

Article

Material footprint in the UK: 2017

The UK's material footprint captures the amount of domestic and foreign extraction of materials needed to produce the goods and services used by households, governments and charities in the UK.

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1 . Main points

- In 2017, the UK's material footprint was estimated as 1.2 billion tonnes, equivalent to 18.5 tonnes per person.
- The UK is increasingly a net importer of materials – domestic extraction accounted for just under a half (47%) of material footprint in 1990; by 2017, this had fallen to just over a fifth (21%).
- Material footprint fell during the economic downturn of 2008 and 2009, but rose again from 2012.
- The proportion of material footprint sourced from China and India rose between 1990 and 2017 (from 2% to 17% and 1% to 7% respectively).

2 . Introduction

The UK's material footprint, or raw material consumption, captures the amount of domestic and foreign extraction of materials needed to produce the goods and services used by households, governments and charities in the UK in one year. This information can be used to examine which goods and services have the largest impact on material extraction.

Methodology for calculating material footprint is complex. Two approaches were outlined in [Measuring material footprint in the UK](#) – one used by Eurostat and another developed for the Department for Environment, Food and Rural Affairs (Defra) by the University of Leeds. This article gives the latest estimates using the University of Leeds method, updating the time series where revised data are available, and including figures for 2017. Estimates for both the University of Leeds and Eurostat methods are included in the [material footprint dataset](#). Data are presented for the UK.¹

[Material flow accounts data](#), which show how materials flow through the economy and are used in both methods of calculating material footprint, have also been updated to 2018. It should be noted that, because of timing of data availability, the material footprint estimates are based on, along with many other data sources, material flow estimates as previously published to 2017.

Notes for: Introduction

1. Defra are intending to publish estimates of Material Footprint for England as part of their report monitoring progress against their Resources and Waste Strategy. The scaling methodology used to estimate this, while suitable for England, is more sensitive if applied to other UK countries. This is because the method uses household expenditure within the UK, of which England makes up a substantial proportion.

3 . Material footprint in the UK

Figure 1 shows the UK estimates for material footprint (using the University of Leeds method) by type of material: biomass, metal ores, non-metallic minerals (also known as construction materials), fossil energy materials and carriers (or fossil fuels).

In 2017, material footprint in the UK was estimated as 1.2 billion tonnes, equivalent to 18.5 tonnes per person. Material footprint has remained relatively stable since 2000.

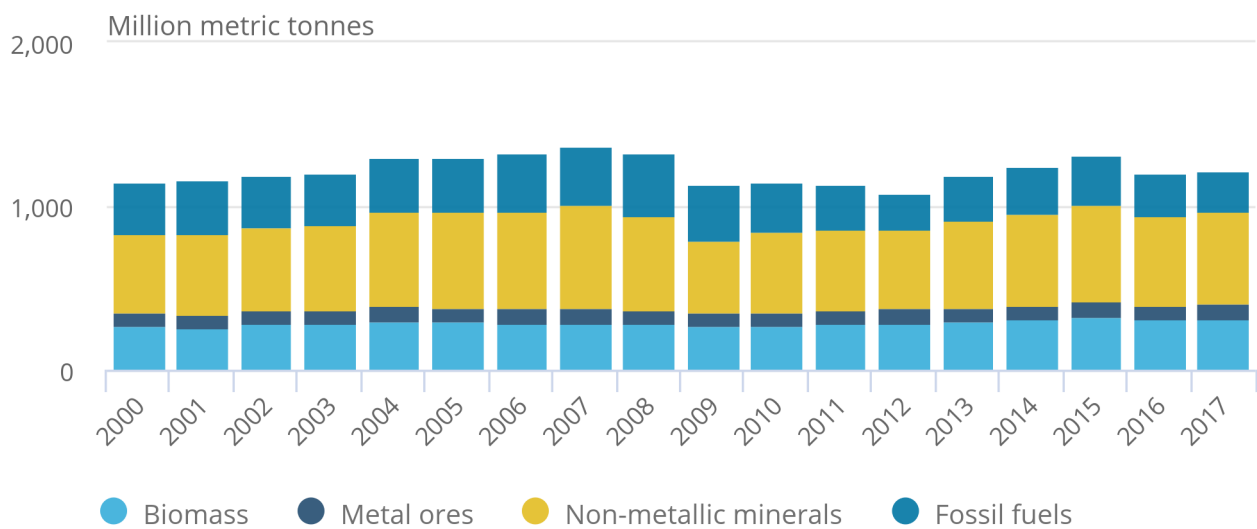
The exception to this was during the economic downturn of 2008 and 2009. Material footprint fell by around 15% between 2008 and 2009 as a result of the impact of the economic downturn. Since 2012, the UK's material footprint has largely been increasing, although it is still lower than its peak in 2007.

Figure 1: In 2017, material footprint in the UK was estimated as 1.2 billion tonnes

Material footprint by type of material, UK, 2000 to 2017

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Material footprint by type of material, UK, 2000 to 2017



Source: University of Leeds

Notes:

1. Estimates for 1990 to 2000 are available in the [dataset](#).

Figure 2 shows the changes over time in material footprint for each of the material types since 2000. While the consumption of biomass and metal ores has remained fairly static, there have been changes to consumption of non-metallic minerals and fossil fuels.

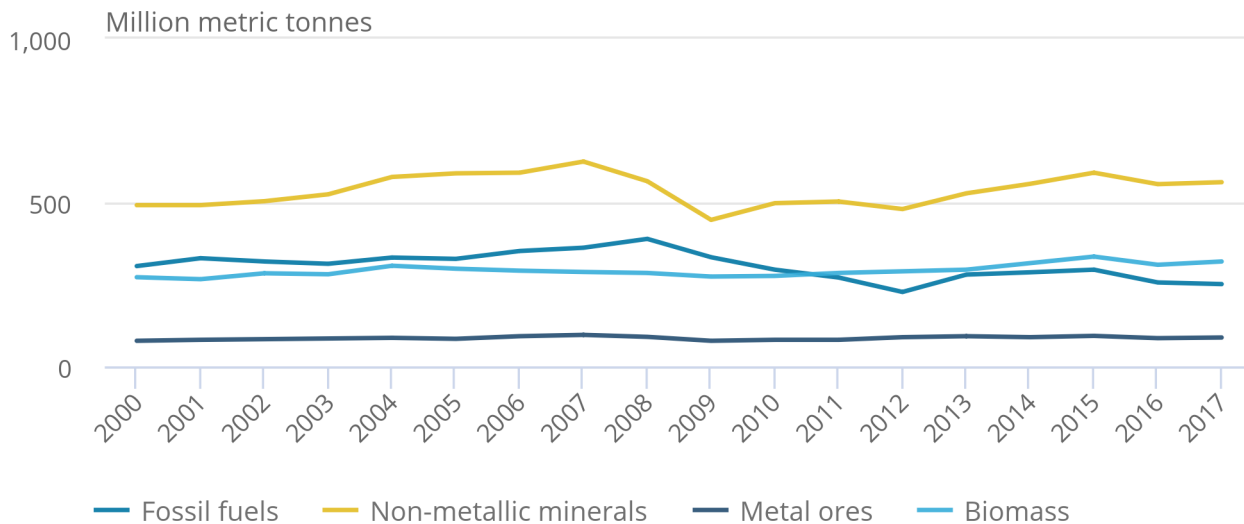
Consumption of non-metallic minerals, because of their use by the construction industry, fell during the economic downturn of 2008 and 2009. Fossil fuel consumption also fell around the same time, for similar reasons, but has not resumed the upward trend seen in non-metallic minerals.

Figure 2: Consumption of non-metallic minerals and fossil fuels fell during the economic downturn of 2008 and 2009

Material footprint by type of material, UK, 2000 to 2017

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Material footprint by type of material, UK, 2000 to 2017



Source: University of Leeds

Notes:

1. Estimates for 1990 to 2000 are available in the [dataset](#).

The UK is a net importer of materials – material footprint is higher than for domestic extraction figures (given in the [material flows dataset](#)). This is the case for each of the material types.

4 . Material footprint by source country

Figure 3 shows material footprint by the countries from which the materials (then used in goods and services consumed by UK residents) are originally extracted from. Note, this is not a measure of how much is imported into the UK from those countries, but of their relative contribution to the UK measure of material footprint.

UK (or domestic) extraction accounted for just under a half (47%) of material footprint in 1990. By 2017, this had fallen to just over a fifth (21%).

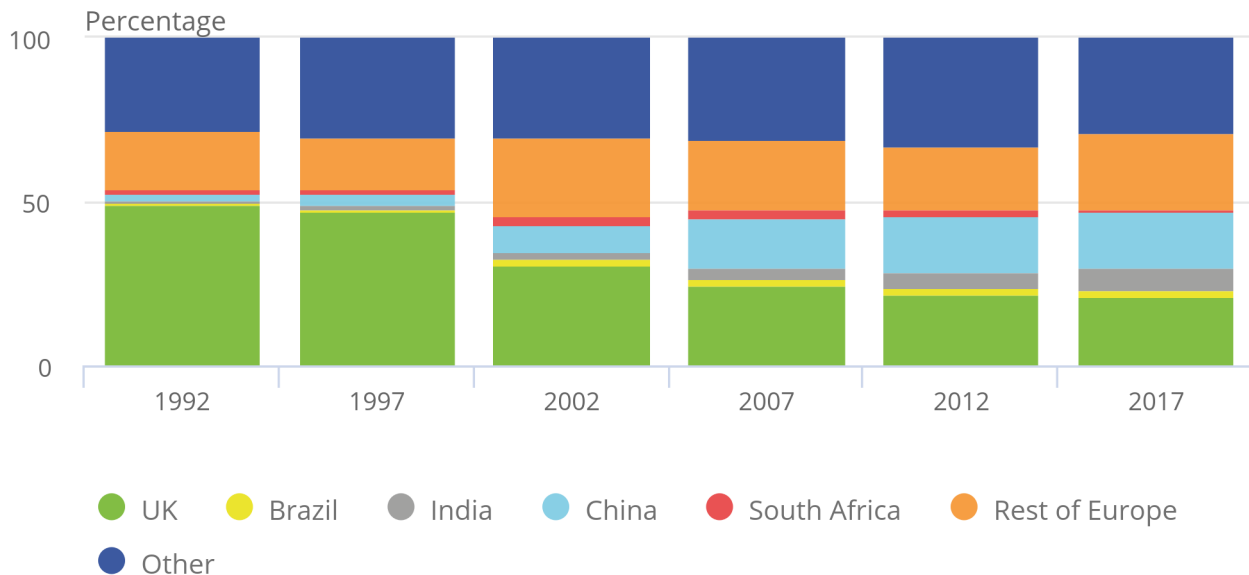
The proportion of material footprint sourced from Asian countries has risen over the same period. In 1990, China accounted for around 2% of the UK material footprint. By 2017, this had risen to 17%. Similarly, estimates for India rose from 1% to 7% over the same period.

Figure 3: Domestic extraction accounted for just over a fifth of material footprint in 2017

Material footprint by proportion originating from selected source countries, data for every 5 years between 1992 and 2017

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Material footprint by proportion originating from selected source countries, data for every 5 years between 1992 and 2017



Source: University of Leeds

Notes:

1. Estimates for other years and more detail by country is available in the [dataset](#).

Material footprint by source country, by type of material

The source countries from which the materials (then used in goods and services consumed by UK residents) are originally extracted varies depending on the type of material. Figures 4 and 5 show material footprint data by source country for each of the material types (biomass, metal ores, non-metallic minerals and fossil fuels) for 1990 and 2017 respectively.

For biomass, just over a third (35%) of material footprint in 2017 was accounted for by domestic (UK) production. A fifth (20%) came from the rest of Europe, particularly countries within the EU. The proportion coming from China has increased from 1% in 1990 to 6% in 2017.

For non-metallic minerals, the contribution of domestic production to material footprint has fallen between 1990 (60%) and 2017 (21%), being replaced, to some extent, by China and India. China and India together accounted for 41% of the UK material footprint for non-metallic minerals in 2017, compared with only 3% in 1990.

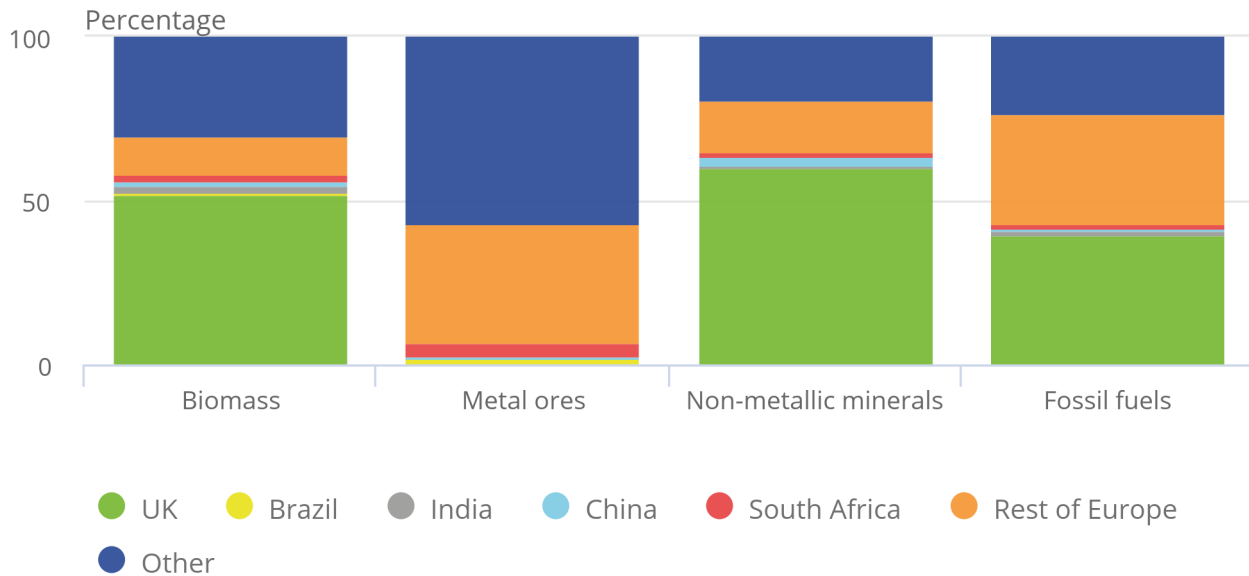
For fossil fuels, only 10% of material footprint in 2017 was accounted for by domestic (UK) production (down from 40% in 1990). In 2017, 40% of material footprint for fossil fuels came from the rest of Europe, primarily Russia. In 2017, Russia accounted for nearly a quarter (24%) of the material footprint of fossil fuels.

Figure 4: The contribution of domestic production to the material footprint of non-metallic minerals was 60% in 1990

Material footprint of biomass, metal ores, non-metallic minerals and fossil fuels, selected source countries, 1990

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Material footprint of biomass, metal ores, non-metallic minerals and fossil fuels, selected source countries, 1990



Source: University of Leeds

Notes:

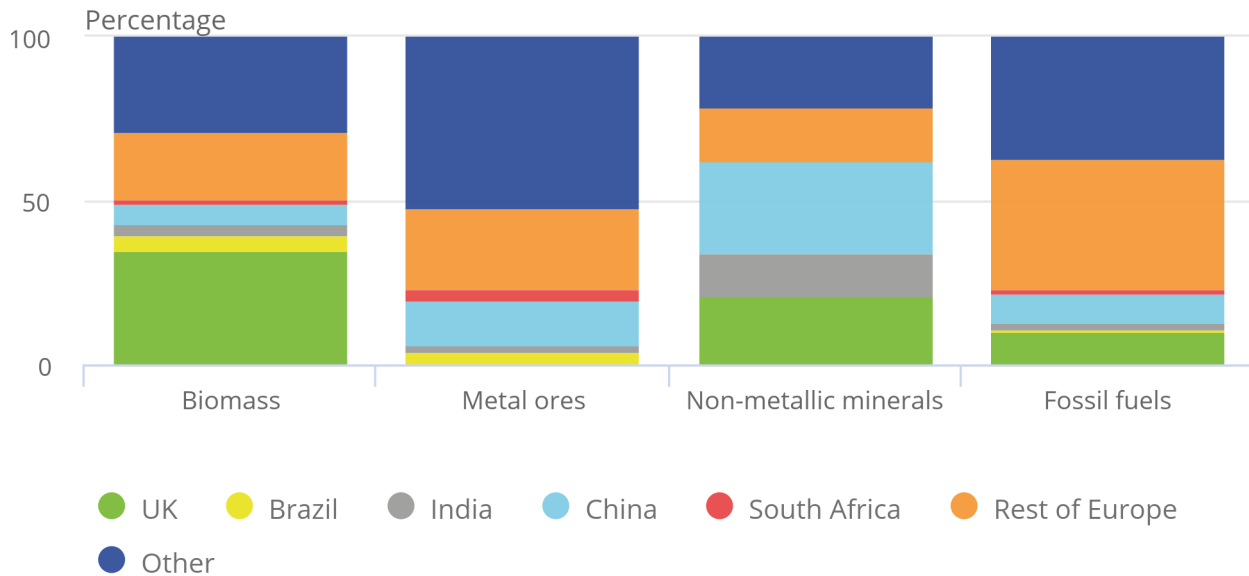
1. Estimates for other years and more detail by country is available in the [dataset](#).

Figure 5: China and India together accounted for 41% of the UK material footprint for non-metallic minerals in 2017

Material footprint of biomass, metal ores, non-metallic minerals and fossil fuels, selected source countries, 2017

Figure 5: China and India together accounted for 41% of the UK material footprint for non-metallic minerals in 2017

Material footprint of biomass, metal ores, non-metallic minerals and fossil fuels, selected source countries, 2017



Source: University of Leeds

Notes:

1. Estimates for other years and more detail by country is available in the [dataset](#).

5 . Related links

[Measuring material footprint in the UK: 2008 to 2016](#)

Article | Released 5 June 2019

The UK's material footprint captures domestic and foreign extraction of materials needed to produce products used in the UK. This article presents updated estimates and discusses the methodology.

[Construction statistics, Great Britain: 2017](#)

Article | Released 22 August 2018

A wide range of statistics and analysis on the construction industry in Great Britain in 2017.

[Material flow accounts](#)

Dataset | Released 2 April 2020

Data on the UK's domestic extraction, imports and exports and flow of materials (biomass, minerals and fossil fuels), 1990 to 2018.

[Resource efficiency metrics \(Defra and University of Leeds\)](#)

Methods document

To explore indicators of material resource efficiency, develop a carbon based metric to measure this and to consider future work to compare carbon intensity of materials and products over their lifetime.

[Material footprint estimates to 2016 \(Defra and University of Leeds\)](#)

PDF, 1.29MB | Released 2019

This document aims to give an overview of the new 2019 release of the Material Consumption-Based Accounts for the UK, showing a time series of results from 1997 to 2016.

[Eurostat data on material flows](#)