

# **26<sup>th</sup> Voorburg Group Meeting on Services Statistics**

**Newport,  
September 19<sup>th</sup>-23<sup>rd</sup>, 2011**

**Services Producer Price Index for Waste Management/Treatment**

**Aspasia Papa**

# SPPI for Waste Management in the UK

## 1. Introduction

This paper provides an overview of Service Producer Price Index (SPPI) for Waste Management industry in the UK as well as the methods implemented for the index compilation. The structure of the paper follows closely the Voorburg Group Content Development Framework.

## 2. Definition of the service being priced

According to the United Kingdom Standard Industrial Classification of Economic Activities (SIC) 2007, waste management is classified under Section E, namely division 37, 38 and 39. The system is identical to the Eurostat System NACE at the four digit class level and the United Nations system ISIC at the three digit group level<sup>1</sup>. This section includes activities related to the management (including collection, treatment and disposal) of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. The output of the waste or sewage treatment process can either be disposed of or become an input into other production processes. This classification also includes activities of water supply, since they are often carried out in connection with, or by units also engaged in, the treatment of sewage (ONS, 2009). However, water supply falls out of the scope of this paper.

The classification is broken down in accordance to SIC'07 as follows:

Division	Group	Class	Description
37	37.0	37.00	Sewerage
38	38.1	38.11	Collection of non-hazardous waste
		38.12	Collection of hazardous waste
	38.2	38.21	Treatment and disposal of non-hazardous waste
		38.22	Treatment and disposal of hazardous waste
38.3	38.31	Dismantling of wreck	
	38.32	Recovery of sorted materials	
39	39.0	39.00	Remediation activities and other waste management

Further breakdown of the classification can be found in the Annex. Currently, UK Services Producer Price Indices are published for Sewerage (class 37.00), Waste Disposal (38.11) and Recovery of sorted materials (38.32) and these will be considered for this paper. It should be noted that prior to the implementation of SIC 2007 in November 2010, recovered secondary raw materials (i.e. recycling) were classified in the manufacturing sector. However, the significant increase in recycling sees it move from Section D, "Manufacturing" in SIC 2003 to Section E in SIC 2007. As a result, it was only since Q1 2011, that SPPIs Waste was expanded to incorporate "Recovery of sorted materials" although the weight of the recently added subclass is minimal (0.97%).

## 3. Pricing unit of measure

The services provided by waste management companies, are repeatable clearly specified services rather than unique bespoke services. In addition, the sector is characterised by long term contract agreements where the price and delivery of service are well-specified for many consecutive periods. As such, the pricing method is the direct use of observed price for these activities. Indeed, for sewerage activities the unit of measure is "price per cubic meter" whereas for trade effluent is the minimum charge per annum, as determined by a specific formula, namely the Mogden formula, which takes into account the strength and volume of trade effluent before it enters the sewers (please see section 4.3 below). Accordingly, for the waste disposal, prices take a number of forms, such as:

- Price per household (for household waste)
- Price per tonne
- Price per cubic meter

## 4. Market conditions and constraints

### 4.1 Market size

---

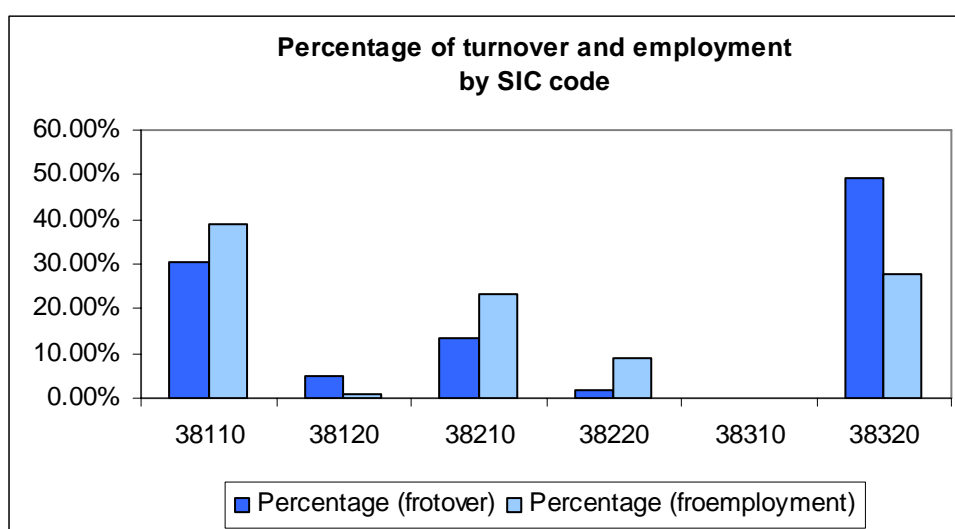
<sup>1</sup> Indeed, according to ISIC Rev.4 Material recovery is only broken down to 38.30.

According to the UK Inter-Departmental Business Register (IDBR), there are 987 companies providing sewerage activities. Approximately 97% of the companies have less than 50 employees. However the bulk of the turnover is generated by the 10 companies which have more than 300 employees. A more detailed break down of the industry is provided in the table below:

Employment band	Number of enterprises	Percentage of companies	Turnover	Market share
0-9	765	77.51%	245445	2.89%
10-49	188	19.05%	382759	4.51%
50-99	20	2.03%	152131	1.79%
100-299	4	0.41%	46249	0.54%
300+	10	1.01%	7663990	90.26%
Grand Total	987		8490574	

Source: Inter-Departmental Business Register (2011)

In addition, there are 5183 companies providing waste disposal activities. The graph below shows the respective percentage of turnover and employment by SIC code. As can be deduced from the graph, the “Recovery of sorted materials” and “Collection of non-hazardous waste” classes account for the largest market share and employment percentage respectively.



Source: Inter-Departmental Business Register

## 4.2 Characteristics of the industry - Special conditions and restrictions

### 4.2.1 Market description

The sewerage industry is broadly split into two main sectors:

- Water supply — the removal (abstraction) of water from various sources, treatment and distribution to business and consumer premises as potable water
- Sewerage services — the collection and treatment of wastewater for re-use in the water system or disposal.

Although water supply falls out of scope for the purposes of this paper, the two sectors are perceived as natural side-by-side industries in the market and overlap as they share many common activities, such as the repair and maintenance of their networks, which represent a significant part of their daily activities, as well as environmental concerns. Consequently, large companies tend to offer both water supply as well as sewerage activities. As a result, there are ten privatised water and sewerage companies (WaSCs) in England and Wales. In Scotland, one publicly owned statutory corporation supplies all the water and sewerage services; in Northern Ireland, these services are similarly provided by a government-owned company (GoCo). As water companies operate as vertically integrated monopolies in a given geographical area, they are not subject to normal market forces and are regulated by authorities in England and Wales, Scotland and Northern Ireland respectively (Key Note, 2010a).

In a similar vein, there are two main strands in the UK Waste Management industry namely:

- Waste collection which is the collection of municipal waste from approximately 22 million households and businesses by private waste management companies. Waste is collected via specialist vehicles (e.g. dustcarts) from households and commercial sites through wheeled bins and
- Waste management which is the process of the treatment and disposal of municipal waste using various methods (please see table below)

These activities are carried out through approximately 358 Waste Collection Authority (WCAs) and Waste Disposal Authority (WDAs) (Defra, 2010). WCAs usually set up long term municipal multimillion- and multibillion-pound contracts with private waste management companies to carry out their responsibilities in the collection of waste. Approximately 50% of collections are made by in-house operations, with the remaining 50% being made by private companies. The waste is then passed on to the waste disposal authority (WDA) for treatment and disposal. WDAs manage the treatment and disposal of municipal waste and are financed from a levy on local authorities through council taxes. For unitary authorities (e.g. Slough, Reading, etc.), WDAs are the same as the WCAs. WDAs usually have contracts with private waste management companies to carry out their responsibilities in the treatment and disposal of waste (Keynote report, 2010b).

#### **4.2.2 Services provided**

Sewerage services include the collection of wastewater and its treatment, mainly through dilution, screening, filtering and sedimentation, before discharge and ultimate re-use. Wastewater comprises of:

- Foul sewerage: mainly water containing waste from domestic activities
- Surface water drainage: rain water which falls on properties and then flows directly or indirectly into the public drainage systems.
- Highway drainage: excess surface and sub-surface water within the right way and
- Trade effluent discharging any liquid, either with or without particles of matter in suspension in the liquid, which is wholly or partly produced in the course of any trade or industry, carried on at a trade premises. (Water Industry Act 1991, section 141). In summary this covers the majority of wastewaters produced by trade processes, including waste water contaminated with food waste, chemicals, fats, oils and greases, detergents, heavy metal rinses and solids.

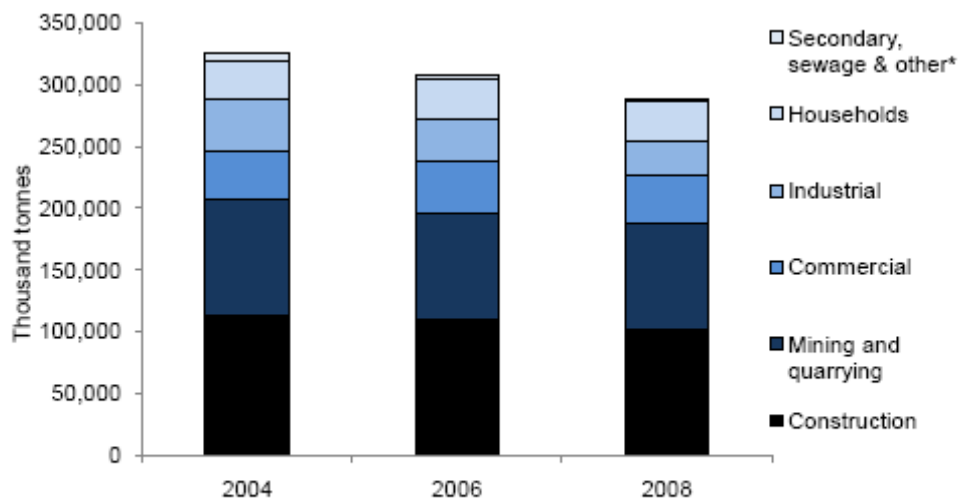
Apart from the primary services mentioned above, recent consultation which the industry indicated that some companies are able to set up maintenance agreement where they clean the service systems using the latest technology to ensure any risks of blockage is eliminated. In addition, some companies offer one-off bespoke services e.g. where they deploy specialised teams who use high definition CCTV units to inspect drainage system and provide the company with a full technical report written to EU standards, schematic drawings and estimate of the required repairs, connection and disconnection.

At the other end of the spectrum, Waste companies provide a range of activities depending on the sources of waste (arisings) and the methods of treatment and disposal. A break down of the waste arisings as well as their definition is provided in the table below:

Waste		
Market sector	Subcategories	Definition
Arisings	Municipal Waste	Household waste which arises from dwellings of various types such as domestic property or residential home, caravans, premises forming part of a university or school or other educational establishment and premises forming part of a hospital or nursing home.
		Commercial waste which originates from premises used wholly or mainly for trade, business, sport, recreation or entertainment (excluding municipal and industrial waste)
		Industrial waste, i.e. factory waste and waste from premises occupied by an industry (excluding mines and quarries), such as textile mills, metal filings, chemicals, plastics, etc.
	Other Waste	Minerals which includes waste such as colliery, coal, china clay, clay, slate and quarrying
		Special waste, i.e. waste that has hazardous properties, such as flammable, irritant, toxic, harmful, carcinogenic or corrosive properties as defined by the Special Waste Regulations 1996. This category also includes construction and demolition waste
		Sewage waste which is household, industrial and commercial liquid waste
		Secondary waste which is generated by the waste management facilities from processes handling wastes generated elsewhere in the economy

Source: Keynote, Defra and National Archives

Construction and mining account for approximately 67% of the waste generates. A more detailed breakdown of the source of waste is illustrated in the graph below:



\* 'Other' includes healthcare wastes, batteries & accumulators, & wastes containing PCB.

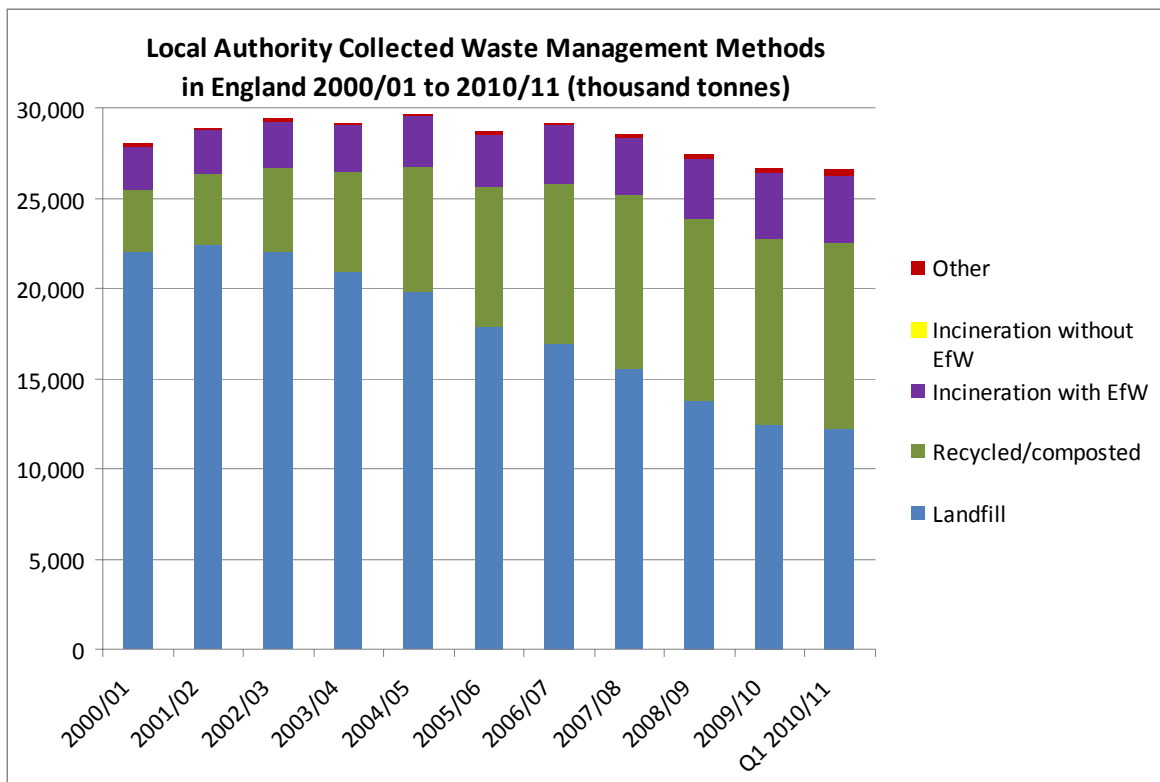
Source: Defra – Waste Statistics Regulation return to Eurostat, 2004 to 2008

Accordingly, the methods of waste disposal are presented in the table below:

Waste		
Market sector	Subcategories	Definition
Methods of Treatment and Disposal	Landfill sites	Landfill sites are areas of land on which waste is deposited. In landfill, full, non-hazardous waste may be covered in topsoil and landscaped whereas hazardous waste which cannot be further treated are kept in more secure specialised landfill sites
	Incineration	This involves the disposal of waste through the burning of organic waste at high temperatures under specific conditions.
	Recycling	This involves the reprocessing of wastes, either into the same product or a different one following a strict sorting process to separate materials physically
	Composting	This is generally an aerobic, biological process in which organic wastes such as garden and kitchen waste are converted into a stable granular material that can be used to improve soil structure.

Source: Keynote, Defra and National Archives

The target in this market sub-sector is to move towards a “zero waste” economy. In essence, this means that in the waste hierarchy priority is given to prevent waste in the first place and when waste is created, priority is given to re-use, then recycling, followed by other recovery such as energy recovery, and last of all disposal (for example landfill) (Environment Agency,2010). Indeed, such a trend is currently depicted in the graph below:



Source: Defra

#### 4.2.3 Price determining characteristics

Since privatization in 1989, the England and Wales water and sewerage industry has been subject to a regulatory regime based on price-cap regulation as a substitute for competition. In essence, the regulator OfWat sets a price limit quinquennially for each of the five years which is the percentage by which a

company can change its overall average charge. This covers charges for household and non-household customers using less than 50 million litres per year. In all other cases, the water company a business can use is based on the geographic location of the business. The price limit allows companies to change prices according to the inflation rate (RPI), plus or minus a *K* factor decided by OfWat. This factor is composed of a negative component that accounts for the potential increase in efficiency that the regulator judges to be achievable (*X*-efficiency) and a positive component (*Q*) that is set to accommodate the large capital investment program of the companies (Erbetta et al., 2007). Therefore, the formula by which the price limit is calculated is:

$$RPI \pm K + U$$

where RPI= Retail Price Index

K= price limit

U = any unutilised K that the company wishes to carry forward in future years.

The price determinations are also based on a comparative performance assessment (yardstick competition). This system allows OfWat partially to circumvent the lack of information that typically characterizes the relationship between the regulator and the companies. The attempt to increase efficiency should lead to a reduction in the use of the resources to produce a specified output (that is, increased technical efficiency), and/or to a change in input mix, given the relative input prices, in order to minimize overall cost (that is, increased allocative efficiency). For the regulated companies, the OfWat sets price limits for each of the five years and apply the price limit to a “basket” of regulated charges. There are a number of items in the basket which include unmetered and metered water supply, metered and unmetered sewerage services and receiving, treating and disposing of trade effluent. Within the annual price limit, the companies can increase or decrease charges for individual basket items by different amounts. For example, a company can increase charges for unmetered sewerage services by a greater percentage than charges for metered sewerage services, as long as this does not breach the overall price cap, and is not unduly discriminatory (OfWat, 2010).

In addition, prices vary between one water company and another to account for local conditions. This is because the types of infrastructure such as reservoirs, underground sources, rivers etc are different for each area. In addition, the quality of raw water, and geographical and environmental factors i.e. population density and amount of rainfall also differ between regions (Water UK, 2011). For example, the South East, has dense population and consequently high water consumption, and has been the hardest hit by dry periods, while other areas, such as the North West, have had abundant rainfall and have not been affected by drought to the same extent.

Nonetheless, there are some common elements how sewerage companies charge for their services, depending on the type of service the clients require and whether the clients are metered or un-metered. More specifically:

Service	Metered	Unmetered
Foul Sewage	Volumes recorded on the water meter adjusted for non-return to sewer allowances	Rateable value of the property
Surface Water Drainage	Volumes recorded on the water meter adjusted for non-return to sewer allowances	Rateable value of the property
Highway Drainage	Fee within the fixed charge	Rateable value of the property
Trade Effluent	'Mogden Formula' that relates cost to the volume and strength (pollution load) of the trade effluent discharged: $\text{Charge per unit of effluent} = R + [(V + Bv) \text{ or } M] + B(Ot/Os) + S(St/Ss)^7$ where: R = reception and conveyance charge [p/m <sup>3</sup> ] V = primary treatment (volumetric) charge [p/m <sup>3</sup> ] Bv = additional volume charge if there is biological treatment [p/m <sup>3</sup> ] M = treatment and disposal charge where effluent goes to sea outfall [p/m <sup>3</sup> ] B = biological oxidation of settled sewage charge [p/kg] Ot = Chemical oxygen demand (COD) of effluent after one hour quiescent settlement at ph 7 Os = Chemical oxygen demand (COD) of crude sewage one hour quiescent settlement S = treatment and disposal of primary sewage sludge charge [p/kg] St = total suspended solids of effluent at ph 7 [mg/litre] Ss = total suspended solids of crude sewage [mg/litre]	

Source: OfWat

A recent turnover survey carried by SPPI development, revealed that companies tend to specialise in either municipal or commercial/industrial or specialist (e.g. clinical) waste. In addition, these companies are funded by Local Authorities through long term contracts. As a result, the price is a unit price depending on the nature of the waste arising, e.g. price per household for household waste or price per tonne for clinical waste. On a macroeconomic level, demand for waste has remained stable throughout the year. However, within the industry, the emphasis is placed on waste prevention rather than disposal. This has several implications for the industry, namely:

- Stricter EU regulations, such as the Waste Framework Directive, have led to a number of market-based instruments increasing the price which have a direct effect on the price of such services. As an example, the landfill tax raise the cost of sending waste to landfill, in part reflecting the environmental externality of disposing waste in this way and as a result this cost translates into an increased price which is passed on to the client
- A number of policy instruments, ranging from regulation to informational campaigns, have increased the demand for recycling to the detriment of landfill disposal.
- At the same time, policies implemented in electricity and heat, such as the EU Emissions Trading Schemes (EU ETS) are expected to further increase demand for non-landfill waste management methods. Indeed, anaerobic digestion could produce enough electricity to supply nearly a million households (Defra, 2011)

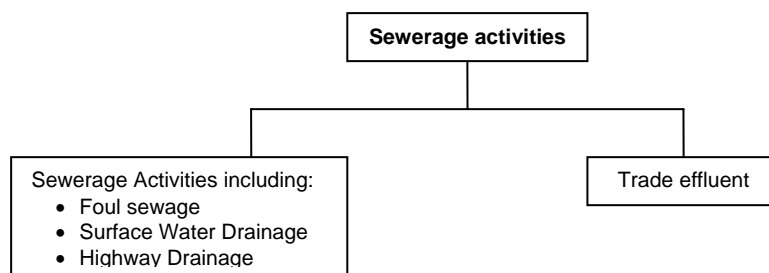
Apart from the aforementioned parameters, other trends drive demands for sewerage activities, including:

- General economic situation: for example the main effect of the current economic downturn is a slight reduction in the waste management activities as manufacturing industries as well as construction works overall have declined.
- Demographic characteristics: the rise in population in the UK is likely to cause an increase to the waste sector as waste generation is dependent on the size population.
- Climate predictions: volatile weather could lead to increased water scarcity and floods, such as those in 2007 and 2009 which would increase the demand for sewerage activities in particular (Key Note, 2010a).

## 5. Current methods

### 5.1 Standard classification structure

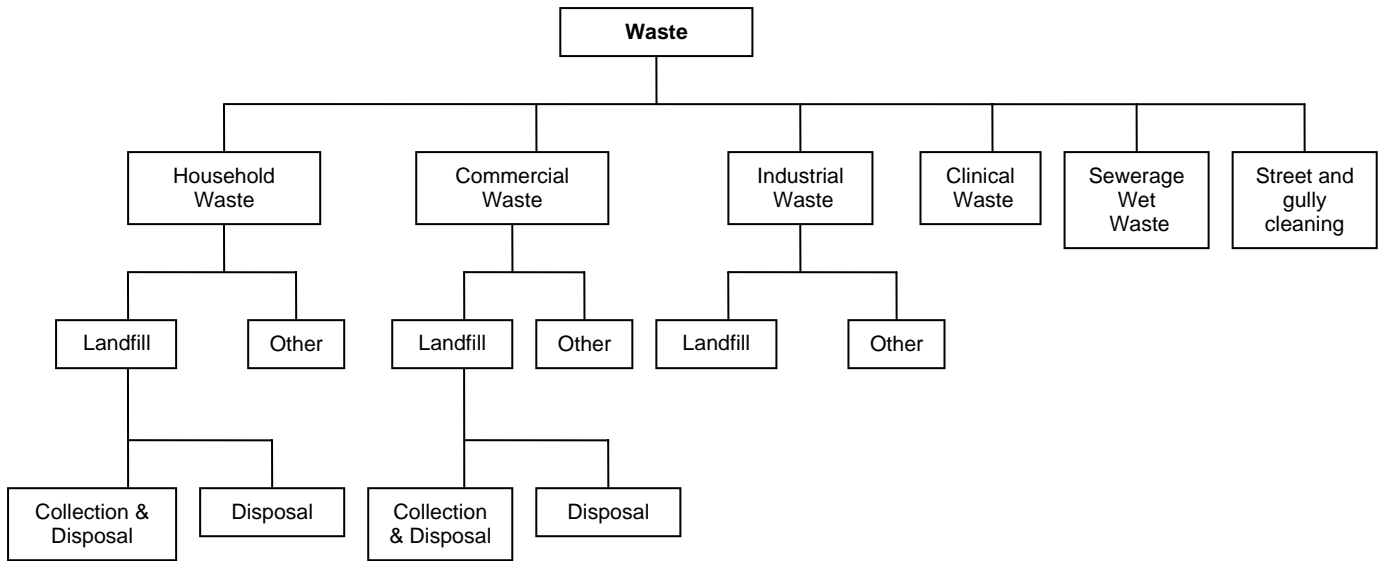
In general, classification structures tend to follow the SIC classification. Nonetheless, in absence of a harmonized system for the collection and publication of services statistics, equivalent to Prodcom, finer level of disaggregations (known as family trees) are generated after consultation with the industry. Indeed, for the purpose of the SPPI, sewerage activities are further broken down to elementary aggregates as follows:



Sewerage activities account for the majority of the fluctuations in the index since the weight is 92.6% whereas trade effluent accounts for 7.4% of the industry.

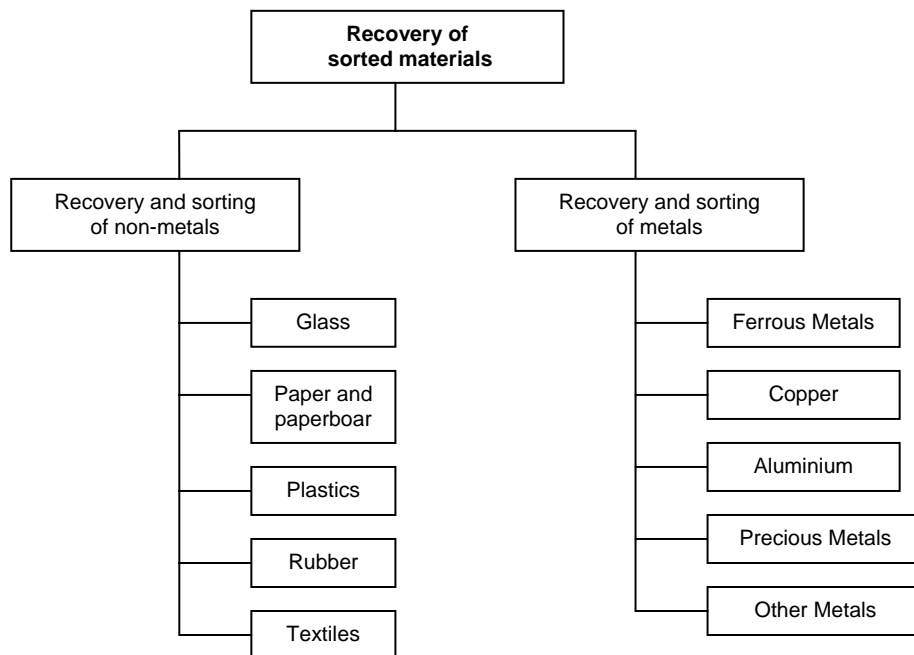
Likewise, the industry structure for the Waste industry is reproduced below:





The majority of fluctuations in the industry is attributable to household waste (weight=45.4%) followed by commercial waste (28.9%) and Sewerage Wet Waste (8.9%) whereas industrial waste (7.4%), street and gully cleaning (7.3%) and clinical waste (1.9%) only account for a small proportion of the fluctuations.

The family tree for Recycling is provided below:



It should be noted that although the recovery of sorted material was reclassified out of manufacturing and onto the services sector, the price of the commodities as opposed to the price of service is still used as a proxy to capture price changes in the industry. Approximately 24% of fluctuations in the industry are attributable to non-metal whereas the rest is accounted for by recovery and sorting of metals.

### 5.2 Pricing methods used

The sampling technique applied for sewerage activities is purposive sampling since data are collected only from OfWat to minimise compliance burden. The data collected represent charges and revenues employed by the 10 regulated companies for sewerage activities and trade effluent in England and Wales, generating 20 items in total. The data are collected once a year, in Quarter 2, since the prices are only reviewed

annually by the water and sewerage companies. These prices are then brought forward for the subsequent quarters. This is in line with the methodology used by CPI/RPI for capturing sewerage activities to households. The weights are derived using revenue for sewerage and trade effluent for base year 2005.

Prices for waste management are collected using quarterly questionnaires to a fixed panel. In selecting the contributors, a weighted stratified simple random sampling technique is applied; where potential contributors are first stratified by size (employment band) and industry (SIC '07 classification). In total 75 companies are selected producing 171 items. Out of these items, 125 account for the "Collection of non-hazardous waste" while the rest account for the "Recovery of sorted materials". Turnover data for waste management are collected using the service turnover survey (STS) for year 2005.

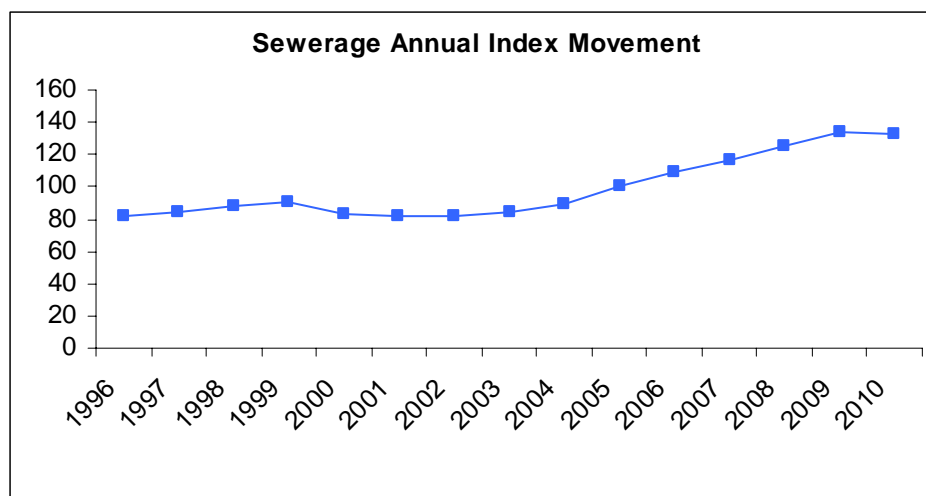
It is noteworthy that prior to SIC' 2007, a price index for the recycling industry was collected and published in the monthly PPI whilst turnover was collected using the annual Prodcum survey. However, as the industry is no longer classified as manufacturing, is therefore no longer covered in Prodcum and an updated 2010 turnover is collected using the STS. The price data for this industry is still collected monthly in the PPI, however, the data is collated and published quarterly in the SPPI release.

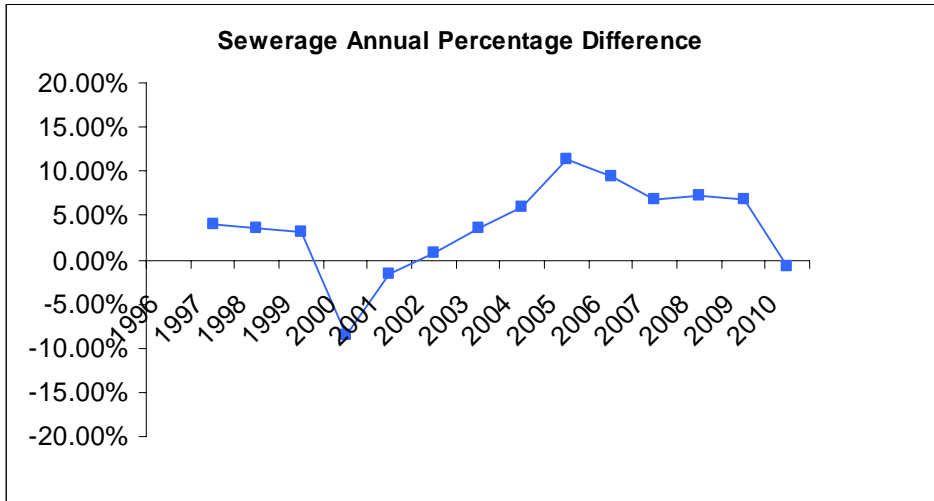
### 5.3 Quality change

The delivery of waste management services is clearly specified and observable and prices, measured on a per unit basis, can be followed exactly over time. Therefore, according to Europa (2006), any index movement should reflect pure price change. In any case, although there is no specific outlier detection/treatment the quality assurance processes followed for the other industries are also followed for the waste management services. For example, after prices are collected any atypical and extreme measures are queried with the respondent to confirm that any movement is a genuine price movement as opposed to changes in the quality of service as defined by the contract.

### 5.4 Results

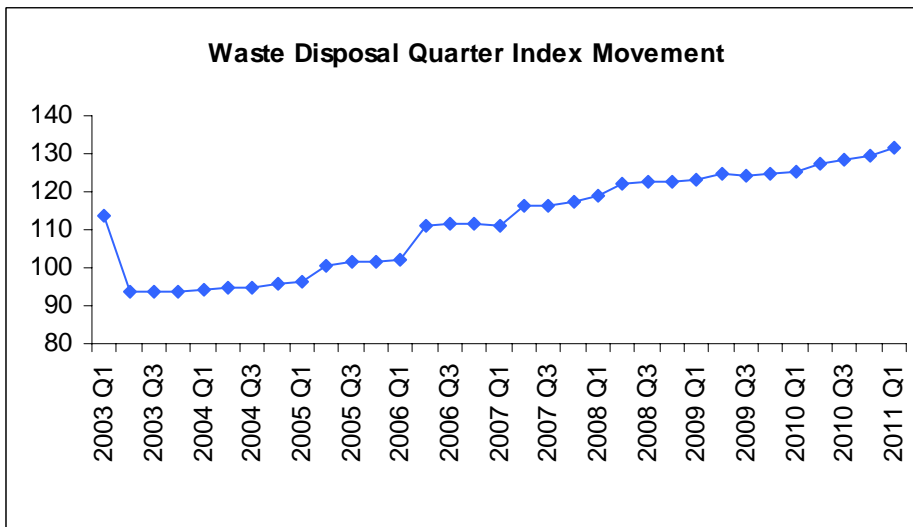
The graphs below represent the index data on an annual basis as well as the percentage index on an annual basis for sewerage activities.

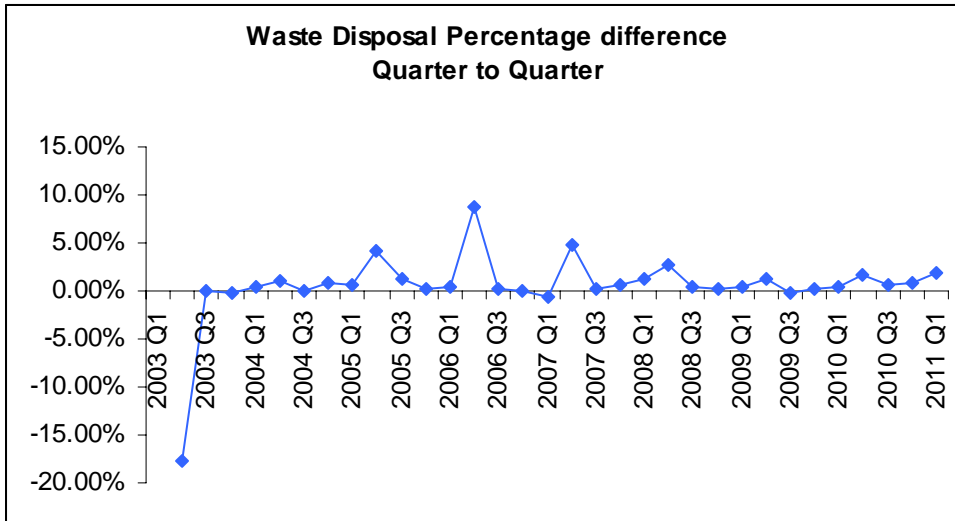




As can be seen from the graphs above, the prices in the industry have been relatively volatile. The prices have increased from 1976 till 2000 where the prices for sewerage activities show a drop of -12.5% compared to the previous years. This is attributable to OfWat quinquennial review and the fact that OfWat aimed to pass some of the improvements in efficiencies achieved by companies onto customers in 2000-01 through an initial reduction in prices. Thereafter prices continued to rise reaching an increase of 12.83% in 2005 when OfWat set the new price limit in their periodic review. The increase reflects improvements to meet new standards under existing and new European directives.

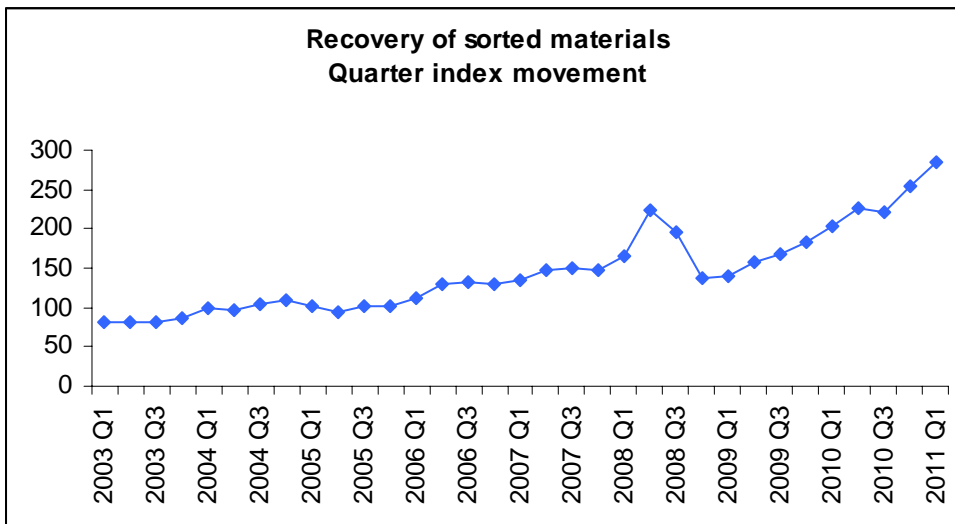
Similarly, the index movement and percentage difference for Waste Management is represented below:

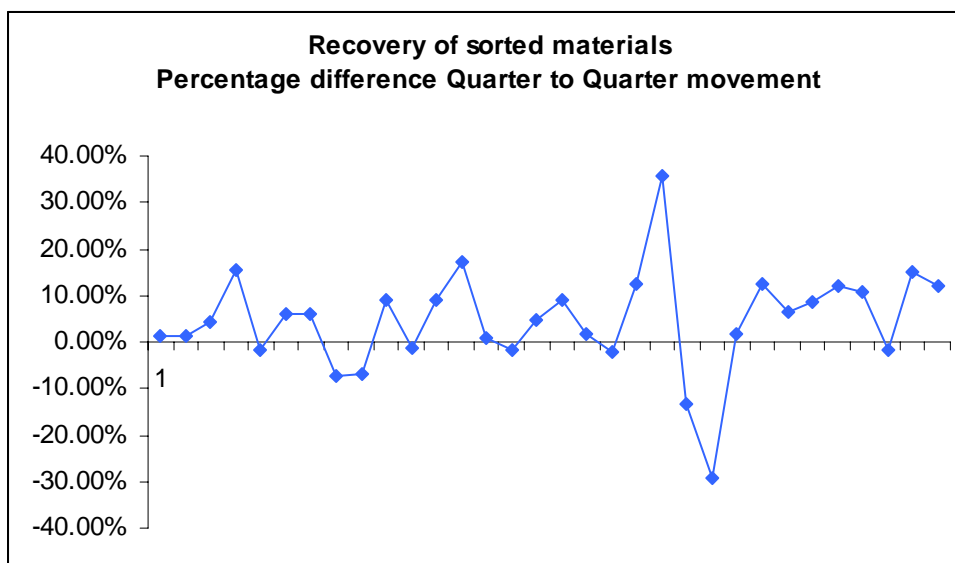




The graphs above show the series have exhibited a decline in 2003. A plausible explanation for this is that it reflects the decrease in the household arisings in 2003/2004. Indeed, according to Defra (2004) there was a 1.5 per cent decrease from 2002/03 and this was the first evidence of a decrease in household waste arisings in recent years. In the following years, waste management has shown a steady rise.

Finally, the quarter index movement and percentage difference for Recovery of sorted material are shown graphically below:





There is a major fluctuation in 2008 Q2, which is attributable to a direct price increase of recovered secondary raw materials, particularly steel scrap as well as an indirect increase of fuel price. Subsequently, the series has exhibited typical fluctuations reflecting fuel increases and general market conditions.

### 5.5 National Account perspective

National Accounts (NA) use the SPPI indices for deflation purposes. More specifically:

- Division 37 uses the SPPI division 37
- Division 38 uses the SPPIs for 38.11 and 38.32 and
- Division 39 applies the aggregate SPPIs for division 38

It could be argued that a new price index could be developed for division 39. However, according to NA latest Gross Value Added (GVA) weights, division 38 has a weight of 6.292 and division 39 has a weight of 0.086 (where GDP = 1000). Therefore, division 39 is less than 0.01% of GDP and over 50 times smaller than Division 38. As a result, it is questionable whether division 39 should be measured separately or combined with another Division.

It should be that NA has yet to implement the SIC 07. Indeed, the new NA Blue Book where the new industrial classification methodology will be introduced is planned to be published later this year which will also give an indication of the addition of recycling to the deflator for this class.

### 5.6 Evaluation of current methods

- Sewerage index

The sewerage index does not include prices for unmetered supplies. However, given that the proportion of metered to unmetered supplies for the industry overall is 84.4% and that an increasing number of companies are installing meters, there is no need to account for unmetered supplies (OfWat review). Also, the sewerage index doesn't cover Northern Ireland and Scotland. The revenue from regulated water and sewerage services in England and Wales represent 87.8% of the total based on reported 2009 revenue whereas Scottish Water and Northern Ireland Water generated 9.3% and 3% of total revenue respectively (Key Note Ltd, page 17). However, SPPI could achieve a greater coverage by incorporating data from Scottish Water which is readily available. Finally, new product lines which are bespoke to customers requirements, one off activities (have emerged which are not currently captured in the index. To date, no data are available which can be used to assess the proportion of secondary to primary activities.

- Waste disposal

Sewerage wet waste is collected both under Sewerage and Collection of non-hazardous waste. The subclass needs to be omitted from the family tree of Collection of non-hazardous waste to avoid double-counting.

In addition, recycling has become prominent for this industry, particularly for those dealing with local authorities who stipulate statutory targets for recycling from waste. However, given that recycling was published under PPI, the price quotes currently collected and published for the recycling industry suggest that price covers the product side of the industry as opposed to the service. Therefore, there is a requirement to capture price movement of the payment received for the processing of waste/scrap into useful material and/or the separating and sorting process. In doing so, there is a need to differentiate between businesses that offer a recycling service and businesses that buy in goods and sell them on. For example, recycling businesses that are sent computers by other businesses wipe them clean and return them to the same businesses clearly provide a service. However, there are recycling businesses that buy computers, wipe them clean and sell them on. In the latter example, which seems to be the norm the turnover is generated from the sale of the computer (i.e. the sale of a recycled product) and respondents do not see themselves as offering a service. Likewise, recycling businesses that buy in waste plastic, convert it into pellets and sell it on to manufacturers do not provide a recycling service.

## **6. Summary and future steps**

The present paper outlined the methods used for the index compilation of the UK Waste Management SPPI. The direct use of observed price for these activities is currently applied, although data are collected using a number of different sources and techniques. A quinquennial turnover exercise, currently being carried out for rebasing purposes, will provide the relative weights for the waste management. Following the exercise, the weighting structure will be restructured to reflect up-to-date market shares. This will also provide scope for sample rotation to be introduced and the recovery of sorted material to be reviewed with the aim to capture prices for the service provided rather than the price of the product.

## References:

Department for Environment, Food and Rural Affairs (Defra) (2011) *Waste data overview* available at:  
<http://www.defra.gov.uk/statistics/files/20110617-waste-data-overview.pdf>

Department for Environment, Food and Rural Affairs (Defra) (2011) *The Economics of Waste and Waste Policy* available at:  
<http://www.defra.gov.uk/publications/2011/06/14/pb13548-economics-waste>

Department for Environment, Food and Rural Affairs (Defra) (2005) *Municipal Waste Management Survey 2003/2004* available at:  
<http://archive.defra.gov.uk/evidence/statistics/environment/wastats/archive/mwb200304.pdf>

Environment Agency (2010) *Waste Hierarchy* available at:  
<http://www.environment-agency.gov.uk/business/regulation/129223.aspx>

Erbetta, F. and Cave, M. (2007) "Regulation and Efficiency Incentives: Evidence from the England and Wales Water and Sewerage Industry," *Review of Network Economics*: Vol. 6: Iss. 4, Article 1.

European Commission (2006) *Methodology of short term statistics – Interpretation and guidelines* available at:  
[http://epp.eurostat.ec.europa.eu/portal/page/portal/short\\_term\\_business\\_statistics/methodology](http://epp.eurostat.ec.europa.eu/portal/page/portal/short_term_business_statistics/methodology)

Key Note (2010a) *Water Industry: Key Note market report*. 5th ed. Hampton: Key Note

Key Note (2010b) *Waste Management Industry: Key Note market report*. 10th ed. Hampton: Key Note

Office for Water (OfWat) (2011) *Non-household sewerage tariffs*  
[http://www.ofwat.gov.uk/consumerissues/chargesbills/nonhousehold/prs\\_web\\_nonhhsewetar](http://www.ofwat.gov.uk/consumerissues/chargesbills/nonhousehold/prs_web_nonhhsewetar)

Office for Water (OfWat) (2010) *The form of the price control for monopoly water and sewerage services in England and Wales – a discussion paper* available at:  
[www.ofwat.gov.uk/content?id=a7229b9c-dde0-11df-9bd7](http://www.ofwat.gov.uk/content?id=a7229b9c-dde0-11df-9bd7)

ONS (2009) *UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007) Structure and explanatory notes*  
[http://nswcopy/methods\\_quality/sic/downloads/SIC2007explanatorynotes.pdf](http://nswcopy/methods_quality/sic/downloads/SIC2007explanatorynotes.pdf)

The National Archives (2011) *The Special Waste Regulations 1996* available at:  
<http://www.legislation.gov.uk/uksi/1996/972/schedule/2/made>

Water UK (2011) *Waterfacts: Water Prices* available at:  
<http://www.water.org.uk/home/resources-and-links/waterfacts/waterprices>

## Appendix A - Complete classification

### 37 Sewerage

This division includes the operation of sewer systems or sewage treatment facilities that collect, treat, and dispose of sewage.

#### 37.0 Sewerage

##### 37.00 Sewerage

This class includes:

- the operation of sewer systems or sewer treatment facilities
- collecting and transporting of human waste water from one or several users, as well as rain water by means of sewerage networks, collectors, tanks and other means of transport (sewage vehicles etc.)
- emptying and cleaning of cesspools and septic tanks, sinks and pits from sewage; servicing of chemical toilets
- treatment of waste water (including human and industrial waste water, water from swimming pools etc.) by means of physical, chemical and biological processes like dilution, screening, filtering, sedimentation etc.
- maintenance and cleaning of sewers and drains including sewer rodding

This class excludes:

- decontamination of surface water and groundwater at the place of pollution, see 39.00
- cleaning and deblocking of drainpipes in buildings, see 43.22

### 38 Waste collection, treatment and disposal activities; materials recovery

This division includes the collection, treatment, and disposal of waste materials. This also includes local hauling of waste materials and the operation of materials recovery facilities (i.e. those that sort recoverable materials from a waste stream).

#### 38.1 Waste collection

This group includes the collection of waste from households and businesses by means of refuse bins, wheeled bins, containers, etc. It includes collection of non-hazardous and hazardous waste e.g. waste from households, used batteries, used cooking oils and fats, waste oil from ships and used oil from garages, as well as construction and demolition waste.

##### 38.11 Collection of non-hazardous waste

This class includes:

- collection of non-hazardous solid waste (i.e. garbage) within a local area, such as collection of waste, which may include mixed recoverable materials, from households and businesses by means of refuse bins, wheeled bins, containers etc.
- collection of recyclable materials
- collection of refuse in litter-bins in public places

This class also includes:

- collection of construction and demolition waste
- collection and removal of debris and rubble
- collection of waste output of textile mills
- operation of waste transfer facilities for non-hazardous waste

This class excludes:

- collection of hazardous waste, see 38.12
- operation of landfills for the disposal of non-hazardous waste, see 38.21
- operation of facilities where mixed recoverable materials such as paper, plastics ,etc. are sorted into distinct categories, see 38.32



### 38.12 Collection of hazardous waste

This class includes the collection of solid and non-solid hazardous waste, i.e. explosive, oxidising, flammable, toxic, irritant, carcinogenic, corrosive, infectious or other substances and preparations harmful to human health and the environment. It may also entail identification, treatment, packaging and labelling of waste for the purposes of transport.

This class includes:

- collection of hazardous waste, such as:
  - used oil from shipment or garages
  - bio-hazardous waste
  - nuclear waste
  - used batteries etc.
- operation of waste transfer stations for hazardous waste

This class excludes:

- remediation and clean up of contaminated buildings, mine sites, soil, ground water, e.g. asbestos removal, see 39.00

### 38.2 Waste treatment and disposal

This group includes the disposal and treatment prior to disposal of various forms of waste by different means, such as treatment of organic waste with the aim of disposal; treatment and disposal of toxic live or dead animals and other contaminated waste; treatment and disposal of transition radioactive waste from hospitals, etc.; dumping of refuse on land or in water; burial or ploughing-under of refuse; disposal of used goods such as refrigerators to eliminate harmful waste; disposal of waste by incineration or combustion. Energy recovery resulting from waste incineration processes is also included.

This group excludes

- treatment and disposal of waste water (see class 37.00).
- materials recovery, see 38.3

#### 38.21 Treatment and disposal of non-hazardous waste

This class includes the disposal and treatment prior to disposal of solid or non-solid non-hazardous waste:

- operation of landfills for the disposal of non-hazardous waste
- disposal of non-hazardous waste by combustion or incineration or other methods, with or without the resulting production of electricity or steam, compost, substitute fuels, biogas, ashes or other by-products for further use etc.
- treatment of organic waste for disposal

This class excludes:

- incineration and combustion of hazardous waste, see 38.22
- operation of facilities where mixed recoverable materials such as paper, plastics, used beverage cans and metals are sorted into distinct categories, see 38.32
- decontamination, clean up of land, water; toxic material abatement, see 39.00

#### 38.22 Treatment and disposal of hazardous waste

This class includes the disposal and treatment prior to disposal of solid or non-solid hazardous waste, including waste that is explosive, oxidising, flammable, toxic, irritant, carcinogenic, corrosive, infectious and other substances and preparations harmful to human health and the environment.

This class includes:

- operation of facilities for treatment of hazardous waste
- treatment and disposal of toxic live or dead animals and other contaminated waste
- incineration of hazardous waste

- disposal of used goods such as refrigerators to eliminate harmful waste
- treatment, disposal and storage of radioactive nuclear waste including:
  - treatment and disposal of transition radioactive waste, i.e. decaying within the period of transport, from hospitals
  - encapsulation, preparation and other treatment of nuclear waste for storage

This class excludes:

- reprocessing of nuclear fuels, see 20.13
- incineration of non-hazardous waste, see 38.21
- decontamination, clean up of land, water; toxic material abatement, see 39.00

### 38.3 Materials recovery

#### 38.31 Dismantling of wrecks

This class includes dismantling of wrecks of any type (automobiles, ships, computers, televisions and other equipment) for materials recovery.

This class excludes:

- disposal of used goods such as refrigerators to eliminate harmful waste, see 38.22
- dismantling of automobiles, ships, computers, televisions and other equipment to obtain re-sell usable parts, see section G

#### 38.32 Recovery of sorted materials

This class includes the processing of metal and non-metal waste and scrap and other articles into secondary raw materials, usually involving a mechanical or chemical transformation process. Also included is the recovery of materials from waste streams in the form of (1) separating and sorting recoverable materials from non-hazardous waste streams (i.e. garbage) or (2) the separating and sorting of mixed recoverable materials, such as paper, plastics, used beverage cans and metals, into distinct categories

Examples of the mechanical or chemical transformation processes that are undertaken are:

- mechanical crushing of metal waste from used cars, washing machines, bikes etc.
- mechanical reduction of large iron pieces such as railway wagons
- shredding of metal waste, end-of-life vehicles etc.
- other methods of mechanical treatment such as cutting, pressing to reduce the volume
- reclaiming metals out of photographic waste, e.g. fixer solution or photographic films and paper
- reclaiming of rubber such as used tyres to produce secondary raw material
- sorting and pelleting of plastics to produce secondary raw material for tubes, flower pots, pallets and the like
- processing (cleaning, melting, grinding) of plastic or rubber waste to granulates
- crushing, cleaning and sorting of glass
- crushing, cleaning and sorting of other waste such as demolition waste to obtain secondary raw material
- processing of used cooking oils and fats into secondary raw materials
- processing of other food, beverage and tobacco waste and residual substances into secondary raw materials

This class excludes:

- manufacture of new final products from (whether or not self-manufactured) secondary raw materials, such as spinning yarn from garnetted stock, making pulp from paper waste, retreading tyres or production of metal from metal scrap, see corresponding classes in section C (Manufacturing)
- reprocessing of nuclear fuels, see 20.13
- remelting ferrous waste and scrap, see 24.10
- materials recovery during waste combustion or incineration process, see 38.2
- treatment and disposal of non-hazardous waste, see 38.21
- treatment of organic waste for disposal, including production of compost, see 38.21
- energy recovery during non-hazardous waste incineration processes, see 38.21
- treatment and disposal of transition radioactive waste from hospitals etc., see 38.22

- treatment and disposal of toxic, contaminated waste, see 38.22
- wholesale of recoverable materials, see 46.77

### 39 Remediation activities and other waste management services

This division includes the provision of remediation services, i.e. the cleanup of contaminated buildings and sites, soil, surface or ground water.

#### 39.0 Remediation activities and other waste management services

##### 39.00 Remediation activities and other waste management services

This class includes:

- decontamination of soils and groundwater at the place of pollution, either in situ or ex situ, using e.g. mechanical, chemical or biological methods
- decontamination of industrial plants or sites, including nuclear plants and sites
- decontamination and cleaning up of surface water following accidental pollution, e.g. through collection of pollutants or through application of chemicals
- cleaning up oil spills and other pollutions on land, in surface water, in ocean and seas, including coastal areas
- asbestos, lead paint, and other toxic material abatement
- other specialised pollution-control activities

This class excludes:

- pest control in agriculture, see 01.61
- purification of water for water supply purposes, see 36.00
- treatment and disposal of non-hazardous waste, see 38.21
- treatment and disposal of hazardous waste, see 38.22
- outdoor sweeping and watering of streets etc., see 81.29