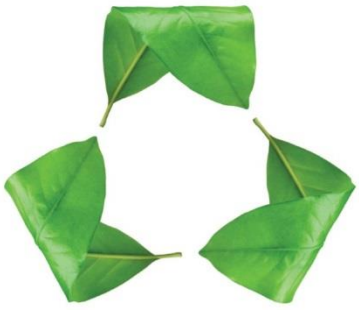
Construction and Demolition Waste management in HUNGARY

V2 – September 2015



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Screening factsheet

1. Summary

Construction and Demolition Waste (CDW) management national performance

	2009	2010	2011	2012	2013
CDW generated (tonnes/year)	3,925,562	4,166,936	4,415,406	3,808,739	3,772,150
Landfilled CDW (tonnes/year)	1,897,080	1,232,657	2,076,371	757,639	708,909
Landfilled %	48	30	47	20	19
Material recovery (tonnes/year)	2,027,768	2,933,919	2,338,761	3,050,797	3,062,943
Material recovery (%)	52	70	53	80	81
Energy Recovery (tonnes/year)	332	182	75	134	58
Energy Recovery (%)	0	0	0	0	0
Incinerated (tonnes/year)	382	178	198	169	240
Incinerated (%)	0	0	0	0	0

In 2013, 19% of CDW was landfilled in Hungary (709,000 tonnes), which is a decrease of 29% since 2009. In 2004, around 91% of all non-hazardous CDW was landfilled. With the introduction of the Landfill Tax in 2013 it is thought that that this figure will continue to reduce. The recovery figures include backfilling.

CDW	2014	2015	2016	2017	2018	2019	2020
Produced CDW (tonnes)	4,000,000	4,000,000	3,900,000	4,100,000	4,200,000	4,400,000	4,800,000
Recovered CDW (%)	60	62	64	68	72	74	75
Disposed CDW (%)	40	38	36	32	28	26	25

CDW arisings have been modelled year on year, which shows that by 2020, 1 more million tonnes of CDW could be produced compared to 2013. The Waste Framework Directive target of recovery 70% of CDW is modelled to be met early in 2018.

Waste producer, collectors, dealers and managers are required to provide information on a regular basis (quarterly or annually) on the waste generated from their activities or treated by them if above a certain threshold. This information is logged into a central database. The Hungarian Government have recognised that the adequacy of waste data collection needs to be reviewed, including reporting different sources, and to this end a Government decree is in preparation.

CDW management practices

Of the 3.8 million tonnes CDW treated in 2013, 63% was backfilled and it has been recognised by Government that there needs to be stricter rules. There is a lack of national coverage for modern processing plants and their capacities are insufficient for the amounts of CDW produced and investment is often

dependant on EU funding. There are requirements for the separate collection of a number of CDW types when they reach a tonnage threshold. The use of mobile recycling / recovery facilities is high.

Data for 2013	HAZ (tonnes)	N-HAZ (tonnes)	TOTAL (tonnes)
Total treatment	100,436	3,516,483	3,616,919
Disposal (all D codes)	52,408	187,366	239,774
Backfilling (R5 partim)	850	2,259,239	2,260,089
Energy recovery (R1)	371	58	429
Other recovery - except backfilling (R2-R11; R5 partim)	49,838	1,090,808	1,140,646

There are rules in place for CDW management, where waste producers have to record the types and quantities of non-hazardous CDW and these are submitted to the building authority. These rules, at the time of writing are being rewritten as it has been recognised that there is a lack of guidance on how CDW materials can be used; however there are a number of standards that have been developed in terms of utilising CDW in certain applications.

Main obstacles to sustainable CDW management

- End of Waste criteria
  - There are no End of Waste criteria for CDW and as such there is a lack of procedures and guidance on where and how CDW can be used and in what specific areas, or where their use is prohibited. .
- Current guidelines
  - The existing CDW specific guidelines are outdated and ineffective. Subsequently new guidelines and technical information are essential in driving change.
- Lack of facilities
  - Modern processing plants within Hungary are not informally accessible throughout the nation. Furthermore, the capacities in those facilities that are present are insufficient for the CDW generated within Hungary.
- Environmental awareness
  - Construction projects within Hungary generally do not fully apply the environmental aspects of waste management.
- Recycled materials
  - Public civil engineering and hydraulic engineering projects do not have to require a minimum level of recycled CDW materials used in their construction.
- Price of recycled CDW materials
  - The price of recycled CDW materials is often expensive when compared to virgin materials and there is a lack of awareness of specifying and using these products.

Main drivers to sustainable CDW management

- Landfill Tax was introduced into Hungary in 2013 for a number of waste types including CDW. This has been successful so far and it is believed that this will continue to reduce the amount of waste landfilled and therefore improve CDW management within Hungary.
- Detailed rules for CDW Management are being rewritten which provides an opportunity to address End of Waste criteria and provide other appropriate guidance

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

In this section the definitions of waste used in Hungary are explored.

2.1. Definition of waste

The waste definition has been established in the **Regulation 2000. XLIII. on Waste Management**[1]. There is no other waste definition in previous or later legislation. The definition is '**waste** is a substance or object in Annex 1 of the Regulation which the holder discards or intends to discard or is required to discard'.
The definition complies with the Waste Framework Directive 2008/98/EC (WFD).

2.2. Definition of construction and demolition waste (CDW)

CDW is defined in **Decree 45/2004. (VII. 26) On detailed rules for the management of construction and demolition waste**[2] as '**Construction and Demolition waste is the waste produced during the construction works listed as in Table 1.** If any of the CDW Categories in Table 1 exceed the set quantitative limits, the waste producer (Construction Company) is required to separately collect the waste in order to enable easy recycling/recovery.

Table 1 Categories of CDW[3]

Number	Groups of waste materials according to quality	EWC	Limit (tonnes)
1	Excavated soil	17 05 04 17 05 06	20.0
2	Concrete debris	17 01 01	20.0
3.	Asphalt rubble	17 03 02	5.0
4	Wood	17 02 01	5.0
5	Metal	17 04 01 17 04 02 17 04 03 17 04 04 17 04 05 17 04 06 17 04 07 17 04 11	2.0
6	Plastics	17 02 03	2.0
7	Mixed construction and demolition waste	17 09 04	10.0
8	Mineral construction waste materials	17 01 02	40.0

[1] http://www.szennyviztudas.bme.hu/files/2000i_43%20t%C3%B6rv%20hullad%C3%A9kgazd%C3%A1lkod%C3%A1sr%C3%B3l.pdf
[2] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0400045.BM
[3] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0400045.BM

Number	Groups of waste materials according to quality	EWC	Limit (tonnes)
		17 01 03 17 01 07 17 02 02 17 06 04 17 08 02	

The CDW definition contains excavated non-hazardous soil and plastic. The hazardous waste streams of Category 17 of the Waste Catalogue are not included in Table 1 and therefore are not within the CDW definition. The European Waste Catalogue (EWC) was first established in Hungary by **Decree no. 16/2001 on the list of wastes[4] (VII. 18)**, as amended. The current legislation containing **the list of waste is Decree no. 72/2013. (VIII. 27)[5],** and complies with the European Waste Catalogue.

2.3. End of Waste (EoW) status

The criteria for End-of-Waste (EoW) are established in Article 7, paragraph 9 of the **Waste Act 2012. CLXXXV[6]**. These criteria are similar to the ones defined in article 6 (1) and (2) of the WFD. To achieve EoW status an object or substance has to comply with set limitations for hazardous substances and with Article 6 of Directive 2008/98/EC of the European Parliament and of the Council to avoid negative impacts on the environment. If a certain waste stream does not have set EoW requirements made by the EU, the Hungarian Ministry of Agriculture can decide on the specific requirements.

End of waste for CDW

There is a lack of CDW specific EoW criteria and associated evaluation with no detailed rules for EoW for CDW in existing legislation. In connection with the utilization of recycled construction materials, the current level of Government regulation is also lacking justification of the EoW status.

2.4. Definitions of waste treatment operations

The Hungarian official definitions of re-use, recycling and recovery comply with the WFD definitions. Article 2 of the **Waste Act 2012. CLXXXV[7]** defines these operations as follows:

- Reuse is any operation by which an object or substance not classified as waste is reused for the purpose for which it was provided;
- Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are used for backfilling operations. The exception of use as fuel is not mentioned in the recycling definition as in WFD;
- Recovery means any treatment operation resulting in changes where the waste serves a useful purpose by replacing other materials which would have been used to fulfil a particular function in the facility or in the wider industry; a non-exhaustive list of recovery operations is the same as in Annex 2 of the WFD;
- Backfilling is a recovery or disposal operation, where waste is used for a suitable purpose for replacing non-waste materials in a place of excavation or landscaping operations.

[4] http://www.kvvm.hu/szakmai/hulladekgazd/jogszabalyok/16_2004_modositott.pdf
[5] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1300072.VM
[6] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200185.TV
[7] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200185.TV

3. Legal Framework – Waste Management Plans and Strategies

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

3.1. Legislation concerning CDW in Hungary

First pieces of legislation on CDW

Act of Environmental Protection (Act LIII of 1995) sets obligations for responsible waste management and construction activities in line with environmental protection.

Act LXXVIII on Built Environment and Conservation 1997 for CDW - it states that the client and contractor are jointly responsible to ensure the disposal/transfer of CDW from the construction site, eliminate environmental damage, and to return the landscape in its original or required state within the period specified by the building authority.

Waste Framework Directive transposition

There were major changes introduced recently in the area of waste management by implementing the **Waste Act CLXXXVI of 2012**[8]**.** This Act introduced a Landfill Tax, as well as waste prevention within the waste hierarchy. This replaces **The Waste Management Act (Act XLIII of 2000).**

- Monies from the **Landfill Tax** are spent for the purposes set out in **Government Regulation (VIII.28) 318/2013.** This Regulation explains the amount of proceeds, payment of contributions to the landfill, as well as the use of landfill goals. It has funded the development of Waste Management Plans (WMP) and Strategies.

Other waste regulations

- **Government Regulation 309/2014. (XII. 11.)**– sets obligations for waste producers, waste holders, carriers, brokers, traders and waste facilities to keep a record of waste.
- **Regulation 439/2012(XII. 29)** - requires carriers, brokers and facilities to register with the relevant environmental authority before starting any waste management activities.
- **15/2003 (XI .7)** - sets requirements and rules for Regional Authorities to develop a Regional Waste Management Plan.
- **Regulation 2/2005 (I. 11)** - the environmental assessment of Waste Management Plans and Programs.
- **72/2013. (VIII. 27.) VM Decree** - establishing the List of wastes,
- **29/2014. (XI. 28.) FM Decree** – covers waste incineration
- **Government Decree 164/2003** – covers obligations for waste recording and reporting.
- **Regulation 314/2005 (XII. 25)** – environmental impact assessment (EIA) and the integrated environmental permit procedure.
- **Government Regulation 271/2001 (XII. 21)** - the level of fines in waste management and the way of imposing them.
- **310/2013. (VIII. 16.) Government Decree** - with detailed requirements for Waste Management Plans.

Extended producer responsibility

- **369/2014 on the management of end of life vehicles (XII. 30)** Government Decree;
- **445/2012 on batteries and related accumulator waste management activities. (XII. 29)** Government Decree;
- **197/2014 on waste management activities related to electrical and electronic equipment (VIII. 1)** Government Decree;
- **442/2012 on packaging and waste management activities relating to packaging waste (XII. 29)** Government Decree;
- **20/2005 on the management of human pharmaceuticals and packaging wastes**. (VI. 10) the Minister of Health;
- **The pesticide contaminated 103/2003 on the management of packaging waste**. (IX. 11) FVM.

[8] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200185.TV

Hazardous waste regulations

Hazardous waste management is regulated by **Government Decree 98/2001 (VI 15) on activities related to hazardous waste.** The regulation is prohibiting mixing different types of hazardous waste and their dilution. The regulation does not specifically mention hazardous CDW, but it requires hazardous waste to be collected separately.

CDW specific regulations

- **Government Regulation 191/2009 (IX 15) On obligations for construction activities.** This is regarding the construction logbook according to. § 12 (2) c). The quantity and type of construction waste generated by construction and demolition work should be recorded. The construction diary is required to be undertaken electronically from October 1, 2013.
- **5/2004 (VII. 26) detailed rules for CDW management is the most relevant piece of legislation for this study.** Requires the waste producer to complete a **waste registration form** after the construction or demolition work is completed. It does not apply to hazardous waste. According to the Government, the Regulation is lacking guidance on where and how recycled construction materials can be used, or prohibition of their use. It is planned to address these issues in an amendment of this Regulation[9].
    - The waste type has to be summarized and exceeding quantities to limits in Regulation 45/2004 (VII. 26) have to be separated for recovery/recycling and treatment method has to be described in the Demolition Waste Registration card (example in Annex 2)
    - Detailed rules for the management of CDW have to be submitted to the relevant Environmental Authority.
    - After completing the construction activity a Construction waste registration card (Annex 3 of this document) has to be completed showing the types and quantities of generated waste. Waste transfer notes have to confirm the validity of the data. These two documents have to be submitted to the building authorities together with a request for the occupancy permit.

Future legislation

A new version of 45/2004 (VII. 26) detailed rules for CDW management is under development at the time of writing. Detailed rules for EoW for CDW on where and how recycled construction materials can be used or where they are prohibited is planned to be implemented in the new Decree on the CDW management.[10]

Landfill diversion policy

The Landfill Directive 1999/31/EC para. 5. (3), d) was implemented in Hungary through the **20/2006 (IV 5) on landfilling and landfill related rules and conditions regulation.**

3.2. Waste management plans (WMP) and Strategies

The current **National Waste Management Plan (NWMP) 2014-2020** is the third NWMP and it builds upon the findings from the previous NWMP 2003-2008. Section 2.4.5 is dedicated to CDW. The NWMP has been established within the **Government Decree 2055/2013. (XII. 31) on the National Waste Management Plan**.

- There are 7 regions in Hungary, each region's Environmental Authority is responsible for developing a Waste Management Plan.
- The municipalities are required to prepare Local Waste Management Plans. The deadline for this plan is 270 days after the Regional Plans have been published. The municipalities can find assistance on the webpage of the Ministry for Environment and Water. Local plans must be accepted by a local governmental order11.

The **National Waste Prevention Program (NWPP)** is part of the NWMP**.** The NWPP sets targets and measures to be implemented in order to achieve the required level of waste prevention. One of the main goals of the NWMP is to decouple the relationship between economic growth and environmental impacts caused by waste generation. Section 4.4.2.1 is for CDW and includes the following: the program draws attention to the alternative utilization possibilities of unused/dysfunctional buildings and structures. The building\area previously used for production can be refurbished for housing, storage, cultural purposes keeping the main structural features of the building.

[9] Vadász Enikő eniko.vadasz@fm.gov.hu

[10] Vadász Enikő eniko.vadasz@fm.gov.hu

The **National Environmental Program (NEP) 2014-2019**[12] specialises in environmental awareness in order to enhance sustainable lifestyles, with regards to production and consumption. This program contains a section on CDW describing the targets as well as the recommended measures to be implemented in order to achieve them.

CDW related documents under development

The Environment Development Department within the Ministry of Agriculture, is undertaking a study regarding CDW drivers/barriers, possibilities of increasing recycling/recovery rates across Hungary. At the time of writing, this study is still in development[13].

3.3. Legal framework for sustainable management of CDW

This section aims at identifying specific legislation that would create good conditions for a sustainable management of CDW as a preliminary overview for task 3.

Description	Level of occurrence (Yes/No) Key Scope/Exemptions	Year established and policy reference	Further detail, information source, related web-site
National/regional obligation for selective demolition?	Not currently but it is planned to implement it.		
National/regional sorting obligation (on-site or in sorting facility) ***45/2004 (VII. 26.) On Detailed rules for the management of construction and demolition waste, 3. §, section 2 and 3.***	If any of the CDW Categories in Table 1 of this document exceeds the set quantitative limits, the waste producer (construction company) is required to separately collect the waste in order to enable easy recycling/recovery, the separation has to be done onsite if possible or in the facility.	2004	http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0400045.BM
National/regional separate collection obligation for different materials (iron and steel, plastic, glass, etc.	None found		
Obligation for separate collection and management of hazardous waste from C&D operations	***Waste Regulation CLXXXV from 2012,*** 56. § (1)145 Hazardous waste cannot be mixed with other wastes or substances without a waste management permit	2012	http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200185.TV
Regulation CVIII 2011 on public procurement regulates public procurement structure.	As announced in the Széll Kálmán Plan14, the procurement must migrate to a new system that provides a simpler, faster and more transparent conduct of public procurement procedures. Regulation CVIII 2011 on public procurement regulates public procurement structure. The framework however does not contain any special rules on green public procurement process, or a description of the environmental criteria that apply to green public procurement procedures.		NWMP 2014-2020 page 257

[12] http://ftvktvf.zoldhatosag.hu/files/nkp/2009-2014_NKP_hatarozat.pdf
[13] eniko.vadasz@fm.gov.hu
[14] http://nkfih.gov.hu/policy-and-strategy/national-strategies/szell-kalman-plan2-0

3.4. Targets

Targets within the National Waste Management Plan 2014-2020 (NWMP)
The CDW target within the NWMP is to increase the amount of reused/recycled/recovered non-hazardous CDW by at least 70% by 2020. The target excludes naturally occurring materials under the waste code 17 05 04. **Measures** planned to be implemented in order to achieve this target are:

- Increase the use of products made of recycled CDW;
- Enable the competitiveness of these products on the market;
- Establish selective demolition; increase the capacities of CDW recovery facilities; development of a new enforcement regulation; and creation of economic and legal instruments necessary for increased utilisation of CDW.

As mentioned in the NWMP, the rules and calculation methods for verifying the fulfilment of the objectives set in article 11 of the WFD will be followed for evaluation. All CDW from Category 17 of the European Waste Catalogue (except hazardous waste and naturally occurring materials under 170504) will be included in the target calculation.

Backfilling practices are classed as recovery, but materials under the waste code 17 05 04 are excluded from the calculations. According to the NWMP, backfilling is not always recovery as such; sometimes the main goal is to overcome landfill charges. Backfilling is also used for reclamation of unused mine ponds for evaporation prevention, where the purpose is environmental protection of water sources.

Targets within the National Environmental Program (NEP) 2014-2019

- Increase the utilization rate of non-hazardous CDW until 2020 to at least 70%;
- Avoidance of landfilling CDW.

The measures necessary to achieve these targets which shall be implemented by the relevant Ministries of Hungary, are as follows:

- Regulating the use of CDW for backfilling;
- Developing selective demolition criteria and implementing in use;
- Increasing the capacity of CDW treatment facilities and establishing compulsory CDW recycling;
- Reviewing and updating related legislation (e.g. public procurement, reporting systems, and guidance documents).

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 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
The environment assessment scheme BREEAM is used on projects within Hungary	n/a	n/a	http://www.zoldirodapiac.hu/zold-irodak
The environment assessment scheme LEED is used on projects within Hungary	n/a	n/a	http://www.hugbc.hu/page.php?id=30
The environment assessment scheme DGNB is used on projects within Hungary	n/a	n/a	http://www.hugbc.hu/page.php?id=30

Extended producer responsibility (EPR) instruments

Material/ product type	Mandatory or Voluntary	Year established	National or regional (specify if regional)	Public sector and Industry lead organisation	Levels of performance e.g. tonnes recycled	Further information/ web-site
CLXXXV /2012. Waste regulation	Packaging materials, oils, batteries and accumulators, tyres	2012	National	Government		http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200185.TV
369/2014. (XII. 30.)	End of life vehicles	2014	National	Government		http://www.kornyved.hu/rendelet/369%202014.pdf
445/2012. (XII. 29.)	Batteries and accumulators	2012	National	Government		http://www.rebat.hu/media/445-2012.-korm.-rendelet.pdf
197/2014. (VIII. 1.)	WEEE	2014	National	Government		http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1400197.KOR
442/2012. (XII. 29.)	Packaging	2012	National	Government		http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A1200442.KOR
20/2005. (VI. 10.)	Human pharmaceuticals and their packaging waste	2005	National	Government		http://www.complex.hu/jr/gen/hjegy_doc.cgi?docid=A0500020.EUM
103/2003. (IX. 11.)	Pesticides and their packaging	2003	National	Government		http://www.kvvm.hu/szakmai/hulladekgazd/jogszabalyok/kv/0302900.htm

Key CDW requirements and guidance

Description	Occurrence (Yes/No) Mandatory (Yes/No) Scope & exemptions	Year established	National or regional (specify if regional)	Details of Public sector and Industry enforcement/ involvement/ collaboration	Levels of performance e.g. tonnes recycled,% coverage	Further information/ web-site
Requirement for pre-demolition audits **A demolition plan has to be prepared according to** Government Regulation 312/2012 (XI.8) about construction and building inspection authority procedures and checks as well as administrative building services	The plan has to include demolition technology, outcomes of the building inspection including any asbestos and other hazardous materials within the building.	2012	National	Not found	Not found	http://koos.hu/2008/04/20/epulet-bontas-elokeszitese/
Selective demolition/ plan for large demolition sites/demolition standard	Not established yet in legislation but there is guidance on the National Waste Management Directory website	2013	National	Informative guidance	Not found	*http://szelektalok.hu/hulladek-vagy-masodnyersanyag-epitesi-bontasi-hulladekok/*

Technical guidelines, standards, and Codes of Practice for use of CDW in construction applications

Description of guidance/ tool	Scope	Year	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
Concrete production with utilisation of recovered CDW and other building materials	Lists the requirements for concrete production and relevant technical standards.	2010	National	Ministry of Agriculture(MoA)[15]	Not found	http://www.betonopus.hu/szakmernoki/kozut-6-bontott-adalekanyag.pdf
JM2/01 Main wall slabs made from crushed brick	Guidance for pre-made rigid, lightweight concrete production in accordance with MSZ EN 206-1:2002	2003	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/fofalazo-m-iranyelv.pdf
JM2/02 Pre-made light concrete slabs for basements made with addition of crushed brick,	Guidance for pre-made light concrete slabs for basements production in accordance with MSZ EN 206-1:2002	2003	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/pincefalazo-iranyelv.pdf
JM2/03 Indoor floor tiles made from crushed bricks	Guidance for indoor tiles made from crushed bricks in accordance with MSZ EN 206-1:2002	2003	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/jarolap-iranyelv.pdf
JM3/01 Guidance on CDW re-use	For construction materials containing hydraulic or bituminous binders and mineral wastes not containing binders	Not found	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/osztrak-maradekhull-utmut.pdf
JM3/02 Guidance	For re-use of CDW from structural engineering and materials without binders	Not found	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/osztra

[15] At the request of the MoE, the Building Maintenance R&D Foundation has prepared guidance determining the quality of reusable building materials in the footsteps of the Austrian Reusable Building Materials Quality Protection Association.

Description of guidance/ tool	Scope	Year	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
						k-kotoag-nellkul-utmut.pdf
JM3/03 Guidance	For re-use of CDW from structural engineering and materials with cement binders	Not found	National	MoA	Not found	http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/osztrak-kotoaggal-utmut.pdf

Description of guidance/ tool	Scope	Year	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
Standards for recycled CDW **Road construction**	General geotechnical rules of roads and motorways of E - 06:02:11 UT (2007 ROAD 2-1222)	2007	National	Industry is required to comply with the requirements	Not found	http://www.epito.bme.hu/uvt/oktatas/feltoltesek/BMEEOUVTUE2/szm_23_2012_burkolat_alapok.pdf
	Road course structures for unbound and hydraulically bound base layer design E- 06:03:52 UT (2-3207 ROAD : 2007)	2007	National	Industry is required to comply with the requirements	Not found	http://www.maut.hu/MAUTDATA/tartalomt%C3%A1r/jav%C3%ADt%C3%A1sok/hibajav%C3%ADt%C3%A1s_060352_20110515.pdf
Standards for recycled CDW **Bricks and tiles**	MSZ EN 771 series (and masonry panels)	2005	National	Industry is required to comply with the requirements	Not found	http://www.emi.hu/webadatbazisok/Publikaciok.nsf/PublicationsPreviewHTMLByDate/748F18A8ACCD953DC125719C004BDDCC/$FILE/Publ_2006_T%C3%B6r%C3%B6kn%C3%A9_Fala z%C3%B3elemek.pdf
	MSZ EN 1304 (ceramic tiles)	2000	National	Industry is required to comply with the requirements	Not found	http://www.emi.hu/webadatbazisok/Publikaciok.nsf/PublicationsPreviewHTMLByDate/B26BF6BAAA2FFC8CC1256E9800291B61/$FILE/Publ_%202004_%20T%C3%B6r%C3%B6k%20%C3%89va.pdf
	MSZ EN 490 (concrete roof tiles) The standards are for primary construction materials	2005	National	Industry is required to comply with the requirements	Not found	http://www.emi.hu/EMI/web.nsf/Pub/65W06E/$FILE/02-Recycling-TorokneE-EMI-szakmai-nap-2013.pdf

Organisations involved in Waste recycling /prevention initiatives

National Association of Recyclers (HOE)

- A national scientific consultancy and trade-advocacy, non-profit organization for public benefit supporting waste management and recycling companies, entrepreneurs, professionals and voluntary associations, organizations and legal entities. Its mission is to protect and care for secondary raw materials industry and environment training and educational activities.

Association of Environmental Enterprises (KSZGYSZ)

- The Association of Environmental Enterprises is a green industry trade advocacy, non-profit organization. Its aim is to develop the environmental culture, strengthen the role of the green industry, enforcement of professional interests, strengthening international relations. The Alliance initiative was founded in 1992 with 26 enterprises and at the time of writing has 265 members. Members include waste treatment and recovery facilities, wastewater treatment, air quality protection and otherwise engaged companies in environmental services, designers, accredited laboratories in the field of research and development service, manufacturers of products used in environmental protection and other representatives of the environmental protection industry. They organise regular working group meetings regarding CDW. Every two years since 2009 they organise the international trade fair ÖKOINDUSTRIA for industrial environments[16].

The Hungarian National Waste Management Agency (NWMA)

- The Agency was founded in 2011, it is a non for profit limited liability company, with a remit to take part in the prevention of environmental pollution and waste generation, to organize and manage the waste collection and recovery of the waste products which fall under product fee regulation and to assist the development of the relationship between human and environmental systems. NWMA was established by the Hungarian Ministry of Rural Development, and consequently acts as an authoritative voice.

From 1 January 2015 the tasks carried out by the National Waste Management Agency are now carried out by the National Inspectorate For Environment and Nature, National Waste Management Directorate (OKTF NHI).

Industrial symbiosis systems

- The industrial symbiosis systems and their supporting programs (e.g. The National Industrial Symbiosis Programme NISP) and supporting partners (e.g. Industrial Development Coordination Agency IFKA) seek to increase a particular resource through contacts and build up the exchange of information between the different areas of the industry. During the three-year period NISP achieved the following in the field of waste recovery:
  - The amount of industrial waste diverted from landfill: 1,200 tonnes
  - The reduction of primary raw material used: 1,238 tonnes
  - Reduce water consumption: 26,000 m^3

5. CDW management performance – CDW data

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

5.1 CDW generation data

According to the provision of Government Decree No 309/2014. (XII. 11.) the producer, the collector, the dealer and the manager of the waste are required to provide information on a regular basis (quarterly or annually) about the waste generated from their activities or treated by them if in the given year, at the given site more waste is produced or treated than that stipulated in the regulation. The waste managers are required to report on each waste type they receive, handle and also the waste they generate to the relevant regional environmental authority EHIR database, who logs them into the **OKIR Electronic Waste**

[16] http://www.okoindustria.hu/

Information System module (Hungarian acronym: EHIR). This is managed by the Ministry of Agriculture.. Data based on the European Waste Catalogue (EWC) are available starting from 2004 on

- the annual wastage reported by the producers;
- reported non-hazardous waste treated by the operators during the year;
- reported hazardous waste treated by the operators during every quarter-year;

Data collection

This is carried out under the Government Decree 309/2014. (XII. 11.)

- No information was found regarding differences in reporting for even and uneven years.

CDW generation data from OKIR

Detailed waste statistics can be found on the **National Environmental Information System website (OKIR)**[17]. The following information for waste generation can be downloaded by year:

- Total waste generation by regions (for primary waste – from waste producers and secondary waste - from facilities)
- Total waste generation by regions and waste type (primary and secondary waste) – this table was used for completion of the excel sheet 'Table_Gs1'
- Total waste generation by main waste categories of the waste catalogue
- Total waste generation by industry
- Total waste generation by NACE and waste type

CDW generated by households are included in this database. Breakdown by demolition, new build, refurbishment and DIY activities was not found.

In 2013, 3.77 MT of CDW was generated; the amount of CDW generated has decreased year on year, since 2009, this is largely linked to the decline in construction activity as shown by Table 2. Approximately 85,000 tonnes of hazardous CDW is produced (around 2% of the total).

Table 2 CDW generation in Hungary (data supplied by the Central Hungarian Statistical Office)

	2009	2010	2011	2012	2013
CDW generated (tonnes/year)	3,925,562	4,166,936	4,415,406	3,808,739	3,772,150

Hazardous waste generation in Hungary

- The European Waste Catalogue, which was introduced in 2002, reclassified several types of non-hazardous waste hazardous. There were interruptions in certain years (in 2005 and 2006), when the remediation of contaminated soil was classified as hazardous waste[18].The slag of certain power plants in Hungary was reclassified as hazardous waste resulting in a sharp rise in the volume of hazardous waste in 1997. The declining tendency of hazardous waste generation in the last decade has resulted largely from an output decline and methodological changes.

Data incompleteness

The data downloaded from the public database could be incorrect due to possibilities of waste producers providing data two times for the same time period, or not providing any information, delayed data or other issues[19]. However, the MoA believes the quality of data is satisfactory as they are fully controlled by law. The data are compiled in accordance with international standards for aggregated data.

Other data sources: regional waste generation data can be found on **ZOLD INFO LANC**[20], which is a public information website

[17] http://web.okir.hu/sse/?group=EHIR
[18] http://www.ksh.hu/docs/eng/xftp/idoszaki/ekornyhelyzetkep13.pdf
[19] Vadász Enikő eniko.vadasz@fm.gov.hu
[20] http://www.zoldinfolanc.hu/

5.2 CDW treatment data

CDW Treatment

CDW has to be identified if hazardous

- **For hazardous CDW** there are separate collection and specific regulations (e.g. asbestos removal[21])
- **Non-hazardous CDW**
  - exceeding the Regulation limitations - recovery in situ (depending on the possibilities) or waste contractor
  - under the limited amount – disposal

Data collection
The data collection methodology is described in section 5.1.

National Waste Statistics data online
Detailed CDW statistics can be found on the National Environmental Information System website (OKIR)[22]. The following information for waste treatment operations can be downloaded by year:

- Waste treatments by treatment codes
- Waste treatments by treatment codes and waste categories – this table was used to complete the Table_T2 sheet of the accompanying excel file
- Waste treatment by regions
- Waste treatment by main waste category

Full and up-to-date data on CDW treatment operations in Hungary for 2013 are provided in the accompanying excel file (sheet Table_T2 for the detailed breakdown). Table 3 shows a summary of this data.

Table 3 CDW treatment operations in Hungary for 2013 from the accompanying excel file (sheet Table_Ts1)

Data for 2013	HAZ (tonnes)	N-HAZ (tonnes)	TOTAL (tonnes)
Total treatment	100,436	3,516,483	3,616,919
Disposal (all D codes)	52,408	187,366	239,774
Backfilling (R5 partim)	850	2,259,239	2,260,089
Energy recovery (R1)	371	58	429
Other recovery - except backfilling (R2-R11; R5 partim)	49,838	1,090,808	1,140,646

Additional Treatment codes for pre-treatment operations:
The CDW treatment data from OKIR contains additional codes for pre-treatment activities (P0202, P0204, P0206, P0207, P0208, P0299, P0301, P0303, P0305, P0399). These codes are specified in Annex 1.These data were excluded from calculation of sheet Table_Ts1 in the accompanying excel file. See sheet "Table_T2".

Temporary storage of CDW
Information about CDW temporary storage was not found.

CDW treatment data from the NWMP 2014-2020
NWMP 2014-2020 shows a summary of non-hazardous CDW treatment from 20042013 (Table 4) and states the following conclusions:

- The amount of landfilled non-hazardous CDW has decreased since 2004, where 91% was landfilled to 47 % in 2011. The figure is expected to decrease further as in 2013 the Landfill Tax has been introduced, which is a major economic factor influencing the diversion of CDW from landfill.

[21] http://www.kvvm.hu/szakmai/hulladekgazd/hulladekgazdalkodas/hulladektipusok_azbeszt_hulladek.htm
[22] http://web.okir.hu/sse/?group=EHIR

- A major part of CDW ends up at municipal landfills. Sometimes, this form of deposition is required, but in many cases CDW is transported to municipal landfills due to their closer location. Landfilling CDW at municipal landfills significantly reduces their life span.
- The proportion of recovered CDW is growing every year. However, the recovery figures include backfilling.
- Around 60% of hazardous CDW is estimated to be landfilled.

Table 4 NWMP 2014-2020 shows a summary of non-hazardous CDW treatments from 2004-2013

	Non-Hazardous CDW treatment methods in Hungary									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CDW generated (tonnes/year)	4,060,208	4,129,514	3,996,041	3,670,169	4,881,837	3,925,562	4,166,936	4,415,406	3,808,739	3,772,150
Landfilled CDW (tonnes/year)	3,689,487	3,051,331	2,984,090	2,293,498	2,650,058	1,897,080	1,232,657	2,076,371	757,639	708,909
Landfilled %	91	74	75	62	54	48	30	47	20	19
Material recovery (tonnes/year)	370,367	1,077,854	1,009,649	1,376,321	2,231,230	2,027,768	2,933,919	2,338,761	3,050,797	3,062,943
Material recovery (%)	9	26	25	38	46	52	70	53	80	81
Energy Recovery (tonnes/year)	200	308	2,252	307	284	332	182	75	134	58
Energy Recovery (%)	0	0	0	0	0	0	0	0	0	0
Incinerated (tonnes/year)	153	22	49	43	265	382	178	198	169	240
Incinerated (%)	0	0	0	0	0	0	0	0	0	0

Data incompleteness

The waste data collection under the Gov. Decree 309/2014. (XII. 11.) is undertaken by electronic format from 1st January 2015.
. The current problematic areas are:

- Data under the quantitative limit of 45/2004 (VII. 26) – Table 1 of this document- are not recorded in the system.

Other waste data sources

- **Central Hungarian Statistical Office**[23] is a government organisation collecting statistical data from EHIR. CDW treatment data from their website are shown in Table 5.

Table 5 CDW Treatment data from Central Hungarian Statistical Office

	2006	2007	2008	2009	2010	2011	2012	2013
Material Recovery	1,010,000	1,376,000	2,231,000	2,028,000	2,934,000	2,339,000	3,051,000	3,063,000
Energy Recovery	2	0	0	0	0	0	0	0
Incineration	0	0	0	0	0	0	0	0
Disposal	2,984,000	2,293,000	2,650,000	1,897,000	1,233,000	2,076,000	758,000	709,000
Total	**3,996, 000**	**3 670 000**	**4,882,000**	**3,926,000**	**4,167,000**	**4,415,000**	**3,809,000**	**3,772,000**

Various data from different sources

The CDW treatment data is received by the Regional Environmental authorities who input the data into the OKIR database by EWC. The Ministry of Agriculture whom manages the OKIR database, annually sends reclassified information (from EWC to sectorial breakdown – Construction sector F) in a report to the Central Hungarian Statistical Office. The Central Hungarian Statistical Office also reclassifies the data to suit the Eurostat reporting requirements that are grouping the waste categories in sectors. The report is sent to Eurostat by Central Hungarian Statistical Office every two years[24].Requesting information from the Ministry of Agriculture Environmental department is the most accurate source of CDW data[25].

5.3 CDW exports/imports data

Export and import of waste for treatment does not play a significant role in Hungary, although there has been an increase in both areas due to the termination of boarders within the Schengen area and globalization of the recovery market. Very significant is transit traffic, which could be in the region of 4-5 million tonnes of waste every year. The most often exported CDW type is 17 04 05 iron and steel, where the tonnages for 2009-2011 are displayed in Table 6 which is from the NWMP 2014-2015. No other information has been found.

Table 6 Import and export of CDW category 17 04 05 (NWMP 2014-2020)

Year	Import (tonnes)	Export (tonnes)
2009	328	340,253
2010	2 217	628,065
2011	2 151	577,822

5.4 CDW treatment facilities data

Modernisation of the waste infrastructure is heavily dependent on EU structural funds as state and local municipalities provide limited financial resources for setting up waste management facilities.

[23] https://www.ksh.hu/stadat_eves_5
[24] Zsofia.Fabian@ksh.hu
[25] Vadász Enikő eniko.vadasz@fm.gov.hu

Landfilling of waste is regulated in Hungary by the Environmental Conservation and Water Inspectorate. The landfills that do not comply with the EU regulations have been closed down since July 2009. Currently there are 70 compliant landfills in Hungary, their total available capacity in June 2013 was 69,000,000 m^3 (source Annex 2 of the NWMP).

New landfills planned in Hungary
In the future, the landfill capacity is expected to be reduced and only the landfills in Table 7 are expected to be developed.

Table 7 Expected landfills to be built (NWMP 2014-2020)

Municipality	Planned completion date	Planned capacity (m3)
Somogy	2015	316,000
Komarom -Esztergom	2015	800,000
Baranya	2014	850,000
Bekes	2015	405,000
Gyor-Moson-Sopron	May-14	300,000

Existing CDW recycling/recovery facilities
The CDW recycling/recovery operators in Hungary are mostly carrying out pre-treatment activities. The biggest, operators are in the areas of Bodrogkeresztúr , Eger, and the Budapest agglomeration. The number of permits released is around 100. The use of mobile recycling / recovery facilities is high. The NWMP 2014-2020 states that the following 5 facilities have recycled the following amounts of CDW in 2011:

- Kaposvár 56,600 tonnes
- Kecskemét 124,200 tonnes
- Bodrogkeresztúr 52,000 tonnes
- Szolnok 28,970 tonnes
- Eger 125,470 tonnes

The number of treatment facilities, waste contractors, and other authorisations regarding CDW Category 17 released by the National Environmental and Nature Protection Inspectorate, the National General Directorate for Disaster Management, are listed in Annex 4 of this document. At the time of writing, there is no central coordination of the available facilities. Therefore, the facilities are often not profitable due to their full capacities not being utilized.

Mobile CDW facilities

- The use of mobile recycling/recovery facilities is high for recovery, pre-treatment, sorting, crushing and cleaning of CDW. They can be used for a maximum of one year on site.
- Information on their capacities is not available.

5.5 Future projections of CDW generation and treatment

The amount of CDW landfilled has been significantly reducing and the recycling/recovery rate (including backfilling) have increased in recent years. Additional landfill diversion is expected due to the implementation of the Landfill Tax. The amount of generated CDW is closely related to the crisis of development in the construction industry, which started in 2009. However, these conditions can't estimate a reliable forecast. There are long-term predictable business processes (e.g. the economic upturn in some countries and increased willingness to invest), that can better estimate the amount of generated CDW in the future. Due to the crisis expecting to continue to around 2015, the first 2-3 years of the forecasted period (2014-2020) shows stagnant amounts of CDW (Table 8). A negative impact is expected due to improvements in the reporting system as it will include lower quantity waste producers.

Another important condition is the 2014-2020 EU budget cycle, which is likely to have a beneficial effect on long term construction investments. On this basis, in the first part of the period around 4 million tonnes of CDW is expected with an increase in the second period. The recovery rate will rise due to the measures put in place as a greater proportion of the CDW will be diverted from disposal to recovery.

Table 8 CDW Forecast including generation, recovery and disposal quantities, excluding 170504

CDW	2014	2015	2016	2017	2018	2019	2020
Produced (tonnes)	4,000,000	4,000,000	3,900,000	4,100,00	4,200,000	4,400,000	4,800,000
Recovered (%)	60	62	64	68	72	74	75
Disposed (%)	40	38	36	32	28	26	25

5.6 Methodology for CDW statistics

The methodology on waste data collection is described in section 5.1 of this document. No information was found regarding any changes to this methodology.

6. C&D waste management in practice

In this section the CDW management "on the ground" in Hungary is explored.

6.1. CDW management initiatives

To improve waste management in Hungary and to achieve the targets set out in the various EU Directives between 2014-2020 the required financial resources are set by the Environment Efficiency and Energy Operational Programme [26] (KEHOP), the Economic Development and Innovation Operational Programme[27] (GINOP) and the Regional and Local Development Operational Programme[28] (TOP) available.

Reprowis cross-border programme

A Hungarian-Slovakian Cross-Border Co-Operation Programme called REPROWIS – Reducing Production Waste by Industrial Symbiosis[29] is an industrial symbiosis programme conducting surveys, research and workshops with the aim of identifying potential materials for re-use from SME's. The project has now finished and was managed within Hungary by the Organisation for Public Benefit, IFKA.

Guidance on CDW

The working group of the Ministry of Agriculture is developing guidance for separate collection of CDW and CDW management. For more details: http://szelektalok.hu/hulladek-vagy-masodnyersanyag-epitesi-bontasi-hulladekok/; Vadász Enikő eniko.vadasz@fm.gov.hu

[26] http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CCkQFjAB&url=http%3A%2F%2Fpalyazat.gov.hu%2Fdownload%2F50248%2F3%2520KEHOP%2520honlapra%25202013%252012%252002.pdf&ei=a_F2Vc-aC6Of7ga2voDwCA&usg=AFQjCNH_UWIAXDcmWG_F35tTaVJJI9VT2w&sig2=3jBSeZc3LiCE7ec_gb_bgA

[27] http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=3&ved=0CDMQFjAC&url=http%3A%2F%2Fpalyazat.gov.hu%2Fdownload%2F1781%2FGOP_070702_EN.pdf&ei=xvF2VefhNeXj7Qar-IHwDA&usg=AFQjCNESA3hwkWocSu3o6Ap699SMxtueDQ&sig2=3ILstRjDnxdZFvwQ7ZaV9g&bvm=bv.95039771,d.ZGU

[28] http://www.energiaklub.hu/sites/default/files/farkas_zsuzsanna_-_top.pdf

[29] http://reprowis.hu/en/home/what_we_do

Best practice in Hungary

CLEAN- WAY Ltd has developed a complex **map application** that displays produced CDW from projects under construction and in planning stage across the country. The application displays available quantities and quality of CDW, including laboratory test results. The forecasted CDW is also displayed to allow resource efficient planning for future projects.

At the time of writing, the system has not been released, as various involved ministries are working on the compliance requirements/solutions for the system. Once it is ready, the system will be available publically across the country and abroad.

The Executive Director of CLEAN- WAY Ltd, Petrovszki Krisztian says that the system will show up-to-date information including forecasted information daily, which is absolutely vital for utilisation of CDW in line with the waste hierarchy. The project has won two innovation competitions. More information is available at http://tisztajovo.eu/ and http://www.cleanwaykft.hu/en

6.2. Stakeholders' engagement

Information on stakeholders' engagement and initiatives were covered in the previous sections of the document.

Communication between stakeholders involved in CDW

- There are conferences and seminars regarding the **Circular Economy** organised by the Ministry of Agriculture and the National Environmental Protection Inspectorate and the National Waste Management Board.[30]

6.3. Waste legislation enforcement

The Ministry of Agriculture is responsible for waste management in Hungary and the Waste Strategy falls within the National Environmental Protection Programme. The main actors are summarised in Table 9. No more information was found.

[30] http://www.zoldkonferencia.hu/

Table 9 Main actors involved in waste management in Hungary[31]

	Public sector	Private sector	Civil society / NGOs
National Level	• Ministry of Agriculture • Ministry of Defence • Ministry of Foreign affairs • Ministry of Human Resources • Ministry of Interior • Ministry of Justice • Ministry for National Development • Ministry of National Economy • Central Statistical Office • National Inspectorate for Environment and Nature Conservation • National Authority for Consumer Protection • Institute for Environmental Management	• Alliance of Manufacturers (GYOSZ) • Individual large companies interested in the rule-making process • Alliance of Waste Utilisation Companies • Nation-wide there are more than 1400 firms that are active in the field of waste collection, waste disposal, waste utilisation, waste transportation, waste processing and handling of hazardous waste • Trade associations of various professions	Various environment protection groups, such as: • Hungarian Waste Alliance "Humusz" • Levego Alliance • Reflex Alliance • Alliances of Local Communities • National research and educational institutions
Regional Level	• Regional municipalities • 11 Regional Environmental Protection officesI • Water Management Directorates • Plant Health and Soil protection Stations • National Park Directorates • Transport Inspectorates	• County-based Chambers of Commerce in Industry • Chambers of Agrarian Companies • Large companies located in the region	• Regional research and education institutions • Regional groups organised for nature protection
Local Level	• Local municipalities	• Companies located in the settlement	• Local NGOs, single issue movements

[31] http://www.oeue.net/papers/hungary-landfillsinhungary.pdf

6.4. Drivers / barriers to increase CDW recycling

Factor / characteristic / element in CDW recycling chain	Drivers	Barriers
Landfill tax	• Newly introduced Landfill Tax (at the time of writing 28 eur/tonne CDW)[32]	
Legislation	• The Waste Act 2012. CLXXXV has been developed.	• Controversial concepts and interpretation of the Regulation 45/2004 (VII.26) currently in force does not fit into the conceptual system with Waste Act 2012 CLXXXVI. • Different terminology used by various authorities as well as the difficulties with interpretation of the law and its application in businesses. This applies in particular to re-use, re-use, preparation, waste and by-product concepts.
End Of Waste status	• The EoW criteria have been implemented in the Waste Act CLXXXVI 2012	• Lack of detailed rules on EoW status and lack of a certification system for EoW • The legislation is currently lacking guidance on where and how CDW can be used, and in what specific areas, or prohibitions on their use. It is planned that implementing this Regulation will solve these issues
Guidelines for CDW efficient management	• Regulation 45/2004(VII.26) on detailed rules of CDW management	• The existing CDW specific guidelines are outdated are ineffective; they are under review. New guidelines and technical introduction are essential
Treatment Facilities		• Modern processing plants do not have national coverage, and their capacities are insufficient for the produced CDW (NWMP). • There are only a few facilities that take CDW from residents in small amount.
Environmental thinking		• Construction projects do not fully apply the environmental aspects of waste management (e.g. GPP) (NWMP).
Market situation		• The prices of recycled CDW products are often not competitive with virgin materials. It would be appropriate to review the investments related to municipal and national public procurement systems (GPP) and fees paid for mining operations (NWMP). • CDW collection, pre-treatment and recycling is currently costly and therefore more expensive than the primary building materials • Construction companies are not familiar with the use of recycled construction materials[33]

[32] http://www.complex.hu/kzldat/t1200185.htm/t1200185_19.htm
[33] Presentation :2009 ÖKOINDUSTRIA 2/2
Nemzetközi Építési-bontási Hulladék konferencia, Green FRAME Bt.

7. CDW sector characterisation

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

7.1. Sector characteristics

Actors involved in the management of CDW in Hungary are:

- **Ministry of Agriculture** is the main regulator of waste management **in Hungary**
  - Environmental Department
  - Waste Management Department
  - State Secretary for Agricultural economy
- **Ministry of National Development** is regulating fees and finances for development projects
- Regional Environmental Protection
  With effect from 1 April 2015 environmental authorities have integrated into the government offices (http://www.kormanyhivatal.hu/hu) . 11 government offices perform tasks related to environmental protection.
- In proceedings relating to waste management, in the first instance, administrative powers are mainly practiced by **Regional inspectorates** and the National Inspectorate participates as secondary authority these matters[34].
- **National Waste Management Directorate** NWMD is a non-profit organization established by Regulation LXXXV of 2011 on Environmental Product Fee. Their main aim is to contribute to waste reduction and to organise and manage the waste collection and recycling of those waste streams which fall under product fee regulation in Hungary. They also organise campaigns to raise waste awareness.
- **National Association of Recyclers (HOE)** Is a national scientific consultancy and trade-advocacy, non-profit organization for public benefit supporting waste management and recycling companies, entrepreneurs, professionals and voluntary associations, organizations and legal entities. Its mission is to protect and care for secondary raw materials industry and environment training and educational activities.
- **Association of Environmental Enterprises (KSZGYSZ).**The Association of Environmental Enterprises in the environmental protection industry, green industry trade advocacy, non-profit organization. Its aim is to develop the environmental culture, strengthen the role of the green industry, enforcement of professional interests and strengthening international relations.

Inadequate CDW treatment capacity

- Modern processing plants do not have national coverage, and their capacities are insufficient for the produced CDW (NWMP).
- No infringements were found
- There is a need for stricter rules on backfilling.

Setting up new waste treatment facilities

- Licensing of waste management activities is regulated by **Government Decree 439/2012(XII.29) .** The application for transportation, collection, brokerage and treatment of waste shall be submitted to the regional environmental authority.
- Application for a waste management license can be completed by the applicant's employee with professional qualification in the field of waste management, or an expert on environmental protection, nature conservation and landscape activity Based on Government Decree (XII. 21) 297/2009

Future prevention practices (within the NWPP 2014-2020)

- From the CDW prevention perspective it is important to create a **coordinating body**. The organization would be responsible for the coordination of supply and demand, the establishment of technical guidelines and standards, with assistance in creating and supporting research and development activities, awareness-raising performance of tasks. The organization should be managing the material flow related to the construction.
- Importance of the widespread practice of **selective demolition**, which would greatly improve the recovery of reusable units from the demolition process. The doors and windows and individual

[34] Jhttp://www.orszagoszoldhatosag.gov.hu/hulladekgazdalkodas.php

building elements, roofing materials, masonry materials and fired clay based products with careful demolition of valuable materials/products could be recovered.

- It is important for the future to develop of an **ecological certification system** for new building materials, which includes the material energy, environment, and recoverability / usability parameters.
- It is also necessary to create special regional laws relating to construction and demolition waste, which facilitates and clarifies the criteria for the "end of waste" status, as well as a guide for public authorities and economic operators in the re-use processes.
- It is also important to encourage the separation of CDW at source. For example, free delivery outlets for separated CDW for the general public.
- To introduce a mandatory percentage of recycled CDW used in state and municipal procedures within the Green Procurement
- Support for research and development (R&D) and encourage academic institutions, market players and public research institutions to work together.

The aims to be achieved by NWPP 2014-2020

- To prevent the demolition of buildings with introducing new features/functions for them
- Primary quantitative reduction of raw material use, construction products and manufactured structures during installation, maintenance and demolition.
- Increase the construction life cycle of products

Information about employment in the CDW sector was not found

7.2. Exports / imports of CDW

The domestic availability of waste facilities in 2008-2010 was covering the demand for recovery and disposal capacity (waste generated in the domestic level compared to exports and imports). Exporting waste is chosen over domestic disposal mostly for economic reasons and to comply with the waste hierarchy.

- The recovery and disposal of all waste was around 24.0 million tonnes per year (2008-2010).
- The capacity utilization rate in 2008 was 90.9% and 77.3% in 2009 and 78.4% in 2010, the decrease was mainly caused by less waste generated.
- Imported waste was 22% (180 authorisations from all released authorisations)
- Waste transit was 43% (342 authorisations from all released authorisations)
- Exported waste was 35% (281 authorisations from all released authorisations)

The export and import shipments measured in tonnes have increased for licensed and license-exempt waste (Green list) during 2008-2010.

- In 2010 the amount of imported license-exempt waste (Green list) has dramatically increased compared to 2008
- The amount of waste imported in 2010 was about four times that of the year 2008 (increased by 114.5 thousand tonnes to 475.1 thousand tonnes), the number of applications has increased by around three times[35].

7.3. CDW as landfill cover

The non-recoverable or non-recovered CDW should be disposed only at inert or non-hazardous waste landfills in accordance with the provisions of 20/2006 (IV. 5) on waste disposal, as well as certain rules and conditions for landfill. No information was found on the use of CDW as landfill cover.

7.4. Market conditions / costs and benefits

The Landfill Tax has been introduced in Hungary by Waste Act CLXXXV/2012. Annex 5[36] of the regulation sets the amount for the Landfill Tax as shown in Table 10.

[35] http://www.orszagoszoldhatosag.gov.hu/dokumentumok/ASZ_jelentes.pdf
[36] http://www.complex.hu/kzldat/t1200185.htm/t1200185_19.htm

Table 10 Landfill Tax for different waste types by year[40]

	Landfill Tax (eur/tonnes)			
Waste type	**2013**	**2014**	**2014**	**2016**
Municipal waste	9.6	19.2	28.8	38.4
Construction demolition waste	9.6	19.2	28.8	38.4
Hazardous waste	9.6	19.2	28.8	38.4
Municipal sewage sludge	9.6	19.2	28.8	38.4
Hazardous and non-hazardous waste remaining from recovery and further utilization	4.8	9.6	14.4	19.2

At the time of writing, CDW is not competitive with primary building materials, due to the cost of CDW collection, pre-treatment and recycled CDW production.

Eco-label for construction products

The number of eco-friendly products on the Hungarian market has increased from 2000 to 2009 by 80%. Nearly the half of these products are construction products.

7.5. Recycled materials from CDW

According to estimates by the Environmental Protection Agency, 300 licenses have been issued to companies to utilise the country's CDW[37].

CDW used in road construction

- There is demand for recycled CDW in road construction sites. Their utilisation would be higher if the public procurement established a mandatory percentage rate of recycled materials to be used.

Areas for recycling “heaped” materials:

- earthworks
- pavement structure layers
- reclamation layers
- backfilling

The following rules apply in road construction:

- General geotechnical rules of Roads and Motorways of E - 06:02:11 UT (2007 ROAD 2-1222)
- Road Course structures for unbound and hydraulically bound base layer design E- 06:03:52 UT (2-3207 ROAD : 2007)

Bricks and tiles

- Bricks and tiles from demolition can be used only if they meet the relevant product standard.
  - MSZ EN 771 series (and masonry panels)
  - MSZ EN 1304 (ceramic tiles)
  - MSZ EN 490 (concrete roof tiles)

Construction materials market conditions

Construction products sold or used in construction have to have a CERTIFICATE OF CONFORMITY.
The Government Decree 191/2009(IX.15) about construction activities[38] requires arranging for an expert examination of natural building materials from construction work and demolished building products to assess their adequacy of utilisation, re-usability or treatment options. The technical manager should decide on handling of these materials and record the decision in the log book.

[37] http://www.alternativenergia.hu/az-epitesi-bontasi-hulladek-ujrahasznositasat-osztonozne-a-kvvm/16655
[38] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0900191.KOR

§ 7 (1) of **Decree 3/2003 on technical requirements for construction products, compliance certification, and detailed rules for the marketing and use**[39] states that if a construction product is unique, made at the construction site or in-built/demolished from a historical monument and there is no declaration of performance available from the manufacturer, this construction product can be used in construction if the responsible technical manager makes a statement in the construction log confirming that the proposed incorporation of the construction product is in compliance with the § 41 of Built Environment and Conservation Regulation LXXVIII from 1997.

- **§ 41 of Built Environment and Conservation Regulation LXXVIII from 1997**
- Only construction products complying with basic requirements listed below can be used for construction:
  - Regulation on harmonized conditions for the marketing of construction products established in the Council Directive 89/106/EEC and 305/2011/EU of the European Parliament, or
  - Specific Technical Documentation defined in Articles 37 and 38 of the Regulation 305/2011/EU is available to demonstrate that the required performance specifications are met, or
  - The construction product complies with the requirements set out in separate legislation.
- For evaluation and verification of suitability of construction products and for suitability of organisations performing the verification, evaluation and registering of these products applies the CXXXIII Regulation[40] on the activities of conformity assessment bodies and requirements in Directive 305/2011/EU
- 89/106 / EEC Construction Products Directive (Construction Product Directive - CPD), is established in Decree 3/2003 (I.25) on the technical requirements for construction products, compliance certification, and detailed rules for the marketing and use.
- 305/2011/EU Construction Products Regulation (Construction Product Regulation - CPR) from 2011 has been adopted since July 2013 regarding the marketing of products[41].

Recycled CDW streams and their utilisation in Hungary

Table 11 shows the main types of CDW that are recycled and subsequently used.

Table 11 Recycled CDW types (NWMP 2014-2020)

Waste	Source	recycled product	Possibility of use
Concrete	Roads, bridges, industrial facilities	Crushed concrete	Road slabs without bond, smaller roads boards. Cement road slabs. Agricultural roads, the preparation of concrete additive, filler, drainage layers.
Tar	Roads	Crushed tar	Upper road slabs without binder, lower road foundation. Road slabs with a binder. Agricultural roads. Additive for preparing asphalt.
Mixture of concrete, stone and tar	roads, bridges, public spaces, pavements	Crushed mixture of concrete, asphalt, stone	Upper road slabs without binder, binder with higher road slabs, agricultural roads.
Rubble	Buildings, industrial facilities	Construction sand and rubble (less than 25% brick content)	Stabilized backfilling and foundations. Sports ground for foundation.

[39] http://www.kvvm.hu/szakmai/hulladekgazd/jogszabalyok/3_2003_I25_BM-GKM-KvVM.htm
[40] http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=A0900133.TV
[41] http://www.emi.hu/EMI/web.nsf/Pub/65W06E/$FILE/02-Recycling-TorokneE-EMI-szakmai-nap-2013.pdf

Waste	Source	recycled product	Possibility of use
Bricks	Houses, facilities	Construction sand and rubble (brick content above 25%)	Additive for preparing blocks. Concrete and lightweight concrete aggregate. Stabilization. Backfilling, foundations. Floor coverings.
Mineral construction waste	Houses, facilities and industrial buildings	Crushed mineral material	Backfilling, foundations, the lower layer, drainage sports fields.

7.6. Construction sector make up

Hungary's industry's output rose in 2013 by 10% from a year earlier to 1,774 billion forints (EUR 5.6bn), though this still remained well behind pre-crisis levels. Recent growth is attributed to the acceleration of disbursements of EU funding with the end of the last EU budget period, which generated more construction work. Most of this is related to infrastructural investments including road and railway construction and utilities development projects. The determining factor of CDW quantities is the production value of construction projects, which is presented in Figure 1 for the period 2004-2011.

Combining construction data and statistical data, shows that the amount of investment dropped significantly causing a decrease in CDW production. The current economic crisis is strongly influencing the construction industry, due to the lack of investment.

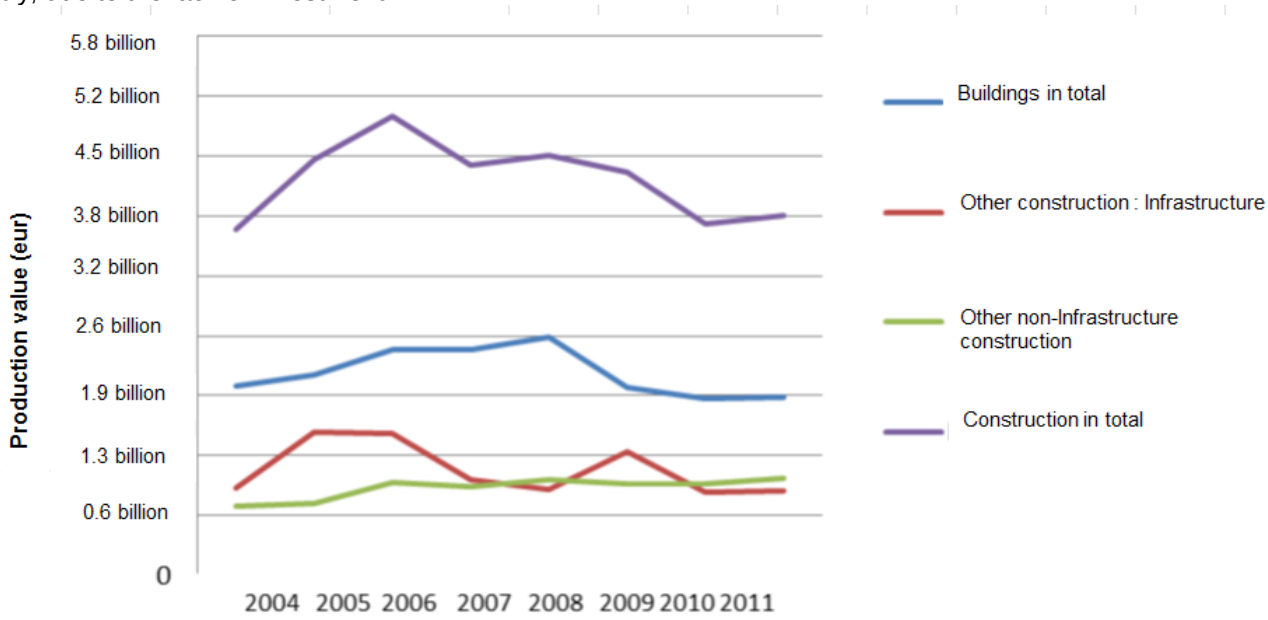

Figure 1 The value of construction projects from 2004 to 2011 (EUR) Source: NWMP

Latest construction figures

- In March 2015, the construction production was 12.7% higher than March 2014
- The production of building construction increased by 9.8% and the production of all built environment increased by 16.4%
- The construction producer prices in the first quarter of 2015 have increased by 2.2% compared to the same period last year[42].

Number of employees in the construction sector

[42] http://www.ksh.hu/docs/hun/xftp/gyor/epi/epi1503.html

Table 12 Number of people employed in the construction sector (F) by years [43]

Year	Construction (number of employees)
2008	308,300
2009	287,900
2010	273,500
2011	260,700
2012	243,200
2013	245,500
2014	268,500

The average earnings in the construction industry are continuously below the national average.

Regional Breakdown

Construction production continues to dominate in Central Hungary based organizations with nearly 50% of all production (see Annex 5 for a detailed breakdown of construction production output)[44].

[43] http://www.ksh.hu/epitoipar_t

[44] http://www.ksh.hu/docs/hun/xftp/idoszaki/jelepit/jelepit13.pdf

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Other contacted stakeholders

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

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- Independent Ecological Center
- University of Miskolc

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Annex 1

Annex 3 of 164/2003 On waste registration and reporting obligations (October 18) .Codes for completion of data sheets.

Pre-treatment identification codes:

Biological treatment

P01 - 01 disinfection
- 02 mechanical - biological pre-treatment
- Other 99

Physical -chemical treatment

P02 - 01 distillation,
- 02 phase separation
- 03 flotation,
- 04 screening,
- 05 Concentration,
- 06 crushing, breaking,
- 07 compression, baling
- 08 separation
- Other 99

Mixing different types of waste or waste and other materials

P03 - 01 mixing,
- 02 dilution
- 03 homogenization,
- 04 soaking
- 05 physical (eg embedding of asbestos dust/ fibres in cement)
- Other 99

Chemical treatment

P04 - 01 neutralization,
- 02 oxidation / reduction,
- 03 precipitation,
- 04 chemical (“Solidification and chemical fixation ")
- Other 99

Storage identification code

B00 -01 collection

Annex 2

Annex 5 to Government Decree 191/2009. (IX. 15.)
DEMOLITION WASTE REGISTRATION FORM Generated by demolition activities

The Client	*Contractors:*		*Date:*
Name: ..... Address:	Name,address: ....., Name,address : ....., Name,address:	Environmental client and area number ..... Environmental client and area number : ..... Environmental client and area number :	
Demolition Address: ..... Geographical number:		*The work carried out :*Total or partial demolition of the building. (Underline the required !)	

Number	Demolition waste			Treatment	
	Waste type	EWC	Quantity (t)	Name	Place
1.	Excavated Soil				
2.	Concrete debris				
3.	Asphalt rubble				
4.	Wood				
5.	Metals				
6.	Plastics				
7.	Mixed Construction and demolition waste				
8.	Mineral construction waste materials				
Total					

Annex 3

Annex 4 to Government Decree 191/2009. (IX. 15.)
CONSTRUCTION WASTE REGISTRATION FORM
Generated by construction activities

The Client	*Contractors:*		*Date:*
Name: ..... Address:	Name,address: ..... Name,address : ....., Name,address:	Environmental client and area number ..... Environmental client and area number : ..... Environmental client and area number :	
N*ew construction:* Address: ..... Geographical number:		*The work carried out :* new construction , reconstruction, expansion, renovation , restoration , modernization and further construction. (Underline the required !)	

Number	Construction waste			Treatment	
	Waste type	EWC	Quantity (t)	Name	Place
1.	Excavated Soil				
2.	Concrete debris				
3.	Asphalt rubble				
4.	Wood				
5.	Metals				
6.	Plastics				
7.	Mixed Construction and demolition waste				
8.	Mineral construction waste materials				
Total					

Annex 4

The number of treatment facilities, waste contractors, and other authorisations regarding CDW Waste Category 17 released by the National Environmental and Nature Protection Inspectorate , the National General Directorate for Disaster Management , as well as performing official duties territorial Inspectorates of Environment and Nature Protection and Disaster Management [45]

Activity	South Great Plain	South - Transdanubia	Northern Great Plain	Nort - Transdanubia	Mid-Transdanubia	Central Hungary	Western Transdanubia	Grand Total
Any decision to release other substantive decision							6	6
Integrated environmental monitoring related to licensing	1							1
Permit Review				1	2	1		4
Revision complex expiry of validity of the license, respectively. Due to differences authorization					1			1
Amendments following the review		1						1
Trade-related waste registration					2			2
Registration for waste mediation		1						1
Environmental impact assessment procedure						1		1

Activity	South Great Plain	South - Transdanubia	Northern Great Plain	Nort - Transdanubia	Mid-Transdanubia	Central Hungary	Western Transdanubia	Grand Total
Enabling Public Service Activity	1		1			1		3
Integrated environmental authorization procedure for existing installations		7					4	11
No significant adjustment due to change		4	2		15	2	1	24
Non-hazardous waste collection	57	25	66	22	43	153	37	403
Non-hazardous waste handling	16	17	33	46	34	42	36	224
Collection of non-hazardous waste	8	12	10	20	8	107	5	170
Non-hazardous waste recovery	24	27	36	28	47	44	32	238
Trade of non-hazardous waste	2	4	7	9	3	54	1	80
Non-hazardous waste brokerage						1		1
Non-hazardous waste disposal services		1					1	2
Transportation of non-hazardous waste	60	19	53	58	74	61	47	372
Storage of non-hazardous waste	1		1		1		2	5
Non-hazardous waste management oversight			1					1
Other waste management activities in non-hazardous waste	1	2	7	1	3	1	1	16
New facility integrated environmental authorization procedure		1			1			2
Hazardous and non-hazardous waste collection	12	8	6		6	5	14	51

Activity	South Great Plain	South - Transdanubia	Northern Great Plain	Nort - Transdanubia	Mid-Transdanubia	Central Hungary	Western Transdanubia	Grand Total
Hazardous and non-hazardous waste pre-treatment	9	6	7	5	9	4	10	50
Hazardous and non-hazardous waste collection	2	12	3		7	2	5	31
Hazardous and non-hazardous waste is recovered	1				3		1	5
Trade of hazardous and non-hazardous waste		1				2		3
Hazardous and non-hazardous waste transportation	6	1	3		10	4	10	34
Hazardous or non-hazardous waste and other waste management activities		6	1		2	1		10
Hazardous waste collection	5	3	11	11	11	33	10	84
Hazardous waste pre-treatment	2		4	4	2	6	12	30
Collection of hazardous waste		1	1	7	1	11	3	24
Hazardous waste is recovered	1	1			1	3	2	8
Hazardous waste trade	1		1			2		4
Hazardous waste disposal				1		1		2
Carriage of hazardous waste	9	2	14	17	14	25	9	90
Hazardous waste and other waste management activities	1		2	1	1			5
Grand Total	220	162	270	231	301	567	249	2000

Annex 5

Construction output breakdown (eur) by Region/Area[46]. Conversion used 1 HUF = 0.0032 EUR

	Construction output (eur)				
Region/Area	**2009**	**2010**	**2011**	**2012**	**2013**
Budapest	1,782,998,400	1,461,350,400	1,432,748,800	1,478,297,600	1,448,166,400
Pest	458,387,200	428,419,200	437,763,200	391,123,200	452,688,000
Central Hungary	2,241,385,600	1,889,769,600	1,870,512,000	1,869,420,800	1,900,854,400
Fejer	124,396,800	107,008,000	101,929,600	87,433,600	96,617,600
Komárom-Esztergom	93,884,800	94,870,400	70,182,400	61,846,400	97,452,800
Veszprem	78,393,600	65,289,600	67,849,600	66,195,200	92,496,000
Central Transdanubia	296,675,200	267,168,000	239,961,600	215,475,200	286,566,400
Gyor -Moson -Sopron	189,427,200	184,502,400	188,198,400	160,480,000	178,076,800
Vas	75,049,600	63,443,200	90,515,200	105,337,600	133,139,200
Zala	86,182,400	92,278,400	68,246,400	72,160,000	94,425,600
Western Hungary	350,659,200	340,224,000	346,960,000	337,977,600	405,641,600
Branya	98,451,200	97,734,400	88,364,800	75,203,200	89,715,200
Somogy	98,265,600	144,406,400	90,371,200	80,649,600	100,592,000
Tolna	64,294,400	65,145,600	74,073,600	57,648,000	66,851,200
South Transdanubia	261,011,200	307,286,400	252,809,600	213,500,800	257,158,400
Transdanubia	908,345,600	914,678,400	839,731,200	766,953,600	949,366,400
Zemplén County	160,473,600	172,124,800	154,624,000	127,625,600	163,862,400
Heves	151,123,200	126,585,600	59,465,600	57,100,800	78,800,000
Nógrád	26,425,600	20,793,600	20,723,200	19,708,800	21,865,600
Northern Hungary	338,022,400	319,504,000	234,812,800	204,435,200	264,528,000

[46] http://www.ksh.hu/docs/hun/xftp/idoszaki/jelepit/jelepit13.pdf

	Construction output (eur)				
Region/Area	2009	2010	2011	2012	2013
Hajdu-Bihar	142,224,000	147,292,800	144,915,200	136,332,800	168,860,800
Jasz -Nagykun -Szolnok	81,532,800	88,486,400	100,073,600	109,664,000	143,321,600
Szabolcs-Szatmár-Bereg	127,811,200	106,140,800	115,616,000	98,704,000	132,256,000
Northern Great Plains	351,568,000	341,920,000	360,604,800	344,700,800	444,438,400
County Kiskun	160,716,800	170,176,000	197,123,200	185,011,200	260,016,000
Bekes	64,006,400	60,268,800	58,649,600	58,585,600	79,491,200
Csongrád	164,096,000	166,720,000	138,979,200	136,105,600	165,126,400
Southern Great Plains	388,819,200	397,164,800	394,752,000	379,702,400	504,633,600
Plain and North	1,078,409,600	1,058,588,800	990,169,600	928,838,400	1,213,600,000
Country total	4,228,140,800	3,863,036,800	3,700,412,800	3,565,212,800	4,063,820,800