2012 by the “Prevention” working group of the Waste National Council (WNC)¹⁴, provided the basis for the National waste prevention program 2014-2020, as did the foreshadowing study on this plan, conducted on behalf of ADEME (French Environment and Energy Management Agency) and the Ministry of Ecology and Sustainable Development. The National waste prevention program for 2014-2020 was approved by the Ministerial order of 18 August 2014. It constitutes the prevention part of the 2020 Waste Plan in the process of being drawn up by the WNC. It identifies CDW as a priority 1 stream and sets as a target to at least stabilize CDW production by 2020. In order to reach this target, the national waste prevention program 2014-2020 plans several key actions:
 - Develop a specific communication plan for construction developers and other building and public works stakeholders;
 - Establish charters for voluntary commitment in building and public works sector to encourage waste prevention;
 - Identify and use levers for action to develop re-use of construction materials;
 - Review the regulation related to demolition diagnosis and refine it if necessary.
 - **The Waste reduction and recovery plan for 2014-2020** was presented the 7th, November 2014 during an extraordinary meeting of the Waste National Council (WNC). This plan contains 10 lines of action, of which line n°5 is specific to CDW: **mobilise building and public works professionals for sorting and material recovery of their waste**. On this specific matter, the plan suggests to:
 - Reform the regulatory framework of the inert waste storage facilities (ISDI) and to fight waste dumping and illegal ISDI;
 - Anticipate and plan the material recovery of waste by implementing waste management plans before the beginning of building sites and assessments at the end of them;
 - Densify regional network of sorting-recovery installations;
 - Enhance confidence by ensuring the reliability of materials, in particular through EoW;
 - Mobilise the actors: project managers, clients, etc. .
 - The plan also announces that a **“Zero wasting, zero building and public works waste”** pact will be launched in the fall of 2014 to mobilise all CDW prevention and management stakeholders around this goal.
- CDW recycling is a promising sector for the **“New Industrial France”**, a program launched in 2013 by French president François Hollande. It consists of 34 plans for a new industrial conquest. Among

¹³ Ministère de l'Ecologie, du Développement durable et de l'Energie (2012), National framework for waste prevention

¹⁴ The Decree n°2001-594 of 5 July 2001 created the Waste National Council (CND). The CND is a consultative body which can look into any waste related question on its own initiative.

them, the “Recycling and green materials” plan roadmap proposes¹⁵ two cross functional measures that concern construction:

- Reduce waste landfill by 25% within 3 years using regulatory instruments? Which ones?;
- Stimulate demand for raw materials from recycling. The roadmap suggests to implement a reduced VAT for certain recycled raw materials and to include a minimal recycled materials percentage of use in public call for tenders.
- The “**Recycling and green materials**” roadmap also recommends the implementation of measures specific to CDW:
 - Reinforce controls of CDW illegal sites by government services, in order to create a level playing field for the recyclers;
 - Raise awareness of project owners and prime contractors regarding the use of recycled materials;
 - Establish standards in terms of composition and grain size for recycled materials in order to increase their use by guaranteeing a quality level;
 - Increase the numbers of CDW for which EoW criteria are defined.
- The plan will support 111 sorting or recovering facilities projects among which 12 concern exclusively CDW.¹⁶ Those 111 projects represent a 785 M€ investment.

Local level

- **The Departmental CDW prevention and management plans were established by the Ministerial Circular of 15 February 2000.** This circular¹⁷ has been a first step towards a better local organisation of CDW management, both for recovery and disposal. But after 10 years of application numerous deficiencies were pointed out, among which uncontrolled burning, landfilling and dumping practices and also many territories lacking adapted solutions. The Grenelle II law hence decided to initiate a new generation of prevention and management plans, which were made mandatory and which responsibility has been transferred to the Departmental Councils (Regional Council in the Île-de-France region).
- These plans give an inventory of the types, the quantities and the origins of waste arising from building and public works. They identify transit, sorting, recovery/recycling and storage existing installations; defines the priorities depending on foreseeable technical and economic developments and sets objectives regarding material recovery and stored quantities.¹⁸
- It should be noted that the possibility of transferring this planning exercise at regional level, within a unique framework for all types of waste (hazardous, non-hazardous, CDW) is suggested in the bill updating the territorial organisation of the French republic, known as the law “NOTRe”, which should enter into force in 2015.
- The Ile-de-France CDW prevention and management plan, known as PREDEC¹⁹, is meant to be definitely approved in June 2015 once the public inquiry is over.

¹⁵ Le Moniteur.fr (2014), Recycling of construction waste: The government’s roadmap launched

¹⁶ MPE-Media (2014), The recycling plan for green Materials saved by the bell

¹⁷ Ministère de l’Ecologie, du Développement durable et de l’Energie (2000), Newsletter of 15/02/2000 concerning the planning of the management of waste from building and public works

¹⁸ UNED (2015), Building and public works waste management plans

¹⁹ Conseil Regional d’Ile-de-France (2014), CR 32-14

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
<i>National/regional obligation for selective demolition?</i>	NO For certain categories of buildings a pre-demolition audit related to CDW is mandatory before any demolition work but there is no obligation for selective demolition.	Pre-audit obligation established by the Articles 46 of Law 2009-967 of 3 August 2009 (known as Grenelle 1 law) and 190 of Law 2010-788 of 12 July 2010 (known as Grenelle 2 law) Obligation from March 2012 for certain categories of buildings.	See paragraph 1.3.1 for more details
<i>National/regional sorting obligation (on-site or in sorting facility)?</i>	NO The Article L. 541-7-2 of the Environmental Code prohibits mixing of hazardous waste with other waste (hazardous, non-hazardous or inert) but there is no sorting obligation as such.		
<i>National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.)?</i>	NO		
<i>Obligation for separate collection and management of hazardous waste from C&D operations? Please specify</i>	NO		
<i>Related Green public procurement requirements</i>	NO		

3.4. Targets

Several targets have been defined:

- The 2014-2020 Waste prevention plan sets the objective of stabilising by 2020 the production of CDW at the level reached in 2010 (260 Mt).
- **The 70% CDW recovery and recycling objective set by the WFD** (“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”²⁰) **has not been transposed in French law yet but it is present in the Article 19 of the bill on energy transition for a green growth.** Nonetheless, the current wording of the bill (“Recover 70% of building and public works waste by 2020”²¹) does not exclude hazardous CDW nor naturally occurring material, contrary to WFD target.
- The same article 19 of the bill also sets the objective of reducing by 2020 the landfill of non-hazardous non-inert waste by 30% compared to 2010 and by 50% by 2025.
- There are also several specific commitments by private actors. Some of them are presented below:
 - In 2009 a voluntary agreement was signed by the Ministry for Ecology and Sustainable Development and several Building and Public Works national federations²². About ten commitments were adopted, among which 2 directly concern CDW:
 - Re-use or recover 100% of naturally occurring materials excavated on sites by 2020
 - Reach eventually 100% of roads recycling (60% in 2012)
 - Double the production of recycled aggregates by 2020 (2008 basis: 15 Mt) is a commitment by the national union of aggregates producers (UNPG)²³

²⁰ European Commission (2015), Construction and Demolition Waste (CDW)

²¹ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), Draft law concerning the energy transition for green growth

²² Ministère de l'Ecologie, du Développement durable et de l'Energie (2009), Convention for the voluntary commitment of actors involved in the design, implementation, and maintenance of road infrastructure, highways and urban public space

²³ UNPG (2015), the Recycled aggregates

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.

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
<i>Economic instrument</i> Landfill tax (General tax on polluting activities, TGAP)	YES The objective of this tax is to raise the cost of polluting activities in order to divert economic agents from them.	2009	http://vosdroits.service-public.fr/professionnels-entreprises/F23497.xhtml Range of LF tax?
<i>Economic instrument</i> Incentives and budget lines dedicated to waste prevention and management projects	YES Different funding possibilities are available for companies and local communities developping a project in the field of waste prevention or management. Potential funders are Ademe, Anru, Oseo, Caisse des Dépôts et Consignations, European funds...	NA	http://www.ademe.fr/
<i>Environmental Agency</i> ADEME - Agency for the Environment and Energy Management	YES ADEME provides full support (informative, technical, financial) to individuals, companies and local communities regarding waste prevention and management. ADEME intervention budget on waste matters amounted 943 M€ for the period 2009-2013, of which 222Me were dedicated to prevention.	1991	http://www.ademe.fr/
<i>Guidebook</i> Sustainable Construction Methodological Guidebook	YES Edited by the Saine-Saint-Denis General Council.	2009	http://cooperation-territoriale.seine-saint-denis.fr/-Le-guide-methodologique-pour-une-.html

<p><i>Building certification standards that cover CDW (e.g. BREEAM)</i></p> <ul style="list-style-type: none"> - HQE - BREEAM - LEED 	<p>YES</p> <p>HQE is the leader in France, with 90% of the 800 certified building operations.</p>	<ul style="list-style-type: none"> - HQE : 2005 - BREEAM : 1990 - LEED : 1998 	
<p><i>Industry Sustainability standard that cover CDW</i></p> <ul style="list-style-type: none"> - Quarries Environment Charter - Clean Building approach 	<p>YES</p> <ul style="list-style-type: none"> - The Quarries Environment Charter was developed in 2004. It is a global Environment voluntary commitment. - The Clean building approach was initiated by the Building Sites Operational Links Centre Association and supported by ADEME. It aims at improving working methods and quality of life on building sites. 	<ul style="list-style-type: none"> - Quarries Environment Charter : 2004 - Clean Building approach : 2005 	<p>http://www.charte.unicem.fr/</p> <p>http://www.construirepropre.fr/uploads/ckeditor/files/Dossier%20de%20presse%20-%202013-01.pdf</p>
<p><i>Public sector Sustainability standard that cover CDW</i></p> <ul style="list-style-type: none"> - Green Site Charter - Clean site Charter 	<p>YES</p> <p>Those standards were initiated by ADEME. They consist in an approach that covers all environmental aspects of a site.</p>	<p>Unknown</p>	<p>http://www.chantiervert.fr/index.php</p>
<p><i>Contractual obligation</i></p> <p>Environment Assurance Plan</p>	<p>YES</p> <p>Operational document prepared by the environmental coordinator or the client. Each company that will work on the site must fill it before the beginning of the building works by indicating the provisions that it will take as regards environment.</p>	<p>Unknown</p>	<p>http://www.oree.org/docs/groupe-de-travail/gt-parcs-d-activites/03-04-16-ft6.pdf</p>
<p><i>Extended producer responsibility scheme in operation?</i></p>	<p>NO</p> <p>There are EPR schemes in operation in France but no construction related materials are concerned. Nonetheless, some of the wastes covered by an EPR scheme might be found on building or demolition sites: lamps, WEEE, tires, batteries and accumulators, furnishing elements and photovoltaic elements.</p>	<p>NA</p>	<p>NA</p>

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. tonnes recycled,% coverage	Further information/ website
Requirement for pre-demolition audits	YESYES For certain categories of buildings a diagnosis related to CDW is mandatory before any demolition work.	Obligation from March 2012 for certain categories of buildings.	National	Obligation established by Articles 46 of Law 2009-967 of 3 August 2009 (known as Grenelle 1 law) and 190 of Law 2010-788 of 12 July 2010 (known as Grenelle 2 law)	It is estimated that only 10% of those pre-audits are actually performed	See paragraph 1.3.1 for more details
<i>Sustainability standard on CDW</i> Waste Management and Organisation Plan (SOGED)	YES NO For building works. Describes the technical organisation of waste management.	Practice introduced by Article L541-2 of the Environmental Code, created in September 2000	National	Document developed by the industry based on the regulation	Unknown	http://www.ademe.fr/sites/default/files/assets/documents/fiche-technique-dechets-des-travaux-publics-201412.pdf
<i>Sustainability standard on CDW</i> Waste Disposal Monitoring and Organisation Plan (SOSED)	YES NO For public works. Aims at addressing materials management and CDW.	Practice introduced by Article L541-2 of the Environmental Code, created in September 2000	National	Document developed by the industry based on the regulation	Unknown	http://www.ademe.fr/sites/default/files/assets/documents/fiche-technique-dechets-des-travaux-publics-201412.pdf

<p><i>Industry certification standard on CDW</i></p> <p>QUALIRECYCLE</p>	<p>YES</p> <p>NO</p> <p>This certification standard was developed by the Building and Public works Recyclers Union (SRBTP). The objective is to :</p> <ul style="list-style-type: none"> - Identify and formalize best practices - Assist members in industrialize sorting and recycling practices 	<p>Late 2014</p>	<p>National</p>	<p>Industry lead organisation</p>	<p>Low at the moment but the SRBTP was initiated by French Building Federation which members stand for 2/3 of the sector turnover</p>	<p>http://recycleurs-du-btp.fr/wp-content/uploads/2014/10/14-10-20-SR-BTP-Com-Presse-QUALIRECYCLE-BTP.pdf</p>
<p><i>Demolition certification</i></p> <p>Demolition/Deconstruction professional qualifications are delivered by certification organisms as AFNOR or QUALIBAT</p>	<p>YES</p> <p>NO</p> <p>Not mandatory but the main demolition companies union (SNED) requires its members to hold at least one professional qualification.</p>	<p>Unknown</p>	<p>National</p>	<p>Industry lead organisation</p>	<p>The SNED represents 70% of the total amount of business of demolition/deconstruction in France. Its 100 or so members hold a qualification.</p>	<p>http://www.sned.fr/page/qualifications-professionnelles.html</p>

Key CDW management other 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
<i>Guidebook</i> Elaboration and monitoring of the building and public works waste prevention and management plans	ADEME and ECOBATP Languedoc Roussillon released this technical guidebook ²⁴ .	July 2012	National	Both Public sector and industry lead organisations	Unknown	http://www3.ademe.fr/languedoc-roussillon/docs/ADEME%20GUIDE%20suivi%20Plan%20d%C3%A9chets%20BTP.pdf
<i>Guidebook</i> Prevention and management of waste arising from building and public works	This guidebook was produced by the DGPR ²⁵ and by CEREMA ²⁶ (ex CETE de Lyon).	December 2012	Regional (Île-de-France)	Public sector lead organisation	Unknown	http://www.centre-est.cerema.fr/IMG/pdf/ct69_detc_dspes_guide_planification_BTP_cle03815a.pdf
<i>Guidebook</i> Conception and functioning of CDW treatment facilities	This guidebook was edited by the French Building Federation (FFB) with support of ADEME	2014	National	Both Public sector and industry lead organisations	Unknown	http://recycleurs-du-btp.fr/wp-content/uploads/2014/06/Guide-Installations-SRBTP-2014.pdf

²⁴ ADEME (2012), Prevention and management plans of waste coming from building and public works sites

²⁵ Directorate General of Risk Prevention of the French Ministry of Ecology, Sustainable Development and Energy

²⁶ Center for the study of risks, environment, mobility and planning

<p><i>Smartphone application</i></p> <p>Building and public works waste Application</p>	<p>This app was launched by the French Building Federation (FFB). This app helps craftsmen and construction company locating the nearest CDW recovery/recycling facility.</p>	<p>January 2015</p>	<p>National</p>	<p>Industry lead initiative</p>	<p>Unknown</p>	<p>http://www.ffbatiment.fr/federation-francaise-du-batiment/laffb/salle_de_presse/communiques_de_presse/la-ffb-lance-la-premiere-application-dechets-btp-pour-smartphone.html</p>
<p><i>Smartphone application</i></p> <p>Excavated soil exchange Application</p>	<p>This app was launched by the company Hesus. It is designed for Public and Building Works professionals, enabling them to exchange GPS localised soil.</p>	<p>2014</p>	<p>National</p>	<p>Industry lead initiative</p>	<p>More than 1.5Mtonnes already evacuated</p>	<p>http://www.hesus.eu/</p>
<p><i>Website</i></p> <p>OPTIGEDE website</p>	<p>Created by ADEME, this website is an online information sharing platform on waste prevention and management, aimed at professionals and territorial communities.</p>	<p>Unknown</p>	<p>National</p>	<p>Public sector lead organisation</p>	<p>Unknown</p>	<p>http://www.optigede.ademe.fr/</p>
<p>Materials marking systems (e.g. NAVIGLASS by Saint-Gobain) reveal their composition, facilitating their eventual recycling.</p>	<p>Mentionned by an interviewed stakeholder, materials marking systems could be a solution to increase deconstruction efficiency.</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>Low</p>	<p>http://www.naviglass.com/accueil.asp</p>

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
<i>Official guidelines</i> Environmental acceptability of alternative materials in road building	This guidebook, written by the Ministry of Ecology and Sustainable Development, provides a technical and regulatory synthesis on the use of recycled materials in road building.	2013	National	Public sector	Unknown	http://www.infra-transport-materiaux.cerema.fr/l/MG/pdf/P.VAILLANT.Guides_MA_actualite_CETE_Lyon.pdf
<i>Information note</i> Recycled granular materials classification and selection guide for their use in road building except asphalt granulates	Information note issued by the Road, Streets and Infrastructures Institute is not a technical guidebook but it proposes a framework for the use of recycled granular materials.	2011	National	Public sector	Unknown	http://www.idrri.com/resources/publications/1/569,IDDRIM-Notedinfo22-V2.pdf
<i>Technical guidebook</i> Old pavement Cold in-place recycling	This guidebook, developed by the Roads and Motorways Engineering Department (Setra), provides technical guidelines for the recycling of old pavement.	2003	National	Public sector	Widely used	http://dtrf.setra.fr/pdf/pj/Dtrf/0003/Dtrf-0003340/DT3340.pdf?openerPage=notice

<p><i>Official guidelines</i></p> <p>Operating guide for the use of recycled gravel from clinker and demolition</p>	<p>This guidebook provides a technical and regulatory synthesis on the use of recycled gravel from clinker and demolition works</p>	<p>2005</p>	<p>Developed by region Rhône-Alpes region</p>	<p>Both Public sector and industry lead organisations</p>	<p>Unknown</p>	<p>http://www.grandlyon.com/fileadmin/user_upload/media/pdf/voirie/20050511_gl_voirie_guide_utilisation_graves_de_recyclages.pdf</p>
<p><i>R&D programme</i></p> <p>RECYBETON</p>	<p>This national R&D programme (see below paragraph 1.6.1) aims at developing a standard for the re-use of concrete waste in new concrete.</p>	<p>2012</p>	<p>National</p>	<p>Public</p>	<p>NA</p>	<p>http://www.pnrecybeton.fr/</p>

The above lists do not pretend to cover all CDW management initiatives.

5. CDW management performance – CDW data

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

Summary - CDW generation and recovery official statistics

	2008	2009	2010	2011	2012	2013
Generated CDW (tonnes)	253 000 000*	NA	260 700 000	NA	246 700 000	NA
Recycled CDW (tonnes)	NA	NA	NA	NA	NA	NA
Backfilled CDW (tonnes)	NA	NA	NA	NA	NA	NA
Landfilled CDW (tonnes)	NA	NA	NA	NA	NA	NA
Energy recovery if any (tonnes)	NA	NA	NA	NA	NA	NA

The above table was filled using:

- Figures of the 2012 survey on waste production and treatment in France²⁷ published in March 2015 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the Observation and Statistics Service (SOeS) of the Commissioner-General for Sustainable Development (Ministry of Ecology and Sustainable Development)). 2010 figure has been revised compared to its previous publication (see paragraph 1.5.1).
- Figures of the 2010 survey on waste production and treatment in France²⁸ published in January 2013 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS). These figures are marked by an asterisk (*).

These figures correspond to the ones sent to Eurostat.

These figures include hazardous CDW and naturally occurring materials. The CDW generated quantities correspond to the CDW produced within the country; they include exported CDW and exclude imported CDW.

It has not been possible to isolate CDW recovery data since the official statistical surveys don't show CDW separately from other types of waste.

²⁷ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), 2012 Review of the production of waste in France

²⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2013), 355 million tons of waste produced in France in 2010

Summary - CDW production and recovery statistics recalculated based on WFD 70% target requirements: only non-hazardous CDW, excluding naturally occurring materials

	2008	2009	2010	2011	2012	2013
Generated non-hazardous CDW excluding naturally occurring materials (million tonnes)	76.84**		67.9*		64.2	
Recycled non-hazardous CDW excluding naturally occurring materials (million tonnes)			42.5* (recycling + backfilling)		40.4 (recycling + backfilling)	
Backfilled non-hazardous CDW excluding naturally occurring materials (million tonnes)						
Landfilled non-hazardous CDW excluding naturally occurring materials (million tonnes)			21.9*		20.8	
Energy recovery if any (million tonnes)			0*		0	

The above figures were calculated using:

- Data of the 2012 survey on waste production and treatment in France²⁹ published in March 2015 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS);
- Data of the 2010 survey on waste production and treatment in France³⁰ published in January 2013 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS). Those figures are marked by an asterisk (*);
- Data of the original 2008 comprehensive survey on CDW performed by the SOeS³¹. Those figures are marked by a double asterisk (**).

Methodological precisions

- 2008 recovery data could not be calculated since the survey does not mention the final destination of the CDW sent to collection/sorting facilities.
- 2010 and 2012 recovery data should be considered as partial and undervalued since they are very likely to exclude CDW quantities first sent to collection/sorting facilities.
- Since the quantities of naturally occurring materials (excavated soil) were not available, we assumed that 100% of the soils were recovered or landfilled and used the total quantity of recovered + landfilled soil as being the quantity of soils excavated.
- The CDW generated quantities correspond to the CDW produced within the country; they include exported CDW and exclude imported CDW. Recovery and landfill quantities also correspond to CDW treated within the country; they exclude exported CDW and include imported CDW.

5.1. CDW generation data

The main source regarding official statistics on CDW is a survey performed in 2008³². This survey serves as a benchmark for the establishment of the biennial estimates sent to Eurostat according to the requirements of the European Regulation on Waste Statistics. It shall also improve the knowledge on CDW, in accordance

²⁹ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), 2012 Review of the production of waste in France

³⁰ Ministère de l'Ecologie, du Développement durable et de l'Energie (2013), 355 million tons of waste produced in France in 2010

³¹ Ministère de l'Ecologie, du Développement durable et de l'Energie (2010), 254 million tons of waste produced by the construction sector in France in 2008

³² Ministère de l'Ecologie, du Développement durable et de l'Energie (2009), Investigation into the waste and rubble produced by the building and public works sector

with the objectives of the “Grenelle de l’Environnement”. The 2010 and 2012 data were estimated using 2008 data. The renewal of 2008 comprehensive survey is currently being performed on 2014 data; results are expected by Q2 2016³³.

At local level many estimates were produced by regional agencies or territorial administration services, often commissioned by General Councils in the framework of the departmental CDW prevention and management plans³⁴.

French official CDW generation data

Year	2006**	2008***	2008**	2008*	2010*	2010	2012
Inert waste (Mt)	347.50	238.72	238.15	238.2	243.4	243.4	231.2
Non-inert non-hazardous waste (Mt)	8.47	13.23	12.37	12.4	14.3	14.7	13.1
Hazardous waste (Mt)	2.91	2.55	2.52	2.5	2.6	2.6	2.4
Total (Mt)	358.88	254.5	253.04	253.0	260.2	260.7	246.7

The 3 categories of waste (inert, non-inert non-hazardous and hazardous) are determined according to the nomenclature of the European Regulation on Waste Statistics.

The above table was filled using:

- Figures of the 2012 survey on waste production and treatment in France³⁵ published in March 2015 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS). Those figures correspond to Eurostat ones;
- Figures of the 2010 survey on waste production and treatment in France³⁶ published in January 2013 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS). Those figures are marked by an asterisk (*). Those figures correspond to Eurostat ones;
- Figures of the 2008 survey on waste production and treatment in France³⁷ published in December 2010 (CDW specific figures are estimates based on the 2008 comprehensive survey on CDW performed by the SOeS). Those figures are marked by a double asterisk (**);
- Figures of the original 2008 comprehensive survey on CDW performed by the SOeS³⁸. Those figures are marked by a triple asterisk (***).

Methodological precisions

- Some 2010 and 2008 figures have been revised after their first publication.
- There is a discrepancy between the 2008 survey on CDW performed by the SOeS (254.5 Mt) and the 2008 and 2010 surveys on waste production and treatment in France that are the biennial estimates sent to Eurostat according to the requirements of the European Regulation on Waste Statistics. This is due to a difference in methodology: sludge are recorded in dry weight by Eurostat and in wet weight by the Ministry of Ecology and Sustainable Development.

³³ Cnis (2014), Investigation into the waste and rubble produced by the building and public works sector in 2014

³⁴ Cnis (2014), Projects concerning the investigation into the terms of opportunities

³⁵ Ministère de l’Ecologie, du Développement durable et de l’Energie (2015), 2012 Review of the production of waste in France

³⁶ Ministère de l’Ecologie, du Développement durable et de l’Energie (2013), 355 million tons of waste produced in France in 2010

³⁷ Ministère de l’Ecologie, du Développement durable et de l’Energie (2010), 345 million tons of waste produced in France in 2008

³⁸ Ministère de l’Ecologie, du Développement durable et de l’Energie (2010), 254 million tons of waste produced by the construction sector in France in 2008

- It should be noted that CDW are registered only if they have left the site on which they were produced. The 100Mt decrease in mineral waste production between 2006 and 2008 comes from a better accounting of the waste as they leave the sites.
- In 2010 survey on waste production and treatment in France, mineral waste category (soils, gravels, stones, concrete, tiles...) has been broken down in order to isolate construction sector soils in compliance with the WFD and the objective of re-use, recycling and other material recovery of 70% of non-hazardous CDW excluding naturally occurring materials (soils) by 2020.
- The CDW generated quantities correspond to the CDW produced within the country; they include exported CDW and exclude imported CDW. Recovery and landfill quantities also correspond to CDW treated within the country; they exclude exported CDW and include imported CDW.

Focus on 2008 inert CDW figures (data from the original 2008 comprehensive survey on CDW performed by the SOeS)

Waste nature	Total quantity of waste generated (Mtonnes)
Concrete	17.84
Bricks, tiles, ceramic and slate	2.87
Glass	0.10
Bituminous mixtures containing no tar	9.30
Unpolluted soil and stones	175.11
Other materials from roadway demolition	11.82
Non polluted track ballast	0.97
Non polluted dredging spoil	2.60
Other inert wastes	1.18
Mixed inert wastes	17.09
Total inert waste	238.89

Inert wastes represent 94% of CDW. Among them, unpolluted soil and stones alone account for 71% of CDW. These unpolluted soil and stones mainly come from earthmoving and demolition works. When calculating the recovery and recycling performance in line with WFD 70% objective they must not be taken into account.

Focus on Rhône-Alpes data

The study run by the Rhône-Alpes Economic Cell (CERA) showed the following figures for 2012:

Waste nature	Quantity generated (Mtonnes)
Agricultural soils, excavated soils	11.0
Rock materials	2.5
Asphalt	1.3
Concrete	1.7
Bricks, tiles and ceramics	0.3
Mix of inert wastes	2.3
TOTAL Inert Waste	19.1
TOTAL Non-Inert Non-Hazardous Waste	1.5
TOTAL Hazardous Waste	0.3
TOTAL CDW	20.9

This study is very exhaustive (see also paragraph 5.2 CDW Treatment Data) and is meant to be conducted in all regions. Many stakeholders pointed out the statistical work performed by CERA and mentioned that national statistics (INSEE) and the Government should rely on it.

Data from industry

The different surveys on CDW issued by the industry all source national data from the 2008 survey on CDW performed by the SOeS and its 2010 and 2012 revisions.

This is the case for instance for the 2014 guidebook on design and operation of CDW treatment facilities, issued by the French Building Federation (FFB) and the ADEME³⁹, which also gives the breakdown between building and public works, the total CDW produced being the same as the 2008 survey by the SOeS.

Average CDW generation in new housing construction (kg per m2 of gross floor area (SHOB))⁴⁰

- Mixed inert waste: 13.5
- Metals: 0.45
- Wood: 1.3
- Non-inert non-hazardous waste: between 5.7 and 7.7
- Plaster/wall covers: 1.8
- Carboard: 0.25

Average CDW generation in demolition and deconstruction operations⁴¹

From 0.5 to 1.1 tonnes per m2 of gross floor area (SHOB), broken down as follows:

- 80% to 99% of inert waste
- 1% to 20 % of non-inert non-hazardous waste
- Less than 1% of hazardous waste

Focus on asbestos

The latest official statistics on asbestos were released in 2010 and concern 2008. That year, 140.7 Ktonnes of asbestos waste were generated in France by building and public works sector. Another 19.5 Ktonnes were generated in the framework of specific asbestos removal activities. Hence, total asbestos waste generated in 2008 amounts to 160.2 Ktonnes.

An asbestos R&D plan (PRDA) has been launched in July 2015⁴². The two main objectives are:

- Improve asbestos detection and measurement.
- Improve operations management in sites subject to asbestos risks, as to reduce costs and deadlines while reducing the arduousness and the exposure of workers.

³⁹ FFB (2014), Guide to the design and operation of facilities involved in the treatment of waste in the building and public works sector

⁴⁰ FFB (2014), Waste from sites

⁴¹ FFB (2014), Waste from sites

⁴² Ministère du Logement, de l'Égalité des territoires et de la Ruralité (2015), First meeting of the Steering Committee to innovate in asbestos treatment

5.2. CDW treatment data

Original 2008 comprehensive survey on CDW performed by the SOeS⁴³

7,000 establishments were questioned; data were collected between November 2009 and March 2010. The field of the survey includes the companies suited to the task of removing asbestos.

2008	Total CDW production (Mt)	Break-down by type (%)			
		Inert waste	Non-inert non-hazardous waste	Hazardous waste	Total
Building works	38.2	72.4	26.1	1.5	100
Public works	216.3	97.6	1.5	0.9	100
Total	254.5	93.8	5.2	1.0	100

CDW destination (2008)	Waste collection, grouping and/or sorting center	Material recovery		Incineration facility, cement plant, energy recovery	Storage facilities			Other including provider takeback	Total
		Re-use, recycling, recovering on another site, including by another company	Quarry filling		Inert waste (CET III, ISDI)	Non hazardous waste (CET II)	Hazardous waste (CET I)		
Inert waste (Mt)	73.58	77.16	41.57	0	35.83	0.72	0	10.03	238.89
Non-inert non-hazardous waste (Mt)	9.66	1.24	0	0.17	0.16	0.54	0	1.41	13.18
Hazardous waste (Mt)	0.5	0.86	0	0.03	0.08	0.64	0.28	0.12	2.51
Total (Mt)	83.74	79.26	41.57	0.2	36.07	1.9	0.28	11.56	254.58

As stated above in section 1.5.1, the 2008 survey does not mention the final destination of the CDW sent to collection/sorting facilities, thereby hampering the calculation of final and reliable recovery and landfill data.

One particular point raised by one of the interviewed stakeholders is that inert waste entering storage facilities (ISDI) are automatically registered as landfill although the final destinations of CDW in most ISDI correspond in fact to the definition of recovery: for instance, if the backfilling of a quarry is anticipated in the prefectural operating order, then the corresponding CDW will be recorded as backfilling and integrated in recovery statistics; whereas if the backfilling is performed in the framework of an ISDI it will be recorded as landfill.

Other Miscellaneous data

- In 2008 around 50% of non-inert non-hazardous CDW were mixed and therefore not sorted on site⁴⁴.
- In 2010, out of the 251Mt of inert waste produced (not only by building and public works), 49% were used for road filling, 16% recovered by other means and 35% landfilled.⁴⁵

⁴³ Ministère de l'Ecologie, du Développement durable et de l'Energie (2010), 254 million tons of waste produced by the construction sector in France in 2008

⁴⁴ ADEME (2014), Waste from building

⁴⁵ ADEME (2014), Key figures for waste

- In 2012 19.5 tonnes of concrete from demolition works were recycled into aggregates⁴⁴.
- In 2012 50 000 tonnes of plaster were recycled⁴⁶
- Only 10% of the sites for which a pre-demolition diagnosis must be established comply with this obligation⁴⁷.

Focus on Rhône-Alpes data

The above mentioned study by CERA showed 20.9 Mtonnes of CDW generated in 2012. To this amount, 0.5 Mtonnes of CDW coming from outside Rhône-Alpes to be treated there must be added, the total then being 21.4 Mtonnes.

CDW final destination	Quantity (Mt)
Re-used or recycled on site	5.1
Re-used or recycled on other building sites without any treatment	0.5
Non-recycling platforms	0.4
Recycled or re-used (with no treatment)	1.6
Recycled or re-used (after treatment)	5.4
Backfilling	4.2
Temporary storage	1
Ultimate storage	1.7
Other uses	0.3
Illegal dumping	1.2
Total	21.4

When removing soil and hazardous waste in order to calculate the recovery and recycling scope according to the WFD indications, the results show 5.1 to 5.25 Mtonnes of non-hazardous CDW excluding soil recovered or recycled out of a total amounting 8.5 Mtonnes, which represents a 60 to 62% recovery/recycling rate (see Annex 3).

This rate is coherent with the national rate calculated in the summary.

5.3. CDW exports/imports data

The reporting of CDW transboundary movements is required by Regulation (EC) No 1013/2006 of the European Parliament and by the Basel Convention Council⁴⁸. The biggest part of imported/exported CDW are uncontaminated soil and stones, which are classified as “1/1(b)WEC”⁴⁹.

- In 2011, reported imports of waste have reached 2.2Mt, among which 765Kt of uncontaminated soil and stones were imported to be recycled⁵⁰.
- In 2011, reported exports of waste have reached 1.5Mt, among which 50Kt of uncontaminated soil and stones were exported to be recycled⁵⁰.

⁴⁶ SINIAT (2015), Project for the Aquitaine : Development of the pipeline for waste plaster recycling

⁴⁷ Roadmap of the CDW working group of the “Recycling and green materials” industrial plan (New Industrial France).

⁴⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2013), Cross-sectoral movement of waste

⁴⁹ Uncontaminated soil and stones fall within the scope of Article 1 Paragraph 1 (b) of the Convention as they are not listed in Basel Convention or considered as hazardous in their importation or exportation country. And since their codification in the European Waste Catalogue is known (17 05 04) they are classified as “1/1(b)EWC.

⁵⁰ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), 2011 Report on the cross-sectoral movement of waste within the framework of Regulation n°1013/2006 of the European Parliament and Council and the Basel Convention

The reported quantities come from the prefecture and the Environmental Authorities (DREAL) of each department. Those figures (total reported amounts of imported/exported waste) increased by about 40% compared to 2007⁵¹.

Pursuant to Article 38 of Regulation (EEC) No 259/93, the French Government has designated as competent authorities⁵² :

- for exports or re-exports of waste to ACP States (African, Caribbean and Pacific states), the Prefect of the department in which the installation that produced the waste or, where appropriate, the preprocessing installation that produced the waste is located;
- for imports, the Prefect of the department in which the waste disposal installation is located;
- for transits, the Minister responsible for the environment.

CDW imports/exports reporting is required by Certain types of waste non listed in Basel Convention or considered as hazardous in their importation or exportation country fall within the scope of Article 1 Paragraph 1 (b) of the Convention (hereinafter “1/1b”). In this case, when the codification of the European Waste Catalogue is known, this complementary information is given for more precision (required by Eurostat). This waste is then gathered and classified as “1/1(b)CED”.

5.4. CDW treatment facilities data

It is to be noted that while it is fairly straightforward to get data on CDW storage facilities, it is much more difficult to retrieve precise data on the number and the type of CDW recovery/recycling facilities since CDW streams are poorly known⁵³ and as there are different types of facilities, many of which also treat waste not being CDW.

Inert CDW

- Recovery/recycling: Inert CDW are mainly treated in dedicated platforms due to the very specific nature of this type of waste. In 2006 there were about 12 facilities dedicated to the recycling of inert waste in Île-de-France⁵⁴. Those platforms transform inert CDW into aggregates. It has not been possible to find statistics on the total number of recovery/recycling facilities in France.
- Storage: Late 2014 there were around 1200 inert waste storage facilities (ISDI) in France⁵⁵. In 2011, out of the 1300 recorded ISDI, 557 had a prefectural authorisation, 239 were awaiting regularisation and around 500 were illegal⁵⁶. As stated in introduction, under the current official definitions, if a backfilling operation is performed in the framework of an inert waste storage facility (ISDI) it will be recorded as landfill. If not, the same operation will be recorded as recovery. This bias distorts the reported inert CDW recycling rate by underestimating it.
- Regarding not-recorded illegal ISDI it was not possible to get statistical data.
- The study run by the Rhône-Alpes Economic Cell (CERA) over the period from 2011 to 2013 showed that in Rhône-Alpes 48% (6,5Mt) of the global amount of inert C&D wastes (13,3Mt) are either recycled or valorised through a quarry⁵⁷.

Non-inert and non-hazardous CDW (NINH CDW)

- Recovery/recycling:
 - NINH CDW are mainly treated in multi-activities units using the same sorting machines for all types of waste. In France there are only 16 mechanised sorting lines. The treatment

⁵¹ Ministère de l'Ecologie, du Développement durable et de l'Energie (2012), 2007 Report on the cross-sectoral movement of waste regarding the European Parliament and Council regulation transposing the Basel Convention

⁵² European Commission (2015), List of Competent Authorities

⁵³ FFB (2014), Guide to the design and operation of facilities involved in the treatment of waste in the building and public works sector

⁵⁴ CCI Paris Ile-de-France (2012), The recycling and reuse of inert waste

⁵⁵ Actu Environnement (2014), The installation of inert waste stocks become classified installations

⁵⁶ Le Monde (2012), Building and public works discharges are spreading across France

⁵⁷ Interview with Michel Zablocki, UNPG, 19 May 2015

capacity of those sorting lines is approximately 800Kt of non-hazardous waste (the total volume of non-hazardous waste approaches 14Mt, of which 50% are mixed waste)⁵⁸.

- There are around 110 non-hazardous waste incineration units in France⁵⁹.
- Storage: Late 2014 there were 252 non-hazardous waste storage facilities (ISDND) in France (with a storage capacity around 22,5Mt) versus almost 500 in 2000 (with a storage capacity around 26Mt)⁶⁰.

Inert and NINH CDW data based on a 2009 survey by ADEME on 39 CDW sorting/recovery facilities)⁶¹

	Operators	Average quantity of CDW treated by platform (Kt)	Recovery rate	Type of recovery	Average geographical area (ha)	Average number of workers	Turnover (M€)	CAPEX (M€)	OPEX (€/t)
Mechanised sorting line + Inert and NINH CDW recovery	Waste management professionals	70 Kt	70%	Mainly material recovery, only 2% of energy recovery	9 ha	15	0.5 to 2 M€	2.1 M€	NC
Simple sorting + Inert and NINH CDW recovery	65% building firms 35% waste management professionals	35 Kt	55%	Mainly material recovery	3 ha	10	0.5 to 2 M€	1.2 M€	25 €/t
Mechanised sorting line + Inert CDW recovery	Quarries	180 Kt	85%	Only material recovery	5 ha	10	2 M€	2.9 M€	NC
Simple sorting + Inert CDW recovery	Mainly building firms	80 Kt	75%	Only material recovery	4 ha	3	0.8 M€	1 M€	6 €/t

Hazardous waste

- Recovery/recycling: these waste are necessarily treated by the producer or in specific facilities. Hazardous wastes are mainly incinerated. There are 16 hazardous waste incineration collective facilities (private facilities welcoming waste from different companies) in France, 13 evapo-incineration facilities and 25 co-incineration facilities (mainly cement industries)⁶².
- Storage: Late 2014 there were 16 opened Hazardous Waste storage facilities (ISDD) in France⁶³.

⁵⁸ FFB (2014), Guide to the design and operation of facilities involved in the treatment of waste in the building and public works sector

⁵⁹ Carl Enckell and Recovery presentation on circular economy and building and public works spread across France

⁶⁰ ADEME (2014), Key figures for Waste

⁶¹ ADEME (2011), Techno-Economic analysis of 39 French platforms involved in sorting/recovery of waste of the building and public works sector

⁶² Ministère de l'Ecologie, du Développement durable et de l'Energie (2012), The management of hazardous waste

⁶³ Ministère de l'Ecologie, du Développement durable et de l'Energie (2012), The management of hazardous waste

5.5. Future projections of CDW generation and treatment

No satisfactory information could be retrieved on future projections of CDW generation and treatment. This is mainly due to the fact that it is difficult to link CDW generation data with accurate construction sector characteristics.

The only hint on the future projection on CDW generation can be found in the 2014-2020 Waste prevention plan, which sets the objective of stabilising by 2020 the production of CDW at the level reached in 2010 (260 Mt).

5.6. Methodology for CDW statistics

Most of the necessary methodological precisions were given in paragraphs 1.5.1 to 1.5.5 but below general methodological precisions are added regarding the 2008 survey on CDW performed by the SOeS:

- The quantities of waste are classified based on the latest destination known by the producer. Indeed, the final destination of a waste is not always known by the producer, especially for inert wastes: wastes are often sent to a collection facility first before being transferred to sorting, recovery/recycling or storage facilities⁶⁴.
- Waste producers might encounter difficulties when reporting the quantities of mixed waste. For instance the quantity of coated materials, bituminous mixes and tarred products might have been overestimated since they include different types of waste⁶⁵.
- The survey covers the construction sector as a whole (building and public works). It also includes the 39.00Z sector (decontamination and other waste management services) which falls under the Industry sector, in order to incorporate the asbestos removal figures in the survey results.

⁶⁴ Ministère de l'Ecologie, du Développement durable et de l'Energie (2011), Waste generated from the establishments of public works

⁶⁵ Ministère de l'Ecologie, du Développement durable et de l'Energie (2011), Waste generated from the establishments of public works

6. C&D waste management in practice

In this section the CDW management “on ground” in France is explored. Specific CDW obligations, initiatives, voluntary agreements and any other management practice are mentioned if available currently in France.

6.1. CDW management initiatives

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

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
<p>Partnership between Paprec (specialised in recycling and recovery) and Raboni (construction and renovation materials distributor).</p> <p>Building and public works SMEs deliver waste on a Raboni site and leave with new construction materials.</p> <p>Waste travel to Paprec recovery/recycling facilities by barges when Raboni sites are located by the water.</p>	<p>12 Raboni sites are operational and many other projects are ongoing.</p> <p>Waste are treated in 2 facilities exclusively devoted to CDW.</p>	<p>2004</p> <p>Partnership renewed for 5 years late 2014.</p>	<p>Ile-de-France region</p>	<p>Industry lead organisation</p>	<p>70 000 m³ collected per year with a recovery rate of 80%.</p>	<p>http://www.batiweb.com/actualites/eco-construction/quels-enjeux-au-recyclage-de-dechets-de-chantiers-30-10-2014-25323.html</p> <p>http://www.paprec.com/sites/default/files/cp-paprec-raboni-dechet-btp.pdf</p> <p>Direct contact available</p>

<p>Suez Environment signed a framework agreement with the Finnish company Zenrobotics regarding the worldwide rollout of Zenrobotics CDW multiple robot waste sorting process.</p>	<p>Those robots are able to safely extract stones, wood and metals out of CDW. This technology can be applied to other sources.</p>	<p>The partnership was signed in September 2013</p>	<p>Meant to be deployed in Sita sites over the world.</p>	<p>Industry lead organisation</p>	<p>12 000 tonnes per year with a recovery rate of 90%.</p>	<p>http://www.zenrobotics.com/press-releases/21-dec-2012-sita-finland-buys-the-worlds-first-multi%C2%AD%E2%80%90robot-zrr-process-for-x%C2%AD%E2%80%90mas/</p>
<p>Gypsum to Gypsum project</p>	<p>The GtoG project aims at transforming the European gypsum demolition waste market to achieve higher recycling rates of gypsum waste, thereby helping to achieve a resource efficient economy.</p>	<p>2013</p>	<p>European</p>	<p>Public-private partnership</p>	<p>WIP</p>	<p>http://gypsumtogypsum.org/</p>
<p>Granulat Plus Approach</p>	<p>This approach was launched by Eurovia on all its Mediterranean quarries. It aims at effectively using 100% of resources : natural materials and inert CDW</p>	<p>2011</p>	<p>Regional (Mediterranea)</p>	<p>Private initiative</p>	<p>Unknown</p>	<p>http://www.granulatplus.fr/la-demarche-granulat-plus.php</p>
<p>Blowing and optical sorting technologies able to separate on industrial scale thin plaster fragments</p>	<p>Veolia Propreté , Pellenc selective technologies (leader in waste optical sorting) and LERM (Materials research private laboratory) formed a partnership, supported by European Programme Life.</p>	<p>2013</p>	<p>2 pilot units were deployed in 2013.</p>	<p>Public-private partnership</p>	<p>Technology able to separate plaster fragments of 8-30mm and 30-80mm</p>	<p>http://www.veolia-proprete.fr/veolia-proprete-experimente-l-extraction-du-platre-des-dechets-du-btp-a-nice.html</p>

<p>Materials marking systems (e.g. NAVIGLASS by Saint-Gobain) reveal their composition, facilitating their eventual recycling.</p>	<p>Mentionned by an interviewed stakeholder, materials marking systems could be a solution</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>http://www.naviglass.com/accueil.asp</p>
<p>DEMOCLES is a collaborative project aiming at improving the management of the end of life of finishing works waste from demolition/rehabilitation sites, set up by 28 organisms, companies and administrations.</p> <p>10 test sites will make it possible to characterise the waste stream, to identify drivers and barriers and to measure the savings that would enable the recovering of finishing works waste sorted beforehand compared to their destruction when still mixed.</p>	<p>The project concerns the 10 Mt of waste of the finishing works, which represent a quarter of the building workds waste.</p>	<p>The project was launched in November 2014.</p> <p>The first conclusions are awaited by late 2015.</p>	<p>National</p>	<p>Public-private partnership</p>	<p>WIP</p>	<p>http://www.recylum.com/communiqués-de-presse-recylum/lancement-du-projet-democles-gestion-dechets-du-batiment-au-service-leconomie-circulaire/</p> <p>Direct contact available</p>
<p>The project Aquitaine aims at developing the plaster waste recycling stream.</p> <p>Being a non-dangerous non inert material, plaster can be landfilled in specific chambers (very expensive) or recycled.</p>	<p>Aquitaine region</p>	<p>The project was launched in February 2014</p>	<p>Aquitaine region first but the objective is to extend the solutions all over France</p>	<p>Public private partnership</p>	<p>The objective is to reach 245 000 tonnes of plaster waste recycled by 2020 at national level (70% of total plaster waste)</p>	<p>http://www.dechets-aquitaine.fr/automne_modules_files/pmedia/public/r14944_44_article_projet_aquitaine_v2.pdf</p>

<p>Applied research collaborative project, RECYBETON aims at reusing 100% of deconstructed concrete (including fines) as constituent of new concrete and as raw material for cement production</p>	<p>4-5 years project with a 5M€ budget.</p>	<p>February 2012</p>	<p>National Project (specific procedure of collaborative R&D in building sector, with the support of the Ministry for Ecology and Sustainable Development)</p>	<p>Public-private partnership</p>	<p>WIP</p>	<p>http://www.pnrecybeton.fr/</p> <p>No direct contact but possible to get.</p>
<p>ASURET, a research project on the reduction of natural resources use and a better optimisation of the use of CDW in building and public works, in particular by:</p> <ul style="list-style-type: none"> - Better characterizing materials and waste sources and streams - Identifying efficient techniques (construction, deconstruction, recycling) - Encouraging the use of recycled materials from CDW 	<p>3 years project with a 1.8M€ budget.</p>	<p>2010-2013 Project finished</p>	<p>Focus on one city (Orleans) and one region (Bouches du Rhône)</p>	<p>Project initiated by the Geological and mining research bureau (BRGM) with the support of the national research association (ANR)</p>	<p>Set up of a methodology for a better estimation of the sources and streams of materials in a given territory.</p>	<p>http://www.brgm.fr/sites/default/files/matinee-btp_20141201_metabolisme-orleans.pdf</p>
<p>Internal standards. Most of the major building firms have an internal standard.</p> <p>For instance Vinci developed the label “Attitude Environnement”, which includes 10 criteria, 3 being specific to waste :</p> <ul style="list-style-type: none"> ➔ Sort hazardous and non-hazardous waste ➔ Control the traceability of the waste ➔ Implement at least one action towards waste prevention re-use or recycling. 	<p>Label potentially available on all Vinci sites.</p>	<p>2009</p>	<p>National</p>	<p>Industry lead organisation</p>	<p>In 2012 80% of Vinci building sites were labelled “Attitude Environnement”</p>	<p>http://www.vinci-construction.fr/france/datav3.nsf/0/BC271CE25310100CC12579A50030C661/\$File/Plaque%20Attitude%20Environnement%20-%20janvier%202012.pdf</p>

<p>REVALO consists in dismantling end-of-life windows on tertiary buildings and recycling them into new windows.</p> <p>Objectives:</p> <ul style="list-style-type: none"> ➤ Recycle 70% of waste weight ➤ Reduce by 50% the number of trucks dedicated to evacuation ➤ Reduce by 25% the total waste cost 	<p>The project was initiated by 4 firms (AGC Glass, GTM, Veka and Veolia).</p>	<p>Late 2011</p>	<p>National</p>	<p>Industry lead organisation, supported by ADEME</p>	<p>In 2 years, 322 tonnes of glazing were recycled, as well as 672 tonnes of PVC carpentry.</p>	<p>http://www.n-schilling.com/veka/53132-revalo.html</p>
<p>Recycling of end-of-life windows and joinery on individual housing</p>	<p>The project was initiated by 3 firms (Paprec, Lapeyre and Saint-Gobain)</p>	<p>2013</p>	<p>National</p>	<p>Industry lead organisation</p>	<p>WIP</p>	<p>http://www.paprec.com/fr/actualite/paprec-group-groupe-lapeyre-saint-gobain-glass-france-creent-partenariat-vertueux</p>
<p>DEMODULOR project aims at developing dismantlable structures to ease materials recovery and recycling during rehabilitation and deconstruction phases.</p> <p>The program is being developed by the Materials and Equipments for a Sustainable Construction Alliance together with the Technical Industrial Centres.</p>	<p>The program focuses on structure and bearing elements : walls, floors, roofs.</p>	<p>Late 2012</p>	<p>National</p>	<p>Industry lead organisation, supported by ADEME</p>		<p>http://optigede.ademe.fr/dechets-batiment-prevention</p> <p>No direct contact but possible to get.</p>

Company VNI Environnement invested 1.2 M€ to install a new mechanised sorting line and rehabilitate his site.		2010	Regional, Provence-Alpes-Côte d'Azur	Industry lead organisation, supported by ADEME	Site treatment capacity doubled, not recovered CDW was divided by 5 and sorting quality improved.	http://www.ademe.fr/sites/default/files/assets/documents/optimisation-tri-dechets-chez-vni-environnement-garde-2012.pdf

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

- **Paprec/Raboni partnership.** Construction SMEs deliver waste on a Raboni site and leave with new construction materials. CDW are then directed to Paprec recovery/recycling facilities.
- **RECYBETON project.** National R&D programme aiming at reusing 100% of deconstructed concrete as constituent of new concrete.
- **DEMODULOR project.** Aims at developing dismantlable structures to ease materials recovery and recycling during rehabilitation and deconstruction phases.
- **DEMOCLES project.** Aims at improving the management of the end of life of finishing works waste from demolition/rehabilitation sites.

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 France. Some of the above listed initiatives were mentioned by the stakeholders but no particular comments were made to be mentioned in this section.

Waste legislation enforcement

6.3. Responsibilities and sanctions

According to Article L2212-2-1 of the Code for territorial communities and Article L541-3 of the Environmental Code, the mayor has police power when waste is dumped, landfilled or stored contrary to waste regulations requirements in his town. If the mayor does not apply its power, the Prefect may intervene and require him to take action. If the mayor refuses, the Prefect shall take action in his place (Article L2215-1 of the Code for territorial communities)⁶⁶.

If the waste producer refuses to remove the waste, several possibilities exist:

- Have the producer pay a deposit corresponding to the cost of the waste removal;
- Have the removal executed at the producer's expenses;
- Have the installation cease its operations;
- Fine of up to 150 K€.

On private land, the waste producer or the land owner might be required to remove the waste. As a last resort the automatic performance of the removal can be ordered. It is to be noted that in cases where the land were leased out, the removal of the waste can be borne by the lessee (case law of Paris Court of Appeal of the 8 July 2004, Commune of Garges-Les-Gonesse vs Company Selectibanque).

According to Article L541-46 of the Environmental Code, abandoning, depositing or causing to be deposited waste contrary to waste regulations requirements shall be punished by deprivation of liberty of up to two years and a fine of 75 000 €.

Main courts' decisions

Companies are often fined for illegal disposal of CDW:

- In October 2013, different companies were sentenced to a fine of 86 000 euros by the Criminal Court of Grasse for illegal waste dumping and ground raising in floodplains.
- In February 2014, the company Societe Nouvelle Dalmasso was sentenced to a fine of 1,6 M€ and its managing director to a fine of 600 K€ by the same Criminal Court of Grasse⁶⁷.
- In June 2014, the two directors of the company Gerlero et Fils were sentenced to two years of suspended imprisonment and a fine of several tens of thousands euros by the Criminal Court of Toulouse for illegal storage of asbestos waste⁶⁸.
- In July 2011, the Criminal Court of Creteil sentenced the managing director of the company LGD Development to 18 months of suspended imprisonment and around 20K€ of damages. LGD is also required to rehabilitate the entire site of Limeil-Brévannes (150 km³ of CDW). But on appeal the

⁶⁶ Jura Nature Environnement (2014), Wild deposits, procedures and sanctions

⁶⁷ France Nature Environnement PACA (2014), New convictions in Alpes-Maritimes

⁶⁸ France 3 Midi Pyrénées (2014), Asbestos waste : a two year suspended prison sentence for Gerlero's two directors

director was eventually sentenced to a suspended fine of 10 k€ and the rehabilitation of the site was taken over by the government for an estimated amount of 20 M€⁶⁹.

Transboundary movements of waste

As stated in paragraph 1.5.3, pursuant to Article 38 of Regulation (EEC) No 259/93, the French Government has designated as competent authorities⁷⁰:

- for exports or re-exports of waste to ACP States (African, Caribbean and Pacific states), the prefect of the department in which the installation that produced the waste or, where appropriate, the preprocessing installation that produced the waste is located;
- for imports, the prefect of the department in which the waste disposal installation is located;
- for transits, the minister responsible for the environment.

6.4. Drivers / barriers to increase CDW recycling

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Legislation and regulation	<ul style="list-style-type: none"> • Implementation of national and departmental CDW management plans • Compulsory pre-audits on demolition sites • Objective of stabilising by 2020 the production of CDW at the level reached in 2010 (260 Mt), set by the 2014-2020 Waste prevention plan • Inert waste storage facilities becoming establishments classified for environmental protection (ICPE) as of 1st January 2015. • EoW status and criteria defined by law. 	<ul style="list-style-type: none"> • The use of recycled materials from CDW is not sufficiently supported through public procurement. • There is still no departmental CDW management plan in force as of today. • Contractors must demonstrate that it is technically possible to use construction materials from recycling. • Backfilling and ground raisings are not sufficiently regulated in the Town planning Code: ground raisings of a height less than 2 meters (or depth for backfilling) or which total area is lower than 100 m² are exempted of any formality.
Resources allocated to CDW prevention and management	<ul style="list-style-type: none"> • Total ADEME intervention budget on waste matters amounted 943 M€ for the period 2009-2013, of which 222Me were dedicated to prevention. 	<ul style="list-style-type: none"> • According to all interviewed stakeholders the human and financial resources allocated to CDW legislation enforcement are not sufficient. • Sanctions are reported to be too low and rarely applied. • Quarries departmental schemes should be grouped into regional schemes and better integrate recycling issues.
Treatment facilities territorial network		<ul style="list-style-type: none"> • Almost all stakeholders pointed out that there are currently not enough treatment installations, the existing ones being therefore too far from the sites, which encourages dumping. • It appears that local authorities are most often reluctant to authorize the installation

⁶⁹ Actu-Environnement (2012), Limeil-Brévannes waste mountain : the municipality petitions the Cour de cassation to challenge the legality of the decision

⁷⁰ European Commission (2015), List of Competent authorities

		of new treatment facilities.
Market conditions	<ul style="list-style-type: none"> • Landfill tax (TGAP) is a powerful recovery/recycling improvement tool. 	<ul style="list-style-type: none"> • A majority of construction companies declare that operating costs of CDW sorting, recovery and recycling are too high. • The Landfill tax (TGAP) is low compared to other MS, which does not encourage building firms to favour recycling and recovery over landfill.
Definitions and statistical data	<ul style="list-style-type: none"> • Set separate objectives for inert waste and non-inert non-hazardous waste (NINH) recycling, in order not to mask NINH CDW recycling performance behind the one of inert waste (80% of non-hazardous CDW excluding soil). • Harmonise the statistical recording rules of backfilling operations (see right-hand column) • Use Construction Regional Economic Cells (CERC) data as a basis for national statistics • Several stakeholders also pointed out that inert, non-hazardous and hazardous waste categories should be harmonised between all Member States so as to enable comparisons. For instance glass wool wastes are considered as non-hazardous in France while they are hazardous wastes in Germany. 	<ul style="list-style-type: none"> • It is very difficult to assess precisely CDW sources and streams. • With the current definitions it is theoretically possible to reach the objective of 70% CDW recovery and recycling only by backfilling quarries with inert waste • If the backfilling of a quarry is anticipated in the prefectural operating order, then the corresponding CDW will be recorded as backfilling and integrated in recovery statistics; whereas if the backfilling is performed in the framework of an ISDI it will be recorded as landfill. • Running national surveys every 4 or 6 years is very time consuming for the construction companies and it is useless to monitor CDW recycling performances at local level, which is the only relevant one since 90% of the CDW loads travel less than 50 km.
Works contracts	<ul style="list-style-type: none"> • Extend the practice of allotment in order to secure the budget and time allocated to waste management. 	<ul style="list-style-type: none"> • Waste management being only one element amongst others in works contracts, it is often neglected. • Upstream studies on waste management planning and pre-audits on demolition sites are rarely performed. • Lack of traceability and control of the recycling rate on which the winner of the call for tender committed himself.
Recycling process and techniques	<ul style="list-style-type: none"> • Systematizing buildings ecoconception would be a major driver to easing end-of-life deconstruction and recycling • Many innovative companies and R&D programmes 	<ul style="list-style-type: none"> • Lack of space on building sites • Most often demolished buildings were not conceived as to be easily deconstructed and recycled. • There are only 15 mechanised sorting lines in the whole country.

7. CDW sector characterisation

In this section some specific characteristics of the CDW management sector in France 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

Waste related characteristics of Building and Public Works sectors⁷¹

- Building works and Public works sectors are very different in terms of sites typology, types and quantity of CDW and recovery streams.
- The great diversity in building sites size, localisation and the frequency makes an adapted CDW collection organisation necessary and requires sorting and gathering platforms.
- On a building site there is a multitude of stakeholders (client, prime contractor, control office, subcontractors...) which are directly or indirectly concerned by CDW management.
- There is also a great diversity in the professions and the size of the companies which is a source of difficulties when it comes to information, awareness-raising and training.
- Most CDW are inert, sometimes being mixed at source with non-inert non-hazardous waste.
- Most of non-inert non-hazardous waste end-up in traditional collection and treatment streams of household and other economic sectors waste, where they cannot be properly recycled because of maladjusted sorting and recycling tools.

Companies and employment

It has not been possible to find precise data on the number of companies and employees in the CDW recovery/recycling sector. The only available data concern the number of members of the two main professional federations:

- SRBTP (Building and Public Works Recyclers Trade Union), which is an emanation of the FFB (French Building Federation). As of April 2015, the SRBTP had around 100 members, mainly small and medium independent companies.
- FEDEREC BTP (Building and Public Works branch of the Recycling Companies Trade Union). As of September 2014 they had around 40 members.⁷²

As regards employment, it is also hard to find some statistics but, according to Helder de Oliveira, Director of the Ile-de-France waste regional observatory (ORDIF) it is considered that landfilling 100 tonnes of CDW creates 3 jobs while recycling them creates 9 jobs⁷³.

Another source of information is the already mentioned CERA study

CDW collection and transport schemes

CDW can be taken by their producers either to sorting/transit/recovery facilities or directly to storage facilities.

The main types of sorting/transit/recovery facilities are:

- Public waste collection sites when they accept small quantities of CDW. Services there might be free but also paid, depending of the quantities and the nature of the waste.
- Private waste collection sites. CDW might be taken there but they might also be collected directly on site by the collection site's trucks.
- Gathering platforms.
- Sorting /recovery platforms.

According to an ADEME study of 2011, 50% of the producers take their CDW to sorting/transit/recovery facilities and 50% take them directly to storage facilities⁷⁴.

⁷¹ ADEME (2014), Waste from building

⁷² Actu Environnement (2014), CDW : Federec creates a new branch to bring all industry players together

⁷³ Conseil Régional d'Ile-de-France (2014), CDW : a mine to recover

⁷⁴ ADEME (2012), Study on the price of eliminating inert waste from building and public works

Waste can be transported by the waste producer, by the collection site/recycling facility or by a transport company. Waste transportation must be registered at the Prefecture if the transported quantities exceed 100 kg of hazardous waste or 500 kg of non-hazardous waste, except for inert waste transportation.

Transport companies taking over waste must be listed in the road hauliers and hire companies register.

CDW treatment schemes

Depending on the nature of the waste there are different types of facilities:

- Quarries backfilling
- Inert recycling facilities
- Aggregate recycling facilities
- Non-inert non-hazardous CDW recycling facilities
- Incineration units. There are some units reserved to non-hazardous waste and other for hazardous waste.
- CDW storage facilities: there are centres for inert waste (ISDI), for non-inert non-hazardous waste (ISDND) and for dangerous waste (ISDD).

CDW recycling and storage facilities can be operated by different types of actors: building firms, waste recycling professionals, quarries...

Those different actors are represented by several sectorial organisations, the main ones being:

- French union of quarry and building materials industries (UNICEM)
- Construction Products Industries Association (AIMCC)
- National Public Works Federation (FNTP)
- French Building Works Federation (FFB)
- Building Craftsmen Professional Organisation (CAPEB)
- National Union of Demolition Companies (SNED)
- Building and Public Works Recycling Union (SRBTP)
- Building and Public Works branch of the Recycling Companies Federation (FEDEREC BTP)

Building and Public Works sector capacity to boost CDW recycling and recovery

It would be hard for the existent actors involved in CDW management to drive increased recycling and recovery of CDW in order to achieve the WFD target without the development of the recovery and recycling facilities territorial network and the strengthening of the fight against illegal landfills. Indeed, the lack of recovery/recycling facilities, combined with insufficient resources allocated to law and regulation enforcement, tends to increase the number of illegal landfills.

In order to illustrate the importance of a dense treatment sites network, it is to be noted that according to the above mentioned ADEME study of 2011, half of the CDW loads travel less than 20 km and 90% less than 50 km⁷⁵.

Another example is the CDW management in Grand Paris project. It is estimated that between 2015 and 2030, Grand Paris Express works will generate at least 60 Mtonnes of CDW.⁷⁶ A recent parliamentary report⁷⁷ pointed out the insufficient number of waste storage facilities. As of 2015 the society in charge of the project identified only 18 inert waste storage facilities, 10 for non-hazardous waste and 3 for hazardous waste. What is more, the total storage capacity should decrease as to reach zero in 2025...

But, as stated in the summary, certain types of treatment facilities (mainly the ones subject to authorisation and/or in difficult environments) can be very long and complicated to open.

⁷⁵ ADEME (2012), Study on the price of eliminating inert waste from building and public works

⁷⁶ Le JDD (2015), Grand Paris Express: tonnes of underground waste

⁷⁷ Assemblée Nationale (2014), Information report

7.2. Exports / imports of CDW

The exports/imports of CDW are marginal in France. As stated above, in 2011, reported imports of waste (not only CDW) have reached 2.2Mt (among which 765Kt of uncontaminated soil and stones were imported to be recycled)⁷⁸ and reported exports of was have reached 1.5Mt (among which 50Kt of uncontaminated soil and stones were exported to be recycled)⁵⁰¹. Those figures are to be compared with the 247 Mt of CDW produced in 2012.

The CDW recycling/recovery/storage capacity in place in France is not sufficient but it is not compensated, nor is it meant to be, by exports since, as stated in paragraph 2.7.1, there is no economic interest in having CDW travel more than 50 km, except for very specific types of waste.

Imports/exports can be an interesting solution for companies (either building firms or recyclers) located close to French borders but they cannot be a solution for French CDW in general.

7.3. CDW as landfill cover

CDW are frequently used as landfill covers, for quarries backfilling or as materials for road construction.

Regarding landfill covers of non-hazardous waste storage facilities, the regulations state that the geometry, the thickness and the nature of landfill covers shall be specified in the facility operating plan⁷⁹.

It is hard to determine how widespread is the use of CDW for covering landfills in France since there is no specific data on this practice.

7.4. Market conditions / costs and benefits

The costs corresponding to the regulatory disposal of CDW represents between 2% and 4% of the building sector turnover, depending if waste can be sorted or not, which is equivalent to 1.2 to 2.4 M€ per year⁸⁰.

General Tax on Polluting Activities (TGAP)

This tax is payable by the companies which activity or products are considered as pollutant: waste, polluting emissions, lubricating oils, detergents, extracted materials... The amount of the TGAP depends on the activity and product category:

- 2015 TGAP on extracted materials⁸¹: 0,2€ per ton⁸²
- 2015 TGAP on waste elimination and transfer⁸³ (see table below):

Non-hazardous waste storage facility		2015 rate (€/ton)
Waste received in an ICPE unauthorized storage facility		150
Waste received in an ICPE authorized storage facility	EMAS registered or ISO 14001 certified	32
	Subject to a biogas energy recovery higher than 75%	20
	Stored and treated using the bioreactor method	14
	Other	40

⁷⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), 2011 Report on the cross-sectoral movement of waste within the framework of regulation n° 1013/2006 of the European Parliament and Council and the Basel Convention

⁷⁹ Legifrance (2015), Decree of the 12th of December 2014- Article 33

⁸⁰ FFB (2014), Waste from sites

⁸¹ Applicable to any person delivering or using for the first time on the domestic market extracted materials naturally occurring as grain or obtained from crushed rock which largest size is lower or equal to 125mm.

⁸² CCI Paris Ile-de-France (2015), TGAP (Tax on polluting activities) applied to mined materials

⁸³ CCI Paris Ile-de-France (2015), TGAP (Tax on polluting activities) applied to waste elimination and waste transfer

Non-hazardous waste incineration facility		
Waste receive in an incineration facility	EMAS registered or ISO 14001 certified	8.21
	Showing a high energetical performance	7.19
	With Nox values below 80mg/Nm3	7.18
	Meeting at least two of the above criteria	4.11
	Other	14.37

Hazardous waste	2015 rate (€/ton)
Waste received in a recovery/recycling facility	11.02
Waste received in a storage facility	21.98

CDW Recovery/recycling and storage costs

Those costs vary widely depending on the type of waste and the facilities. Therefore it is hard to estimate those costs and there are numerous sources. The figures presented below come from a 2014 French Building Federation (FFB) study⁸⁴:

- Recovery/recycling
 - Inert waste recycling unit: a few euros per tonne
 - Non-inert non-hazardous waste recycling unit: variable (sometimes free)
 - Hazardous waste specific treatment unit: between 200€ and 1200€ per tonne
 - Incineration unit: between 60€ and 110€ per tonne
- Storage
 - Inert waste storage unit: between 1€ and 8€ per tonne
 - Non-inert non-hazardous waste storage unit: between 80€ and 120€ per tonne
 - Hazardous waste storage unit: between 200€ and 500€ per tonne

Logistics is also an important part of the total CDW treatment cost:

- Renting costs of a truck is around 90€/hour
- Skips can be charged up to 50€ per month if the number of rotations is not high enough

Construction materials scarcity

France needs around 400 Mtonnes of aggregates every year⁸⁵ and this figure is meant to increase due to the demographic evolution, the densification of transport networks and the growth of the average ground area devoted to housing.

In 2011, the production of aggregates in metropolitan France was estimated to 354 Mt⁸⁶ (excluding recycling) and there were around 2,300 aggregate extraction sites, compared to 3,500 in 1982.

The main reasons are the resource scarcity, the growing number of the protected areas, the regulatory framework that makes quarries opening and extension applications long and expensive, and a growing Nimby factor⁸⁷.

It is in particular the production of loose rocks that is decreasing (from 2,300 production sites in 1982 to 1,100 sites in 2008) while the production of solid rocks remains steady with a bit more than 1,000 production sites⁷⁸.

⁸⁴ FFB (2014), Waste from sites

⁸⁵ UNPG (2011), Quarries and aggregates by 2030

⁸⁶ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), The production of aggregates

⁸⁷ Usine Nouvelle (2010), Tomorrow aggregates will be worth their weight in gold

But when it comes to future aggregates needs, estimated to 500 Mtonnes per year by 2035⁷⁸, aggregates professionals remain confident in their ability to fulfil them, provided several measures are implemented:

- Put the aggregates supply into public policies;
- Improve the acceptability of the activity;
- Set up a collaborative management of the activity.

7.5. Recycled materials from CDW

The main CDW product is recycled aggregates, used for backfilling and road building. As of today, the EoW status for aggregates made from CDW for on-road applications is work in progress. The Ministerial Order project was put into consultation from 01/08/2014 to 12/09/2014. But according to CDW recyclers, the current text is not usable in its current state because the currently accepted sulphate rate is too low and also because the text requires numerous analyses to be run a priori, which is not possible on the small sites with a high stock rotation.

In 2011, out of the 379 Mt of aggregates produced, 25 Mt came from recycling⁸⁸.

About 50% of recycled aggregate are produced by quarries. For quarrymen recycled CDW are growth drivers. They use them to produce basic low-margin construction materials, saving natural resources (rocks, gravels...) for more complex products with more demanding technical specifications.

Other recycled materials from CDW exist:

- Incineration bottom ash from non-hazardous waste (includes waste not being CDW). The technical and environmental criteria of incineration bottom ash were specified by the Ministerial Order of 18 November 2011⁸⁹. It is estimated that each year 3 Mtonnes of incineration bottom ash are produced⁹⁰.
- Concrete and building sites sludge can be recycled into sand and gravel to be used for concrete, surfaces or regravelling. In Île-de-France around 0.35 Mtonnes of concrete sludge are produced every year⁹¹. In France the company Clamens is a pioneer and a leader in concrete and building sites sludge recycling, with a special treatment removing all the carbon dioxide contained in the sludge.

Regarding public procurement, as of now there are two important barriers to an increased use of recycled materials from CDW:

- Contractors must demonstrate that it is technically possible to use construction materials from recycling.
- The main criteria regarding public procurement remains the price, which is an issue since recycled materials may be more expensive than natural materials (transportation costs can be an important barrier to the use of recycled materials when natural materials are available close by).

We found no information on the attitude of construction operators' insurers towards the use of recycled CDW.

EPDs

Since January 2014, companies getting to market construction materials highlighting environmental advantages must establish an environmental declaration based on the lifecycle analysis of the product.

⁸⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), The production of aggregates

⁸⁹ Legifrance (2015), Decree of the 18Th of November 2011 concerning the recycling in road technical cinders in the incineration of non-hazardous waste

⁹⁰ Order of 18 November 2011 related to the use of non-hazardous waste incineration bottom ash as a road construction material

⁹¹ TSM (2011), Clamens recycles concrete sludge

Some R&D programs

- Cematerre⁹² is a new construction material made of soil, recycled concrete aggregates, lime, flax fibre, cement and water. It can be poured as concrete and has three times higher acoustic and thermal insulation performances.
- Toprak, created by the same company that developed Cematerre, is a projected single layer coating that is soil-based and meets the norms of the Building sector Scientific and Technical Centre.
- Recybeton aims at reusing 100% of deconstructed concrete (including fines) as constituent of new concrete and as raw material for cement production⁹³.
- MURE⁹⁴ is a research project aiming at improving the recycling process of warm asphalt mixes and to develop industrial applications for the multirecycling of the mixes.

7.6. Construction sector make up

Housing construction

In 2014, there were 297,532 housing starts, which is a 10.3% decrease compared to 2013⁹⁵.

2014 housing starts repartition by type of construction:

- 266,544 correspond to new buildings
- 30,988 correspond to construction on existing buildings

2014 housing starts repartition by type of housing:

- 126,800 individual housings (-19.1% compared to 2013)
- 147,057 collective housings (-6% compared to 2013)
- 23,672 housings in residences (+26% compared to 2013)

Non-residential construction

In 2014, the construction of 25.3 million m² of non-residential buildings was initiated, which is an 8.8% decrease compared to 2013⁹⁶:

- Hotels: 0.6 million m²
- Offices: 2.9 million m²
- Businesses: 3.4 million m²
- Craft trades: 0.9 million m²
- Industry: 2.6 million m²
- Farms and loggings: 6.5 million m²
- Warehouses: 3.3 million m²
- Public services: 5.0 million m²

General data on the construction sector⁹⁷

- The turnover of the construction sector reached 193 billion euros in 2013, 65% for building works and 35% for public works.
- There were 1.2 million employees in the construction sector in 2013, 78% in building works sector and 22% in public works sector.
- The construction sector hired 231 579 people in 2013, 86% in the building works sector and 14% in the public works sector.

⁹² Portraits d'entreprises innovantes (2015), Cematerre reinvents a "concrete" material : soil !

⁹³ Recybeton (2013)

⁹⁴ PN MURE, Presentation

⁹⁵ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), Housing construction : Results till late December 2014

⁹⁶ Ministère de l'Ecologie, du Développement durable et de l'Energie (2015), Housing construction : Results till late December 2014

⁹⁷ Observatoire des métiers du BTP (2015), Figures

- There were 519,140 companies in the construction sector in 2013, 92% in building works sector and 8% in public works sector. The 3 regions with the greatest number of construction companies were Île-de-France, Provence-Alpes-Côte d'Azur and Rhône-Alpes.

Construction products and materials market data

In 2011, out of the 379 Mt of aggregates produced, 25 Mt came from recycling⁹⁸.

In 2013, the whole sector produced 496 Mt of materials (+0.4% compared to 2013), including⁹⁹:

	Quantity produced (Mt)	Revenue (M€)
Aggregates	366	3,892
Concrete products	21.3	2,783
Ready-mix concrete	38.7	3,959

Other construction materials: in 2013, the production of cement amounted 17.5 Mt and the production of tiles and bricks amounted 4.4 Mt.

materials: in 2013, cement amounted

Trends and forecasts of the sector

After a bad 2014 year (28,700 jobs destroyed) , the activity should remain uneven in 2015 (decrease of new housing on one hand, slight improvement of maintenance and upgrading activities on the other hand)¹⁰⁰. The construction sector should not experience a significant rise in activity before 2017.

⁹⁸ Ministère de l'Ecologie, du Développement durable et de l'Energie (2014), The production of aggregates

⁹⁹ UNICEM (2013), 2013 Statistics

¹⁰⁰ FFB (2014), 2014 review and 2015 previsions

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Other consulted stakeholders

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

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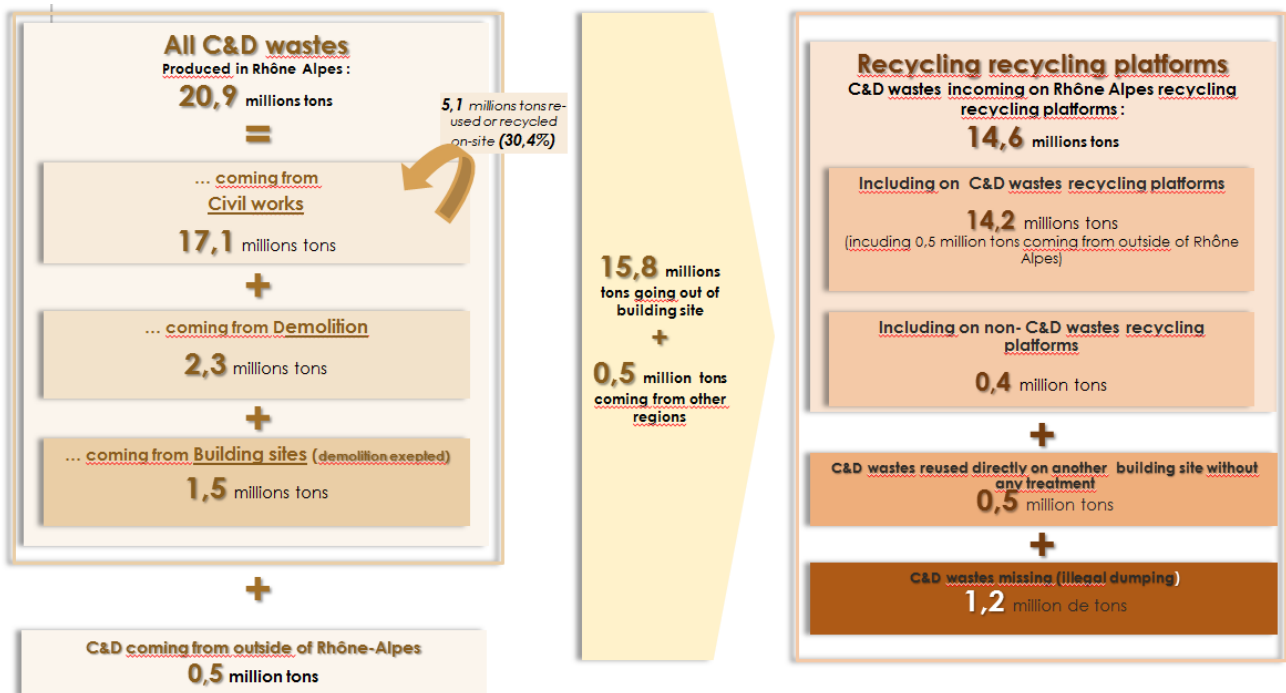
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Annex

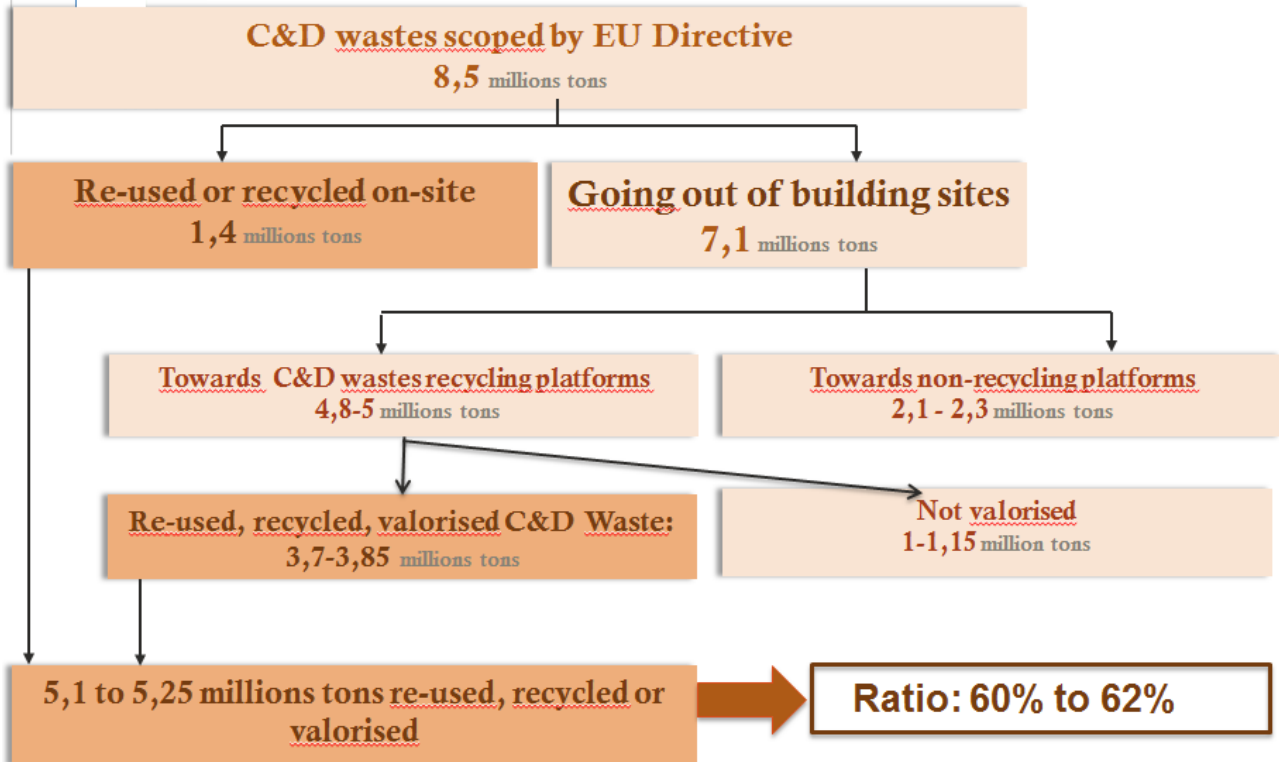
Annex 1: Extract of the study run by the Rhône-Alpes Economic Cell (CERA) on 2012 CDW generated quantities



Annex 2: Extract of the study run by the Rhône-Alpes Economic Cell (CERA) on 2012 CDW treated quantities



Calculation in accordance with the Waste Frame Directive



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