

Statistical bulletin

Environmental Protection Expenditure Survey, UK: 2021

Estimates of environmental protection expenditure by UK industries, based on the Environmental Protection Expenditure Survey.

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1 . Main points

- Total environmental protection expenditure (EPE) by those UK businesses targeted by this survey was an estimated £2.1 billion in 2021, an increase of 10.5% from an estimated £1.9 billion in 2020.
- Between 2016 and 2021, total estimates from the EPE Survey have remained around £2 billion, with small annual fluctuations around this level.
- Operating costs accounted for £1.8 billion (85.7%) of EPE in 2021, of which £1.4 billion related to payments to external organisations.
- Solid waste management activities accounted for almost half (£1.0 billion, 47.6%) of all EPE in 2021.

2 . Environmental protection expenditure (EPE) by UK businesses

Our Environmental Protection Expenditure (EPE) Survey collects data from a selected group of industries (for more detail see [Section 4: Environmental protection expenditure by industry](#)). This survey has been designed to target businesses that are likely to have expenditure that aims to protect the environment, rather than generating turnover from providing environmental protection services, for example.

Estimates from the EPE Survey are used in our [EPE accounts](#), which are part of our [UK Environmental Accounts: 2023](#). These capture estimates of expenditure, output, and use by government, businesses and households.

This bulletin outlines UK EPE estimates from the EPE Survey only. Data are collected from businesses on an annual basis. All estimates in this bulletin are given in current prices, as provided by the survey respondents; no adjustments have been made to take account of the effects of inflation.

EPE is defined in the [Eurostat EPE handbook](#) as:

"the economic resources devoted to all activities and actions which have as their main purpose the prevention, reduction and elimination of pollution and of any other degradation of the environment."

Examples of EPE include:

- managing sewage
- managing solid waste
- treatment of exhaust gases
- protection of natural landscapes

The [accompanying dataset](#) gives more detail on individual expenditure types (as well as profits made from disposals), by industry and activity breakdowns.

Environmental protection expenditure in 2021

For those UK businesses targeted by the EPE Survey, total EPE was an estimated £2.1 billion in 2021.

EPE can be divided between operating expenditure and capital expenditure.

Operating expenditure relates to running costs incurred by businesses for environmental protection services that enable them to operate.

Capital expenditure relates to investment by businesses in assets such as, land, equipment or buildings that are used during business operations to protect the environment from pollutants. Capital expenditure is often one-off items, so low levels of investment in one year may reflect high investment in previous years.

In 2021, the majority of EPE related to operating expenditure, accounting for £1.8 billion (85.7% of total EPE). Around 77.8% (£1.4 billion) of this was external operating expenditure.

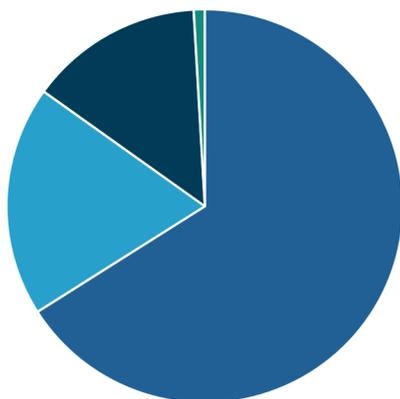
Capital expenditure from UK businesses was £0.3 billion (14.3% of total EPE) in 2021. The majority of this (94.4%) was end-of-pipe capital expenditure (for full definitions of expenditure types see [Section 8: Glossary](#)).

Figure 1: Targeted UK businesses spent £2.1 billion on environmental protection in 2021

Environmental protection expenditure (EPE) by expenditure type, UK, 2021

Figure 1: Targeted UK businesses spent £2.1 billion on environmental protection in 2021

Environmental protection expenditure (EPE) by expenditure type, UK, 2021



Source: Environmental Protection Expenditure Survey from the Office for National Statistics

Notes:

1. See [Section 8: Glossary](#) for full definitions of EPE expenditure types.
2. Percentages may differ to those presented in main bulletin text because of difference in rounding precision.

Environmental protection expenditure from 2016 to 2021

Although the EPE Survey provides information from 2015, there was a significant change in survey methodology affecting data from 2016. As a result of this change, year-on-year comparisons are only made from 2016 onwards (for more detail see [Section 10: Strengths and limitations](#)).

Overall, UK EPE Survey estimates have increased by 5.0%, from an estimated £2.0 billion in 2016 to an estimated £2.1 billion in 2021.

Between 2016 and 2021, total EPE estimated from this survey has remained around £2 billion, with small annual fluctuations around this level. The highest estimate was £2.2 billion in 2017 and the lowest was £1.9 billion in 2020. As noted above, UK EPE has since rebounded between 2020 and 2021, increasing by 10.5%, from £1.9 billion to £2.1 billion.

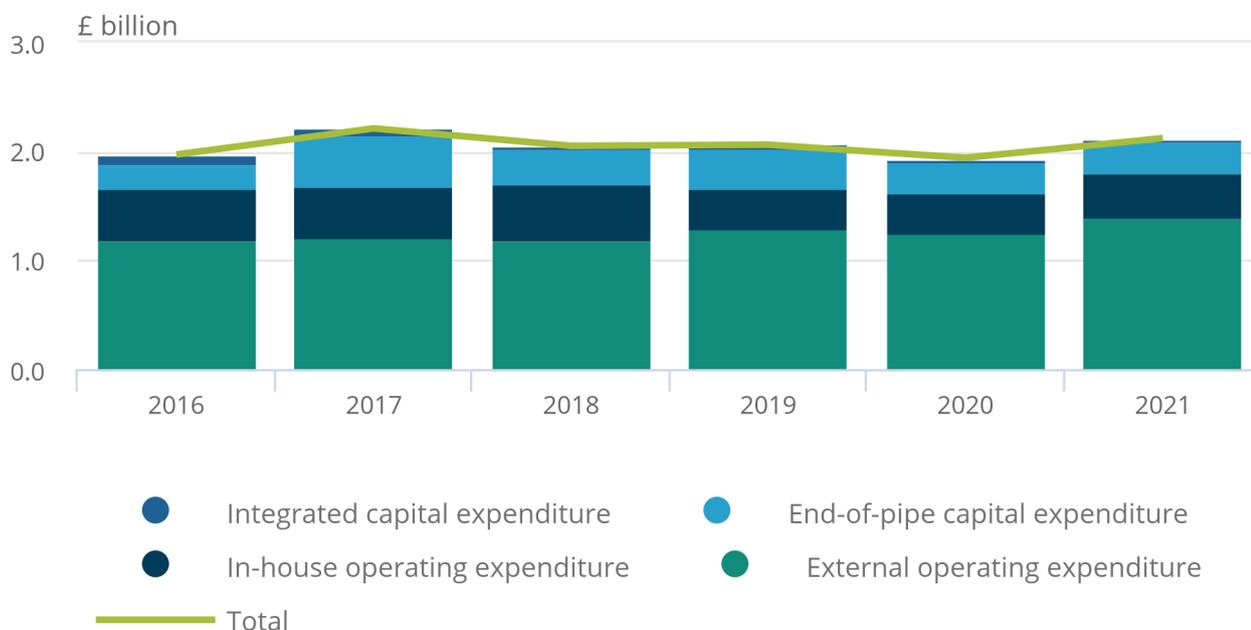
In every year since the first comparable figures in 2016, the majority of EPE has related to external operating expenditure. External operating expenditure was also at its highest level in 2021 since data collection began on this expenditure type in 2016.

Figure 2: Total UK EPE Survey estimates have remained relatively stable between 2016 and 2021

Environmental protection expenditure (EPE) in £ billions, UK, 2016 to 2021

Figure 2: Total UK EPE Survey estimates have remained relatively stable between 2016 and 2021

Environmental protection expenditure (EPE) in £ billions, UK, 2016 to 2021



Source: Environmental Protection Expenditure Survey from the Office for National Statistics

Notes:

1. All estimates are provided in current prices and are not adjusted for inflation.
2. Estimates may differ slightly from those presented in the accompanying dataset because of difference in rounding precision.
3. Sub-totals may not sum to totals because of rounding.
4. Year-on-year differences should be interpreted with caution because of the precision of survey-based estimates. 95% confidence intervals (CI), a standard way of expressing the statistical accuracy of a survey-based estimate, can be found in the dataset for different types of expenditure.
5. See [Section 8: Glossary](#) for full definitions of EPE expenditure types.

3 . Environmental protection expenditure (EPE) by activity

The [Eurostat Classification of Environmental Protection Activities and Expenditure \(CEPA\) - Explanatory notes \(PDF, 360KB\)](#) is used to define environmental protection expenditure (EPE) activity.

Solid waste management was estimated to be almost half of EPE activities, at £1.0 billion (47.6%). An estimated 90% (£0.9 billion) of this solid waste management was accounted for by external operating expenditure.

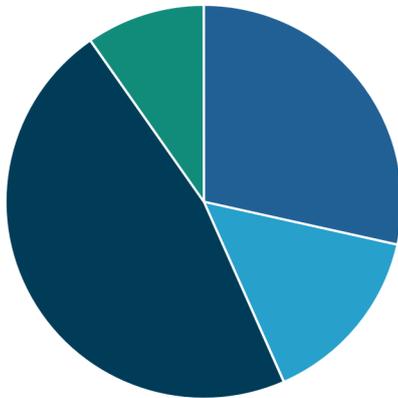
Between 2020 and 2021, solid waste management activities also had the largest increase of all CEPA activities, from £0.9 billion to £1.0 billion (11.1%).

Figure 3: Solid waste management accounted for the largest proportion of EPE Survey activity in 2021

Environmental protection expenditure (EPE) by activity, UK, 2021

Figure 3: Solid waste management accounted for the largest proportion of EPE Survey activity in 2021

Environmental protection expenditure (EPE) by activity, UK, 2021



Source: Environmental Protection Expenditure Survey from the Office for National Statistics

Notes:

1. See [Classification of Environmental Protection Activities and Expenditure \(CEPA\) - Explanatory notes \(PDF, 360KB\)](#) for full definitions of activities.
2. Percentages may differ to those presented in main bulletin text because of difference in rounding precision.

4 . Environmental protection expenditure by industry

Businesses are classified into an industry, using our current [UK Standard Industrial Classification \(SIC\) 2007](#), by the type of economic activity in which they are related to.

At a top level this system classifies businesses by industry (or section), within each of these industries businesses are further classified by division.

The Environmental Protection Expenditure (EPE) Survey samples UK businesses from 31 individual SIC divisions, all these divisions belong to one of the following four SIC industries (or sections):

- SIC Section B – Mining and quarrying
- SIC Section C – Manufacturing
- SIC Section D – Electricity, gas, steam and air conditioning supply
- SIC Section E – Water supply; sewerage, waste management and remediation activities

EPE varies across industries depending on the operating activity of the business, and strategies for waste management and environmental protection.

The SIC divisions selected for the EPE Survey are consistent with Eurostat EPE guidelines (see [Section 2: Environmental protection expenditure \(EPE\) by UK businesses](#)). Most of these divisions, and therefore most of the businesses sampled by the EPE survey (over 90%) are in the manufacturing industry. For this reason, although industry breakdowns are provided in the [accompanying dataset](#), they are not compared here as the results are heavily influenced by the nature of the sampling frame.

5 . Narrative questions

Businesses were asked for more information about why environmental protection activities had taken place and the considerations involved, as an addition to the 2021 Environmental Protection Expenditure (EPE) Survey. These questions were narrative based, to help explain trends in the quantitative data, rather than for analysis.

The responses provided information regarding different approaches to external and in-house operating expenditure. Respondents confirmed how they mainly used contractors and consultants for their specialist services to move and dispose of waste, and to provide maintenance for machinery and systems. By contrast, when responding about their in-house operating costs, many businesses confirmed that their EPE spend was mainly centred on staffing, with limited examples of in-house waste management being provided.

On capital expenditure, the majority of businesses confirmed they had no spend relating to EPE. Of those businesses that did confirm capital expenditure, a limited number reported that their spend was reducing because of efforts to become more efficient and environmentally sustainable.

Across all the narrative questions, some businesses confirmed an aim to reduce their environmental impact and provided examples of implementing operating efficiencies to achieve this.

6 . Climate change adaptation

As climate change has an increasing impact on weather conditions, people, and the natural environment, it is anticipated that businesses will need to invest in adapting to, or preparing for, the consequences of climate change (many of which have been identified in the [gov.uk policy paper, UK Climate Change Risk Assessment 2022](#)).

Additional data on this expenditure would help inform policy makers and the public. To support this, we introduced a new narrative question to the Environmental Protection Expenditure (EPE) Survey in 2021. We asked whether businesses were investing in "climate change adaptation".

Of the businesses who confirmed expenditure on adaptations to address the impact of climate change, the majority had adapted their premises, with examples including:

- installing heating or cooling systems
- installing new flood defenses
- changes to infrastructure and technology to build resilience

Businesses also made investments in staffing and training, while product diversifications were also cited, with some examples of how these related to climate change.

We will use these new questions and responses as we continue to develop the EPE survey to maximise insights on climate adaptation.

7 . Environmental Protection Expenditure Survey data

[Environmental Protection Expenditure Survey estimates: by industry and activity](#)

Dataset | Released 22 June 2023

Estimates for the UK's environmental protection expenditure by industry and activity, 2015 to 2021.

8 . Glossary

Environmental protection expenditure

Environmental protection expenditure (EPE) includes all activities and actions that have as their main purpose the prevention, reduction and elimination of pollution or any other degradation of the environment. Examples of EPE include:

- managing sewage
- managing solid waste
- treatment of exhaust gases
- protection of natural landscapes

Environmental protection types are classified in this bulletin according to an internationally recognised categorisation scheme devised in [Eurostat's Classification of Environmental Protection Activities and Expenditure \(CEPA\) - Explanatory notes \(PDF, 360KB\)](#).

External operating expenditure

External operating expenditure refers to operating costs paid to external organisations for treatment, disposal or investigation relating to wastewater management, protection of ambient air and climate, solid waste management or other environmental-related external operating expenditure not elsewhere classified.

In-house operating expenditure

In-house operating expenditure refers to on-site management costs for the treatment, disposal or investigation relating to wastewater management, protection of ambient air and climate, solid waste management or other environmental-related external operating expenditure not elsewhere classified.

End-of-pipe capital expenditure

End-of-pipe capital expenditure is a type of expenditure that represents investment in methods, technologies, processes or equipment designed to manage pollutants after their creation, such as investment in plants or equipment that treat generated pollutants.

Integrated capital expenditure

Integrated capital expenditure refers to investment in methods, technologies and equipment that are integrated within the business' overall activity, where the primary aim of the expenditure is to reduce any pollutants generated.

9 . Measuring the data

Information on environmental protection expenditure (EPE) comes from the Office for National Statistics (ONS) survey, which we have run annually since 2016, providing data for 2015.

The survey samples around 3,000 businesses that operate in four industries, based on [UK Standard Industrial Classification \(SIC\) 2007](#) to obtain estimates of EPE by these industries:

- SIC Section B – Mining and quarrying
- SIC Section C – Manufacturing
- SIC Section D – Electricity, gas, steam and air conditioning supply
- SIC Section E – Water supply; sewerage, waste management and remediation activities

In 2021, the response rate to the survey was 65%. Potential activity in other industries is not captured by the survey. As with any survey-based estimates, these are subject to a margin of error and should be interpreted with caution. Standard errors around all published estimates are published in the [dataset accompanying this release](#).

Revisions to Environmental Protection Expenditure Survey estimates

This release contains revisions to estimates for the years 2019 to 2020 since they were last published in June 2021. Revisions can result from a variety of factors, including:

- the incorporation of additional data received from businesses who have been sampled in multiple years of the survey
- changes to data, as a result of businesses revising their previous submissions
- developments in methodology and changes to the questionnaire

Quality

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in our [Environmental protection expenditure \(EPE\) survey Quality and Methodology Information \(QMI\)](#).

10 . Strengths and limitations

Uncertainty

Data for environmental protection expenditure (EPE) are survey-based estimates and gather information from a sample rather than the whole population. This means they are subject to some [uncertainty](#), which can have an effect on how changes in the estimates should be interpreted. Estimates of the level of uncertainty associated with the figures ([standard errors](#) and [confidence intervals](#)) reported are presented in the bulletin and datasets to aid interpretation.

Comparability

Prior to 2015, data were collected by a Department for Environment, Food and Rural Affairs (Defra) survey in 1994 (pilot), 1997, and then annually between 1999 and 2013. Defra have published [the results from the Environmental Protection Expenditure \(EPE\) Survey](#) for these years.

In 2016, the survey was migrated to the Office for National Statistics (ONS) and was dispatched in September 2016 to collect data for 2015. As a result of the migration no data were collected for 2014. Results from the EPE Survey from 2015 onwards are not comparable with previous data because of differences in the methodology between Defra and the ONS.

In 2016, we added a question to the EPE Survey to obtain estimates of external operating expenditure; prior to this, information was only collected on in-house operating expenditure. The addition of this question highlighted that many businesses had previously been including external operating costs in the values they provided for in-house operating expenditure. Consequently, 2015 estimates of in-house operating expenditure from the ONS Environmental Protection Expenditure (EPE) Survey may be overestimated and not directly comparable with estimates from 2016 onwards.

Geography

Estimates of total environmental protection expenditure (EPE) by industry and activity, are available at a UK level and are not further disaggregated by geography.

Timeliness

We aim to publish the Environmental Protection Expenditure (EPE) Survey data in the timeliest manner available, currently two years after the reference period. For example, data for 2021 are being published in 2023.

11 . Related links

[Low carbon and renewable energy economy, UK: 2021](#)

Bulletin | 16 February 2023

Estimates of the size of the UK's Low Carbon and Renewable Energy Economy (LCREE), including turnover and employment.

[UK Environmental Accounts: 2023](#)

Bulletin | Released 5 June 2023

Measuring the contribution of the environment to the economy, impact of economic activity on the environment, and response to environmental issues.

[UK environmental taxes: 2022](#)

Bulletin | Released 4 May 2023

The value and composition of UK environmental taxes between 1997 and 2022, by type of tax and economic activity, with other European country comparisons.

["Green jobs" update, current and upcoming work: March 2023](#)

Article | Released 13 March 2023

An update to our work on green jobs, including a summary of user engagement, our definition, and future work.

12 . Cite this statistical bulletin

Office for National Statistics (ONS), released 22 June 2023, ONS website, statistical bulletin, [Environmental Protection Expenditure Survey, UK: 2021](#)