

Statistical bulletin

# UK environmental goods and services sector (EGSS): 2010 to 2014

First estimates of the UK environmental goods and services sector for 2013-2014 and revised estimates for 2010-2012. Included are estimates of output, gross value added, and employment.



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Release date:  
11 January 2017

Next release:  
To be announced

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# 1 . Main points

The environmental goods and services sector (EGSS) contributed £29.0 billion to the UK economy in terms of value added in 2014 (1.6% of GDP).

The EGSS contributed £61.1 billion on a production output basis in 2014, growing 18.7% between 2010 and 2014.

The EGSS contributed 373,500 full-time equivalent (FTE) jobs to total employment in 2014; an increase of 10.9% between 2010 and 2014.

Waste management activities accounted for the largest proportion of output at £12.7 billion (20.9%), gross value added at £5.2 billion (18.0%) and employment with 127,300 FTE jobs (34.1%) in 2014.

Between 2010 and 2014, the value added from production of renewable energy activities more than doubled from £2.2 billion to £4.5 billion.

## 2 . Things you need to know about this release

The methodology used to develop the environmental goods and services sector (EGSS) estimates remains under development; the estimates reported in this publication are experimental and should be interpreted in this context. Experimental Statistics are those that are in the testing phase, are not yet fully developed and have not been submitted for assessment to the UK Statistics Authority. Experimental Statistics are published in order to involve customers and stakeholders in their development and as a means of building in quality at an early stage. Further information on [Experimental Statistics](#) can be found on our website. Detailed information on the data sources and methodologies used are presented in the [Methodology annex](#).

Estimates for recycling activities as well as 5 of the environmental goods and services sector (EGSS) activities <sup>1</sup> that are derived from the Annual Business Survey should be treated with caution along with aggregate figures that they feed into because of the quality of the methodologies used; for more information see [Section 9: Quality and methodology](#).

Although there is no commonly accepted definition for the green economy, the EGSS framework, adopted by the UN System of Environmental Economic Accounting, provides a set definition and specification of activities to be included as environmental activities. The environmental goods and services sector is made up of those areas of the economy engaged in producing goods and services for environmental protection purposes, as well as activities to conserve and maintain natural resources. Excluded from the scope of EGSS are goods and services produced for purposes that, while beneficial to the environment, primarily satisfy technical, human and economic needs or that are requirements for health and safety. Goods and services related to minimising the impact of natural hazards and those related to the extraction, mobilisation and exploitation of natural resources are also excluded.

### Notes for: Things you need to know about this release

1. These activities are: energy saving and sustainability, environmental consultancy, environmental construction, environmental inspection and control, production of industrial environmental equipment.

### 3 . Why do we publish environmental goods and services sector estimates?

There is increasing demand in the UK and internationally, to measure the progress towards a green economy. There is particular interest in establishing how the economy is managing natural resources, protecting the environment from further deterioration (sustainable development) and the amount of green jobs created. Furthermore, information on green growth is required to assist in the development of environmental and economic policies.

This publication provides revised estimates on the output<sup>1</sup>, gross value added<sup>2</sup> and employment<sup>3</sup> of the UK's environmental goods and services sector between 2010 and 2012 and first estimates for 2013 and 2014. The data are broken down by environmental activities in line with the classification of environmental protection activities (CEPA) and the classification of resources management activities (CReMA), as well as industry (Standard Industrial Classification (SIC)).

#### Notes for: Why do we publish environmental goods and services sector estimates?

1. Output is the value of goods and services produced.
2. Gross value added (GVA) is the total value of output of goods and services produced less the intermediate consumption (goods and services used up in the production process in order to produce the output). It represents the contribution made by these activities towards gross domestic product (GDP). GVA is measured in current prices.
3. Employment is measured by the number of full-time equivalent (FTE) jobs, defined as total hours worked divided by average annual hours worked in full-time jobs.

### 4 . Total environmental goods and services sector estimates

**Table 1: Output, value added and employment for the EGSS, 2010 to 2014**

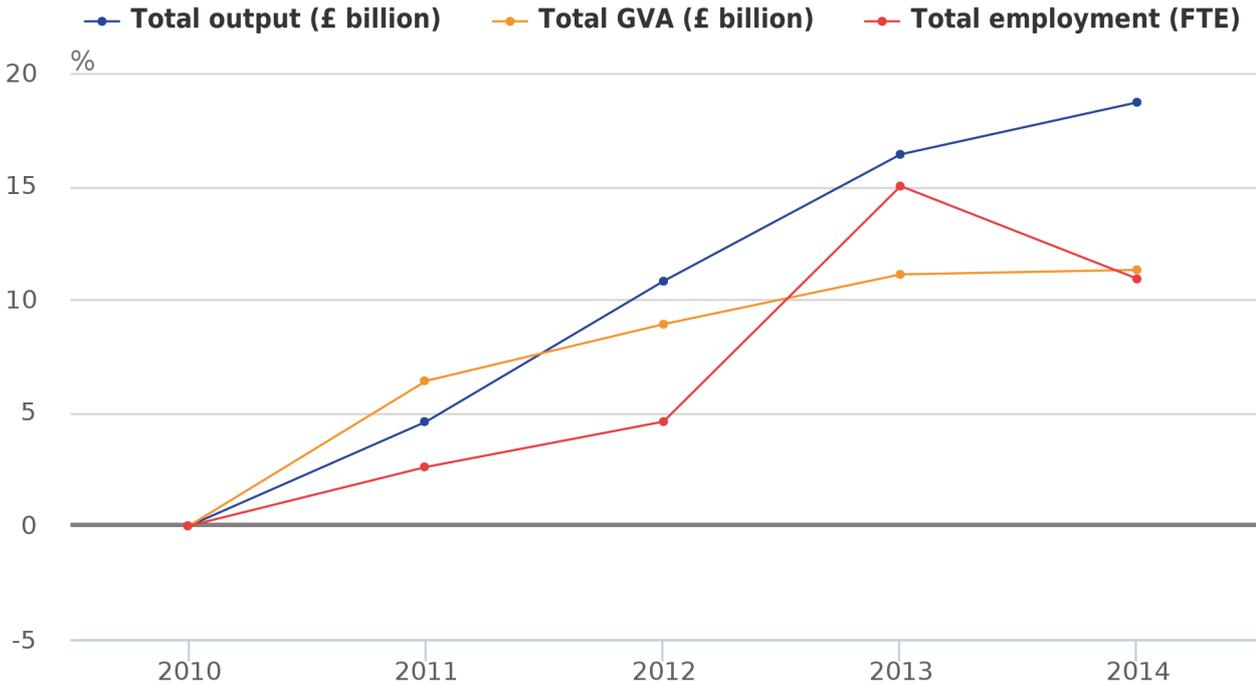
	Total output (£ billion)	Total GVA (£ billion)	Total employment (FTE)
2010	51.5	26.1	336,900
2011	53.8	27.7	345,800
2012	57.0	28.4	352,500
2013	59.9	28.9	387,500
2014	61.1	29.0	373,500

Source: Office for National Statistics

In 2014, the environmental goods and services sector (EGSS) contributed an estimated £29.0 billion to the UK economy (Table 1) in terms of gross value added (GVA) (1.6% of GDP), an output of £61.1 billion and 373,500 full-time equivalent (FTE) jobs. Since 2010, output and GVA from the EGSS have grown, increasing by 18.7% and 11.3% between 2010 and 2014 respectively (Figure 1). Output has grown more quickly than GVA suggesting that intermediate consumption has increased over time. Employment in EGSS activities increased by 15.0% between 2010 and 2013 but decreased 3.6% between 2013 and 2014 from 387,500 FTE to 373,500 FTE. This decrease is due predominantly to the 5 Annual Business Survey-derived EGSS activities (see “Section 9: Quality and methodology” for more information). If these 5 activities are removed from the total then employment shows a growth rate of 2.5% between 2013 and 2014.

**Figure 1: Output, value added and employment of the EGSS, growth rates**

2010 to 2014



Source: Office for National Statistics

## 5 . Environmental goods and services sector activities

This section focuses on 5 environmental goods and services sector (EGSS) activities that accounted for the majority of output (71.8%), gross value added (72.7%) and employment (56.9%) in 2014. The remaining EGSS activities have been combined into “other” (individual estimates can be found in the [dataset](#)):

- environmental charities
- managerial activities of government bodies
- management of forest ecosystems
- second-hand shops
- insulation activities
- wholesale of waste and scrap
- in-house environmental activities
- organic agriculture
- environmental-related education
- energy saving and sustainable energy systems
- environmental consultancy and engineering services
- environmental-related construction activities
- environmental inspection and control
- production of industrial environmental equipment

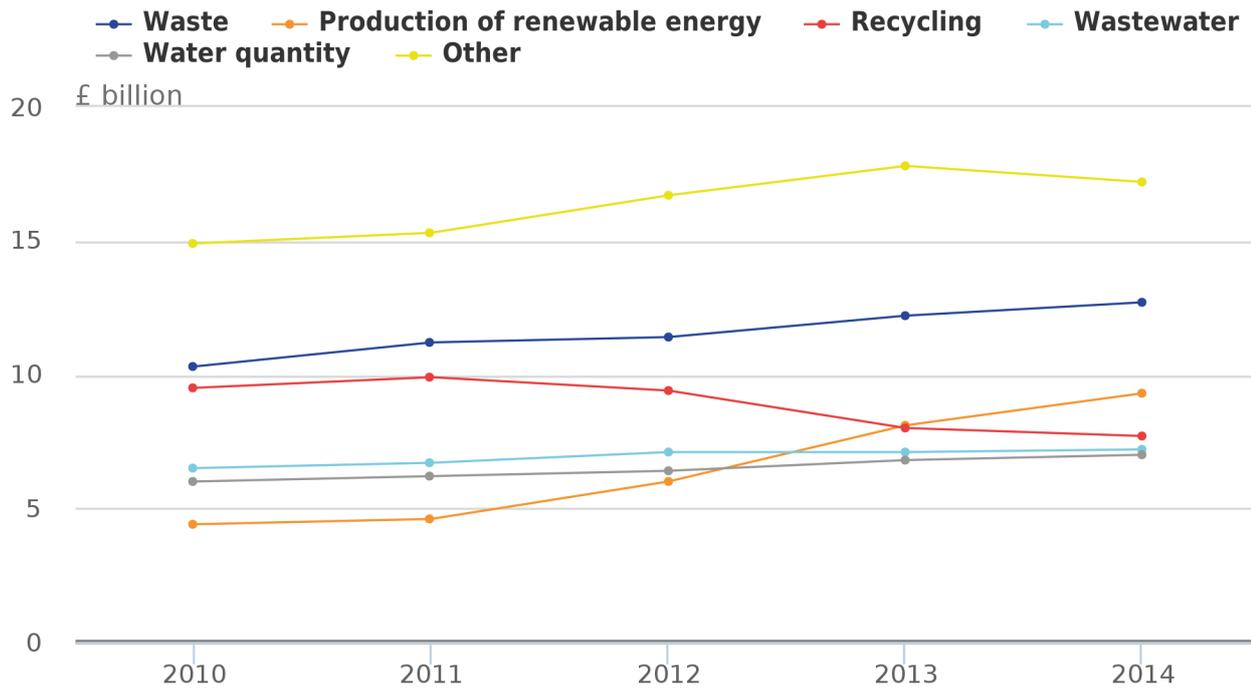
Definitions for all EGSS activities can be found in the [Methodology annex](#).

Waste activities accounted for the largest proportion of EGSS output in every year between 2010 and 2014 (Figure 2), with £12.7 billion output in 2014 (20.9%). Recycling activities accounted for the second largest proportion of EGSS output between 2010 and 2012 but steadily decreased from £9.9 billion in 2011 (18.3% of total EGSS output) to £7.7 billion in 2014 (12.6% of total EGSS output); this is likely due to the underestimation of the contribution from the public sector, see “Section 9: Quality and methodology” for more information.

Output from the production of renewable energy activities has more than doubled from £4.4 billion in 2010 to £9.3 billion in 2014 (15.2% of 2014 total EGSS output). This is supported by figures from the [Digest of UK Energy Statistics](#), which show that the amount of energy generated from renewable sources tripled over the same period from 25,783 gigawatt hours (GWh) to 64,584 GWh. Output from wastewater and water quantity management activities increased slightly between 2010 and 2014 by £0.7 billion and £1.0 billion respectively. The output from other EGSS activities increased between 2010 and 2013 by 19.6% and decreased by 3.1% between 2013 and 2014. If the 5 ABS-derived activities are removed from the total for “other” then output increased by 7.6% between 2013 and 2014 (see “Section 9: Quality and methodology” for more information).

**Figure 2: Output by EGSS activity**

2010 to 2014



Source: Office for National Statistics

Notes:

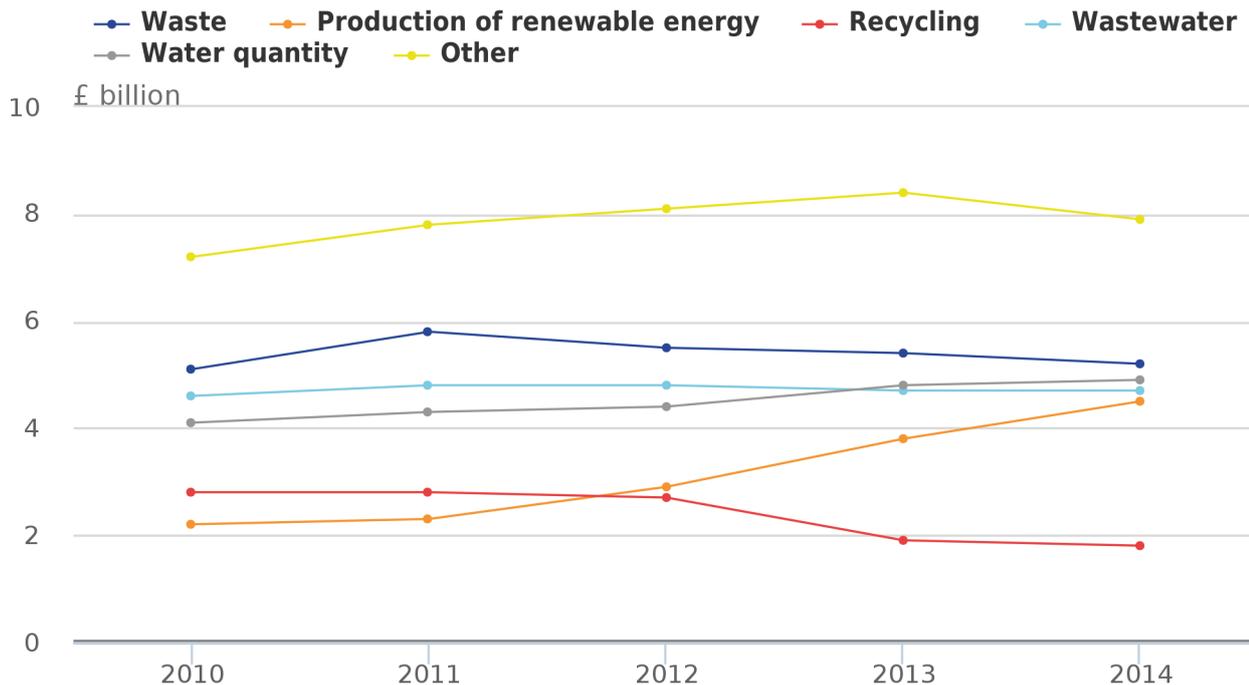
1. See the beginning of this section for the list of the activities included in 'other'.

As with output, waste activities accounted for the largest proportion of gross value added (GVA) in the EGSS in all years, with 18.0% in 2014 (Figure 3); however, the GVA by waste activities has decreased by 9.6% since 2011, indicating that the intermediate consumption involved in these activities has increased over time. The GVA by wastewater activities has remained relatively stable and accounted for the second largest proportion of GVA between 2010 and 2012; this activity was overtaken by water quantity management activities in 2013. The GVA from water quantity management activities increased by 19.3% from £4.1 billion in 2010 to £4.9 billion in 2014.

As with output, the largest growth was seen in production of renewable energy, which doubled between 2010 and 2014 from £2.2 billion to £4.5 billion. The GVA from recycling activities decreased year-on-year between 2010 and 2014 from £2.8 billion to £1.8 billion. The GVA from the other EGSS activities grew by 15.6% between 2010 and 2013 and decreased by 5.2% between 2013 and 2014; the growth between 2013 and 2014 is 10.6% if the 5 ABS-derived activities are removed (see "Section 9: Quality and methodology").

**Figure 3: GVA by EGSS activity**

2010 to 2014



Source: Office for National Statistics

Notes:

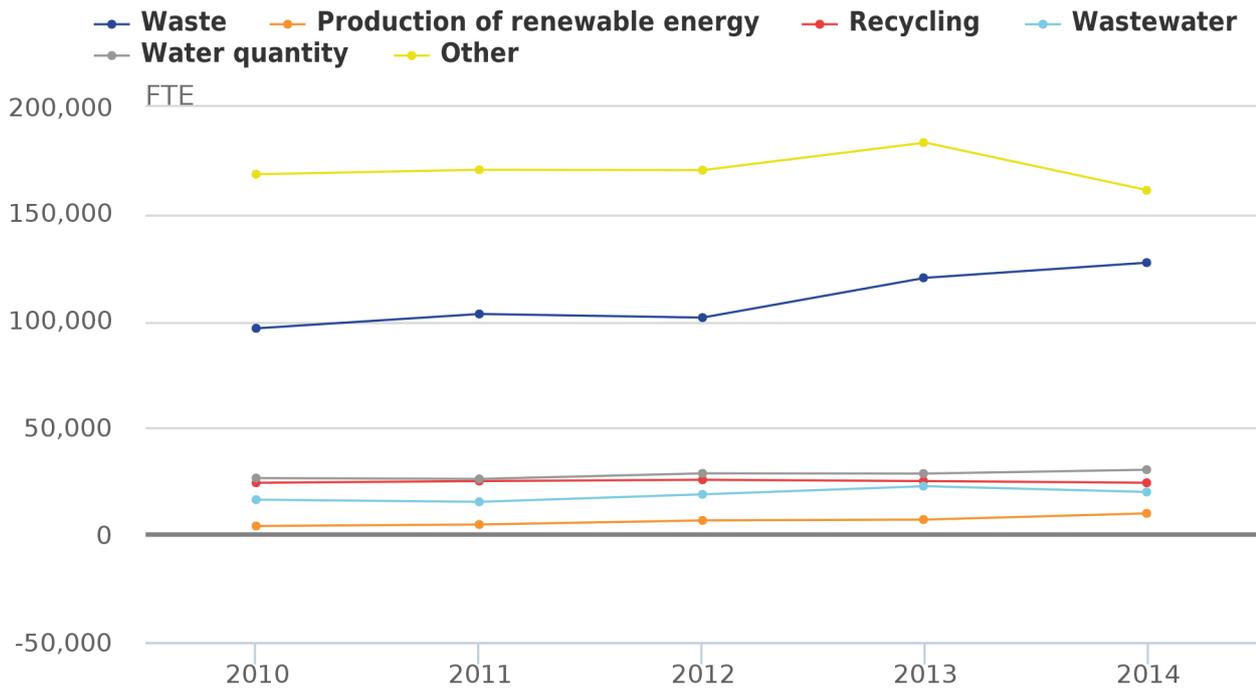
1. See the beginning of this section for the list of the activities included in 'other'.

Employment in waste management activities increased steadily between 2012 and 2014 and accounted for the largest number of full-time equivalent (FTE) employees for all years, with 127,300 in 2014 (Figure 4). Production of renewable energy activities accounted for the smallest proportion of FTE employment of the 5 main activities in all years (2.7% in 2014); this reflects that production of renewable energy requires relatively few employees to produce a high level of output and GVA. Water quantity management employment increased gradually from 26,600 FTE employees in 2010 to 30,500 FTE employees in 2014. Employment in recycling activities remained consistent between 2010 and 2014, while employment in wastewater activities increased between 2011 and 2013 before decreasing between 2013 and 2014.

Combined together, the remaining EGSS activities accounted for the largest proportion of employment; this reflects that a number of these activities are resource intensive, for example environmental consultancy, and so require a higher number of employees to produce a comparatively low level of output and GVA. As with output and GVA, employment decreased between 2013 and 2014 by 12.2%; if the 5 ABS-derived EGSS activities are removed from the total then the decrease is considerably smaller at 0.4% (see "Section 9: Quality and methodology" for more information).

**Figure 4: Employment (FTE) by EGSS activity**

2010 to 2014



Source: Office for National Statistics

Notes:

1. See the beginning of this section for the list of the activities included in 'other'.

## 6 . Environmental protection and resource management activities

Another way to examine the environmental goods and services sector (EGSS) in the UK is by environmental protection and resource management domains. These domains are defined by 2 environmental categorisation schemes: the classification of environmental protection activities (CEPA) and the classification of resource management activities (CReMA) (Table 2).

Environmental protection includes technologies, goods and services that reduce or prevent the amount of harmful material that enters the environment, while resource management includes technologies, goods and services that manage or conserve natural resources. Both classifications also include activities related to monitoring the quality of the environment, research and development (R&D), general administration and training and teaching related to environmental protection or resource management.

The main difference between the 2 classifications is that environmental protection focuses on physical outputs while resource management focuses on inputs (natural resources). The CEPA is an internationally recognised standard devised by Eurostat. Although there is currently no internationally agreed standard classification for resource management activities, the CReMA was developed by the Eurostat EGSS taskforce to be used for EGSS purposes.

**Table 2: Categories of CEPA and CReMA**

Classification of Environmental Protection Activities (CEPA)	Description
CEPA 1	Protection of ambient air and climate
CEPA 2	Wastewater management
CEPA 3	Waste management
CEPA 4	Protection and remediation of soil, groundwater and surface water
CEPA 5	Noise and vibration abatement
CEPA 6	Protection biodiversity and landscapes
CEPA 7	Protection against radiation
CEPA 8	Environmental research and development
CEPA 9	Other environmental protection activities
Classification of Resource Management Activities (CReMA)	Description
CReMA 10	Management of water
CReMA 11	Management of forest resources
CReMA 12	Management of wild flora and fauna
CReMA 13	Management of energy resources
CReMA 14	Management of minerals
CReMA 15	Research and development activities of resource management
CReMA 16	Other resource management activities

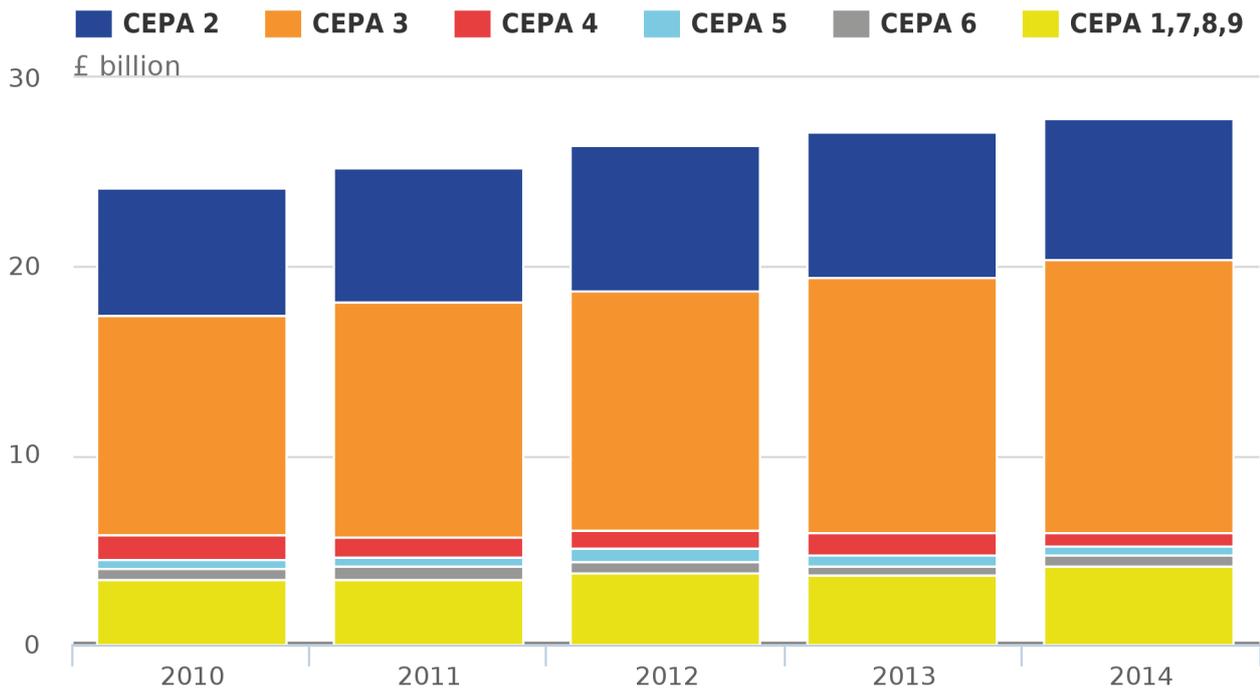
Source: Office for National Statistics

Since 2010, output from both environmental protection and resource management activities has grown (Figures 5 and 6). Output from environmental protection activities increased by 15.6% from £24.2 billion in 2010 to £28.0 billion in 2014, whilst output from resource management activities increased by 21.2% from £27.2 billion in 2010 to £33.0 billion in 2014.

Output of resource management activities has increased more rapidly than environmental protection activities due mainly to the growth in the management of energy resources (CReMA 13), which includes the production of renewable energy activities. The slow in growth between 2013 and 2014 observed in the CReMA activities is primarily a result of the 5 ABS-derived EGSS activities (see “Section 9: Quality and methodology” for more information), around two-thirds of which feed in to various CReMA activities. The main area of growth observed in the environmental protection activities was in waste management (CEPA 3) with a 25.3% increase in output from £11.6 billion in 2010 to £14.6 billion in 2014.

**Figure 5: Output by environmental protection activities**

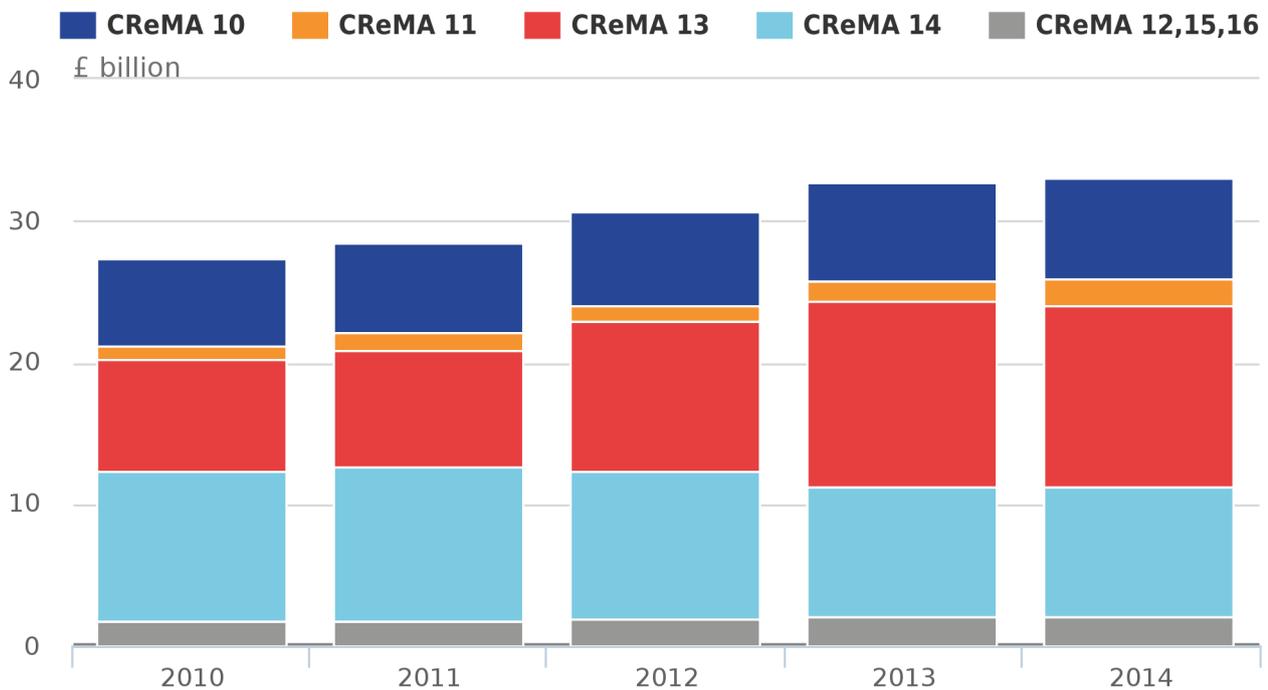
2010 to 2014



Source: Office for National Statistics

**Figure 6: Output by resource management activities**

2010 to 2014

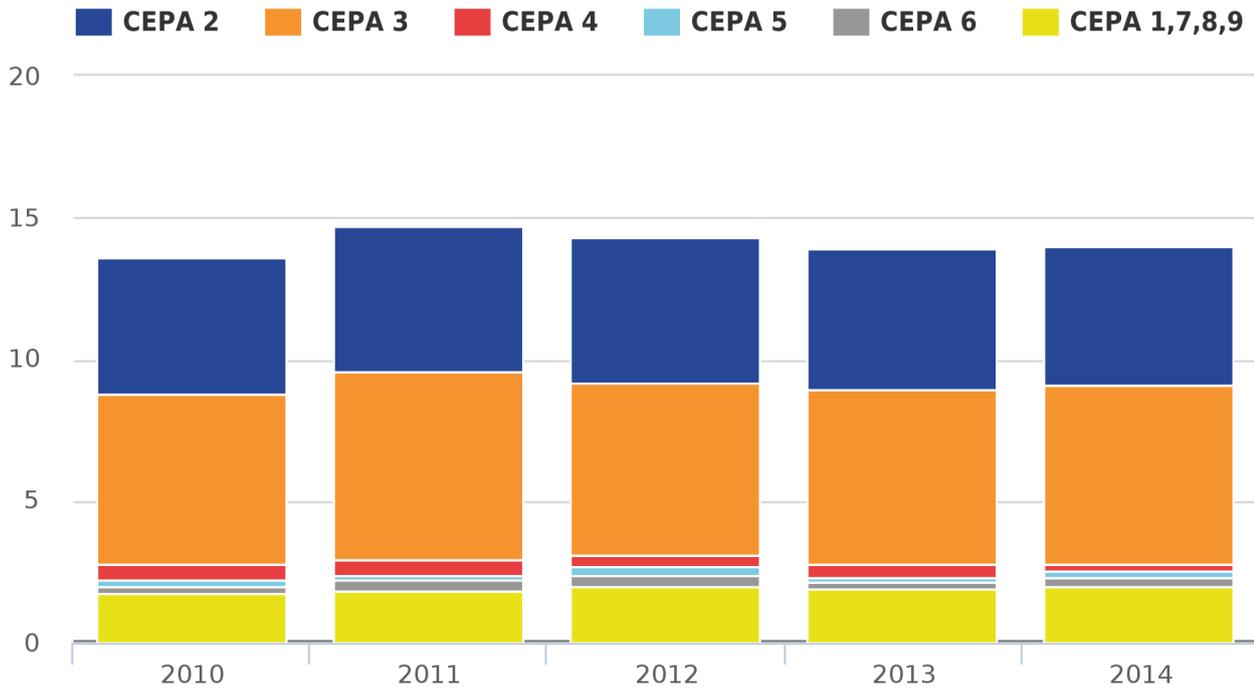


Source: Office for National Statistics

Value added by environmental protection activities fluctuated between 2010 and 2014, peaking in 2011 with £14.6 billion, before dropping to £14.1 billion in 2014 (Figure 7). This is due predominantly to changes in the GVA produced from waste management activities (CEPA 3). In contrast, GVA by resource management activities increased steadily between 2010 and 2013 from £12.5 billion to £15.0 billion before dropping slightly to £14.9 billion in 2014 (Figure 8). The growth in the CReMA activities between 2010 and 2013 is due mainly to an increase in the GVA produced by management of energy resources (CReMA 13) whilst the decrease between 2013 and 2014 is due to the 5 ABS-derived EGSS activities, the majority of which feed into CReMA activities (see “Section 9: Quality and methodology” for more information).

**Figure 7: GVA by environmental protection activities**

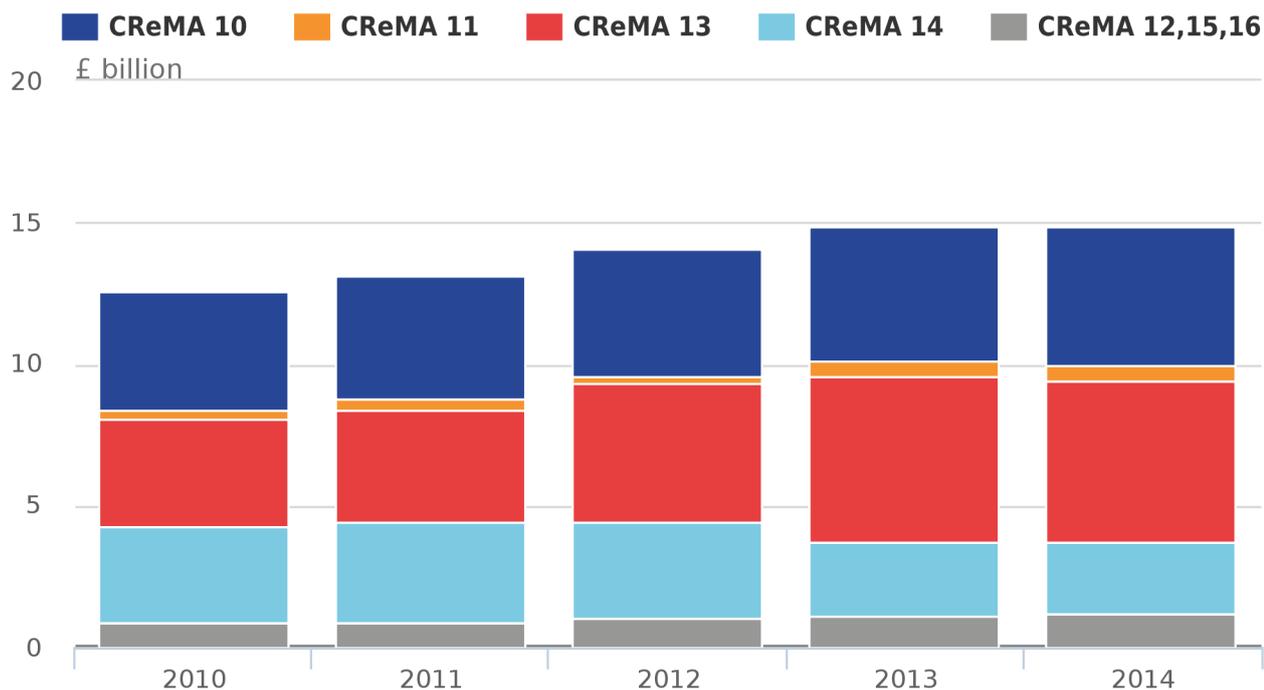
2010 to 2014



Source: Office for National Statistics

**Figure 8: GVA by resource management activities**

2010 to 2014



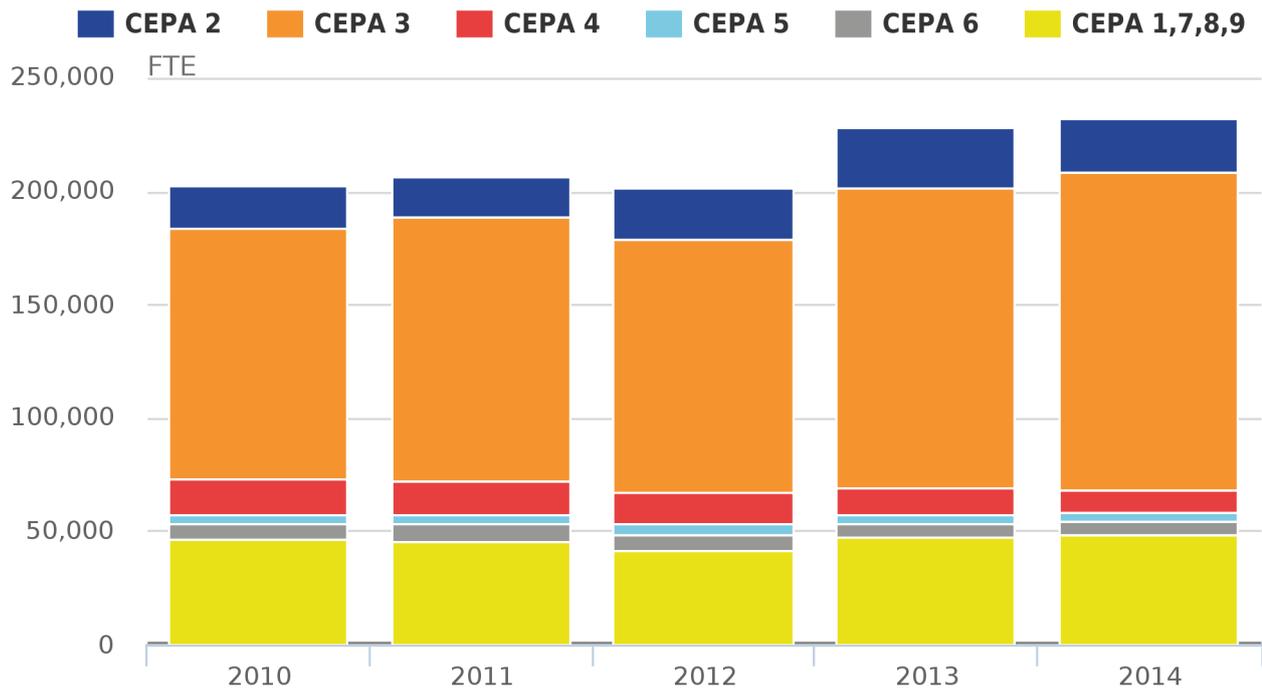
Source: Office for National Statistics

Employment in environmental protection activities remained relatively stable between 2010 and 2012, increased by 13.4% between 2012 and 2013 and then stayed at a similar level in 2014 with 231,800 full-time equivalents (FTE) (Figure 9). This growth was largely because of the increase in employment in waste management activities (CEPA 3). Employment in resource management activities grew by 18.0% between 2010 and 2013 from 133,900 FTE to 158,000 FTE (Figure 10) but decreased by 10.6% between 2013 and 2014. As with output and GVA, the growth between 2010 and 2013 was driven by management of energy resources (CReMA 13). The decrease between 2013 and 2014 is due to the 5 ABS-derived EGSS activities (see “Section 9: Quality and methodology” for more information); when these are removed from the total, employment in resource management activities increased by 6.2% between 2013 and 2014.

Employment was higher in environmental protection activities compared with resource management activities in all years between 2010 and 2014; however, total output and GVA were lower in environmental protection activities in all years. This reflects that productivity per FTE employee was lower in environmental protection activities at around £121,000 per FTE compared with £234,000 per FTE in resource management activities in 2014.

**Figure 9: Employment (FTE) by environmental protection activities**

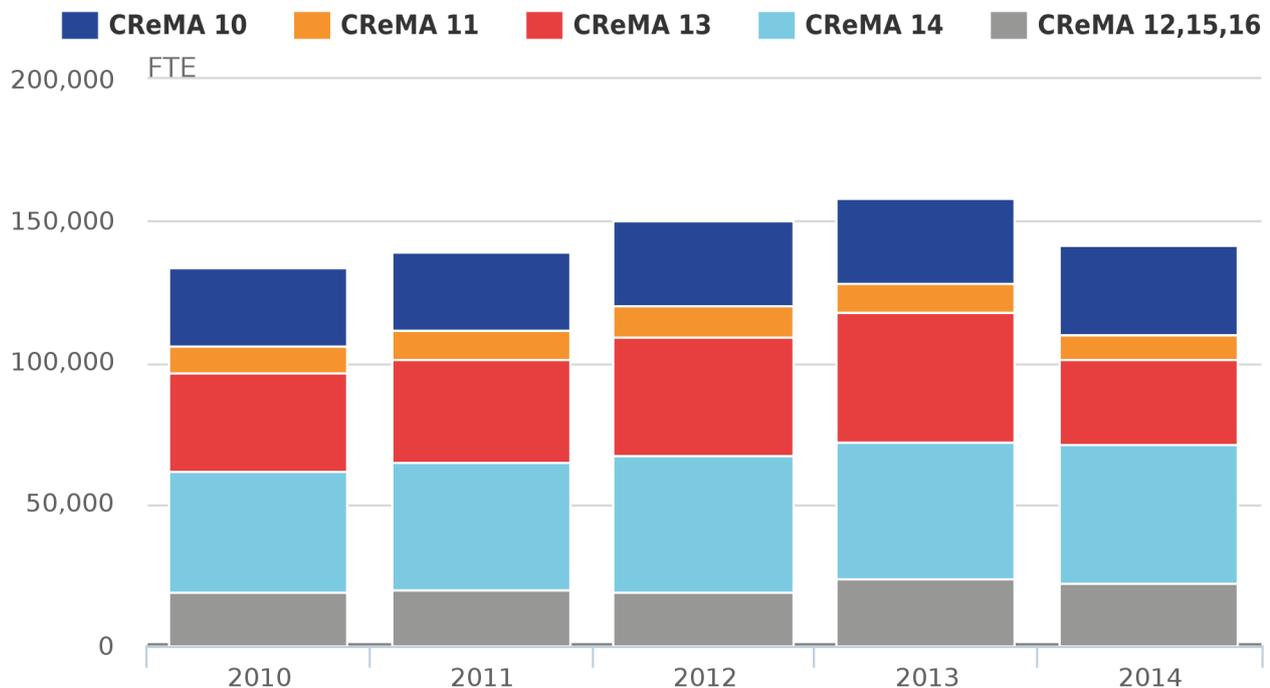
2010 to 2014



Source: Office for National Statistics

**Figure 10: Employment (FTE) by resource management activities**

2010 to 2014



Source: Office for National Statistics

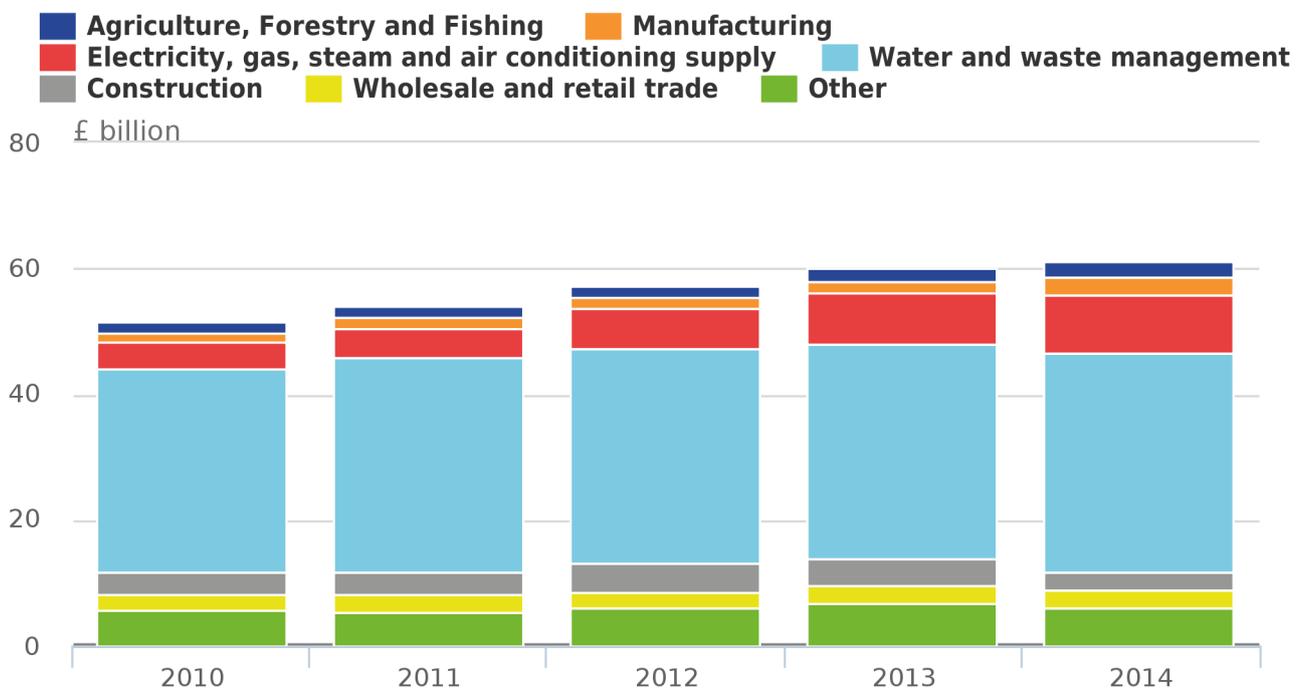
## 7 . Industries producing environmental goods and services

A diverse range of industries are involved in the production of environmental goods and services; estimates in this section are presented at Standard Industrial Classification (SIC) section level. Classification is by the producer unit and is determined by the primary activity<sup>1</sup> of the business.

Water and waste management industries (SIC section E) contributed the largest amount of output to the environmental goods and services sector (EGSS) with £34.7 billion in 2014 (56.9% of total EGSS output in 2014) (Figure 11). This is unsurprising considering that the largest output in the EGSS was from waste management activities (Figure 2). Additionally, EGSS output was largest for CEPA 2 (wastewater management) and CEPA 3 (waste management), which fall under the water and waste management SIC section. Electricity, gas, steam and air conditioning supply (SIC section D) produced the second highest output, with £9.5 billion in 2014 (15.6%) and accounted for the majority of the increase observed between 2010 and 2014; this section includes production of renewable energy activities, which doubled between 2010 and 2014.

**Figure 11: Output by industry**

2010 to 2014

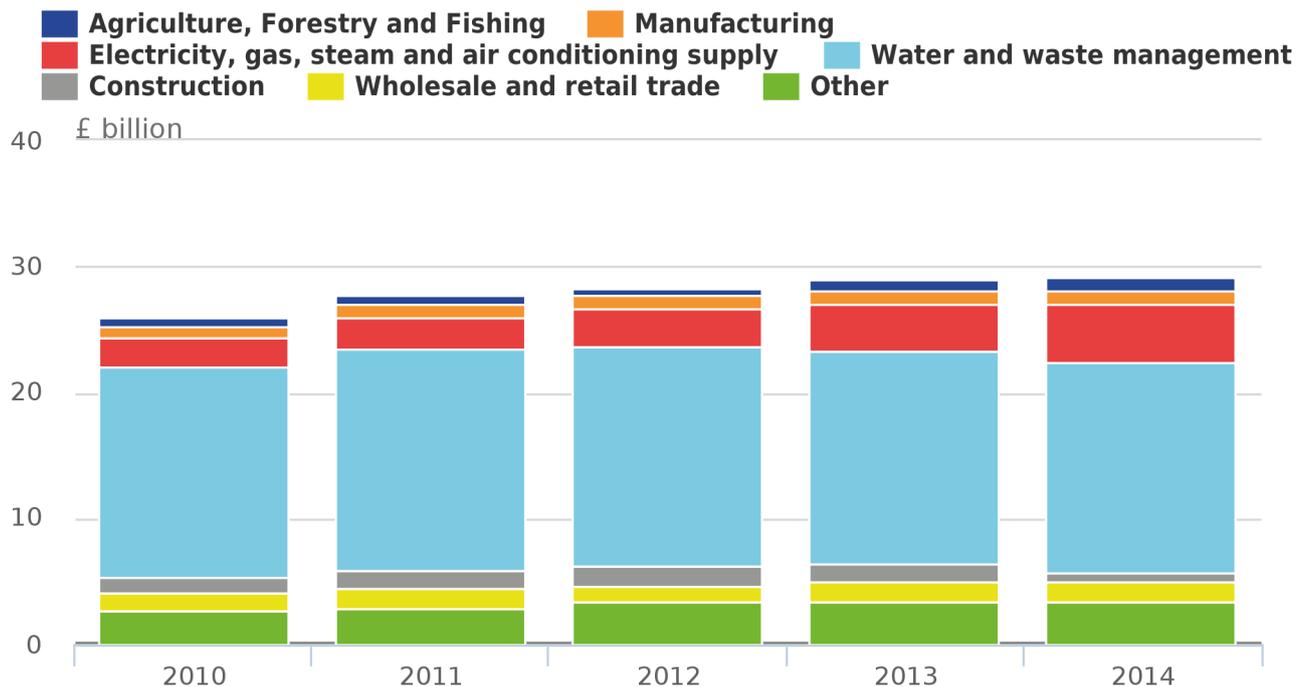


Source: Office for National Statistics

A similar pattern to output is seen in the gross value added (GVA) by industry, with water and waste management accounting for the largest proportion at £16.7 billion in 2014 (57.6% of total EGSS GVA) (Figure 12). The electricity, gas, steam and air conditioning supply section produced the second highest EGSS value added, with 16.1% (£4.7 billion) in 2014. Output grew more rapidly than GVA between 2010 and 2014 (18.6% and 11.2% respectively), this difference was predominantly caused by the water and waste management section; the majority of EGSS activity comes under this section and it saw no significant growth in GVA between 2010 and 2014 (negative 0.2%), which slowed the total EGSS GVA growth rate.

**Figure 12: GVA by industry**

2010 to 2014

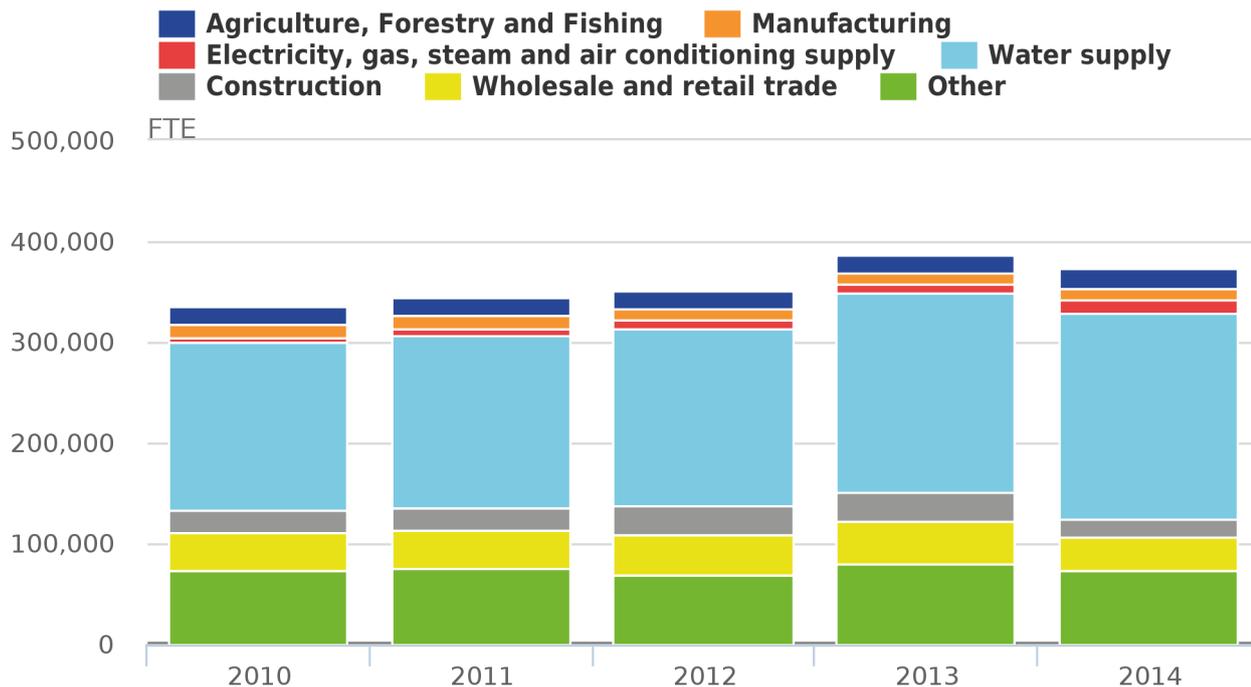


Source: Office for National Statistics

The water and waste management section accounted for the largest proportion of EGSS employment, with 54.9% (204,600 full-time equivalent (FTE) employees in 2014), which is slightly lower than the proportion of output (56.9%) and GVA (57.6%) accounted for by these activities. The electricity, gas, steam and air supply section accounted for a smaller proportion of EGSS employment (3.2% in 2014) than output (15.6% in 2014) and GVA (16.1% in 2014). This reflects the fact that the production of renewable energy requires very few employees to generate a level of output and GVA. The decrease in employment between 2013 and 2014 is due to the 5 ABS-derived EGSS activities that predominantly feed into the construction and “other” sections activities (see “Section 9: Quality and methodology” for more information); when these 5 activities are removed, total employment increased by 2.5% between 2013 and 2014.

**Figure 13: Employment (FTE) by industry**

2010 to 2014



Source: Office for National Statistics

## Notes for: Industries producing environmental goods and services

1. Primary activity is defined as the activity which accounts for the largest proportion of employment.

## 8 . Next steps

A large amount of development work is planned for 2017 to improve the environmental goods and services sector (EGSS) estimates. We will be focusing on improving the methodology for the Annual Business Survey (ABS)-derived activities in order to more precisely capture the magnitude of these EGSS activities. We are planning to incorporate information from the [Low Carbon and Renewable Energy Economy Survey](#) ([link](#) to latest results), which collects information from businesses on employment, investment, turnover, imports and exports of low carbon and renewable energy activities. Combining these 2 data sources will strengthen the estimates for these EGSS activities.

We will investigate data sources to supplement the recycling activities estimates to ensure that the contribution from the public sector is not being underestimated. We will also look to make additional improvements to “water quantity management”, which currently includes not only resource management activities to minimise water losses and water reuses (considered part of the EGSS) but also services relating to the distribution, collection and treatment of water. Eurostat recognise that it is difficult to narrow the scope to exclude the distribution, collection and treatment of water, but future improvements may be possible once the resource management expenditure accounts (ReMEA) are further refined and completed. One way in which we plan to improve this category is to consider the financial records of water companies to identify expenditure and investment (based on the formation of fixed capital) in water management services, which may help to estimate the resource management activities appropriate for inclusion in the EGSS.

The estimates for insulation activities are currently underestimates in the EGSS due to the lack of information on the installation services associated with double and triple glazing. Insulation in commercial building is also unaccounted for and will require further work to be incorporated in the future.

Currently, estimates for environmental-related education do not include secondary education or post-secondary non-tertiary education relating to environmental protection and resource management activities. It is proposed that these will be incorporated once UK education statistics provide more detail.

The EU regulation 538/2014 requires the Office for National Statistics (ONS) to provide data on exports of EGS. This work is currently ongoing and initial estimates on exports in the EGSS will be included in the next EGSS statistical bulletin.

The next update to the EGSS estimates are currently planned for January 2018 and will occur on an annual basis. We aim to produce a longer time series, where data sources allow, in order to assess how the EGSS has developed prior to the year 2010.

The methodology used to develop these estimates remains under development; the estimates reported in this publication are experimental and should be interpreted in this context. We welcome comments and feedback on all aspects of the methodology used and seek feedback for further improvement and refinement.

## 9 . Quality and methodology

We have used a wide variety of sources for the collection of the environmental goods and services sector (EGSS) statistics, which have been compiled in line with the guidelines recommended by the [EGSS Practical Guide \(2016\)](#) and [Eurostat EGSS Handbook \(2016\)](#). The methodology used to develop these estimates remains under development; the estimates reported in this publication are experimental and should be interpreted in this context. Experimental Statistics are those that are in the testing phase, are not yet fully developed and have not been submitted for assessment to the UK Statistics Authority. [Experimental Statistics](#) are published in order to involve customers and stakeholders in their development and as a means of building in quality at an early stage. Further information on Experimental Statistics can be found on our website. Detailed information on the data sources and methodologies used are presented in the [Methodology annex](#).

Five of the EGSS activities are derived from a 2-part question on the Annual Business Survey (ABS) introduced in 2013:

- energy saving and sustainability
- environmental consultancy
- environmental construction
- environmental inspection and control
- production of industrial environmental equipment

Businesses self-report whether they produce a good or service with the main aim of protecting the environment, which we then validate and allocate to one or more CEPA or CReMA code. Estimates of EGSS output, GVA and employment between 2010 and 2012 for these activities were back-casted from the 2013 ABS data based on a business's turnover in these years, creating a relatively smooth series. In future years however, the series may be more volatile as a result of the small sample sizes involved and the subjective nature of the methodology. The figures for 2014 show some noticeable differences to 2013 and result in a net decrease in the output, GVA and employment for these activities combined, which has also affected the aggregated figures. The figures for these specific activities should be treated with caution along with any aggregate figures that they feed into.

Estimates for recycling activity are derived by calculating the proportion of GVA and output in SIC 38 (waste collection, treatment and disposal activities; material recovery) that comes from SIC 38.3 (materials recovery) using data from the ABS and applying this to output and GVA for SIC 38 from National Accounts Supply and Use Tables, which cover the whole economy. However, as the ABS only collects information on the private sector it is likely that this methodology is underestimating the contribution of the public sector to recycling activities. This may explain why the estimated output and GVA presented in this bulletin decrease over time. Without more detailed national accounts data it is not possible to derive more accurate figures and so the estimates should be used with caution.