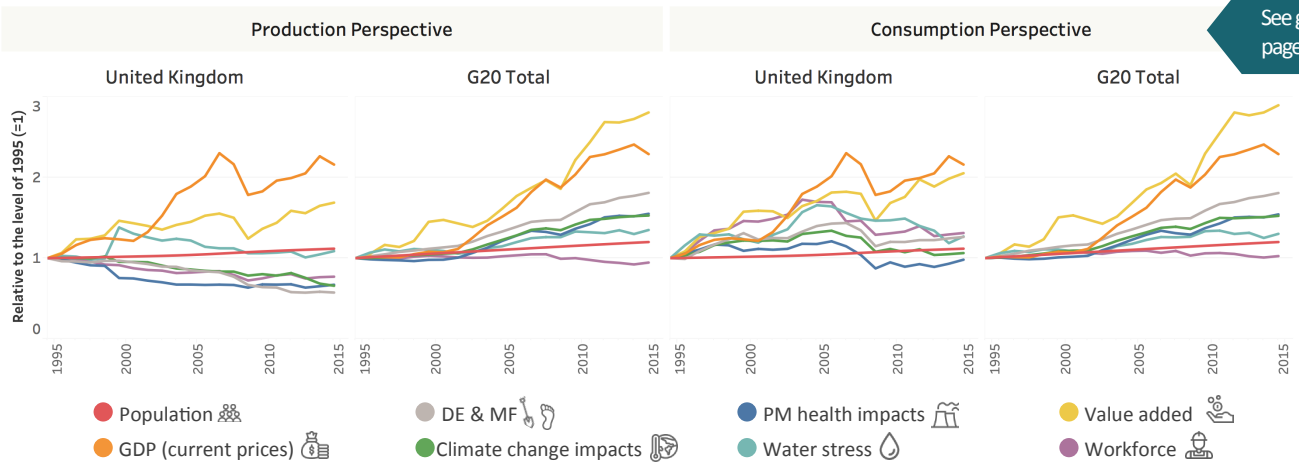
Natural Resource Use in the Group of 20

Status, Trends, and Solutions | United Kingdom

Status and trends of Natural Resource Use

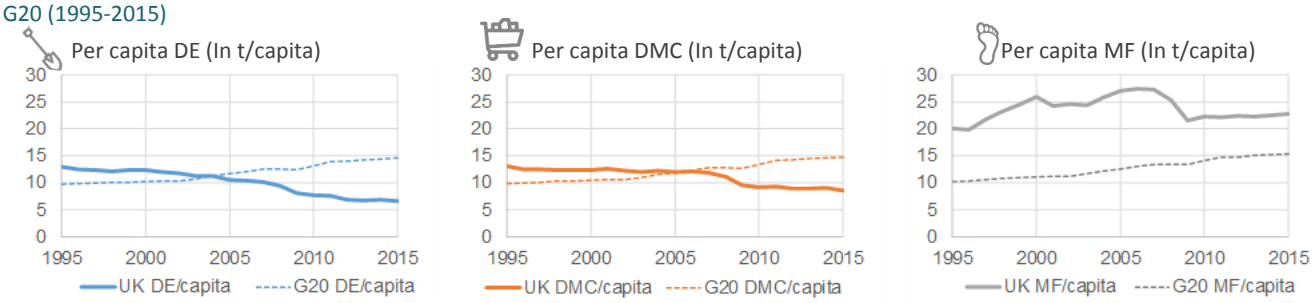
Figure 1: Socio-economic indicators, domestic extraction, material footprint, and material-related environmental impacts in the United Kingdom and in the G20 (1995-2015)*

See glossary on pages 2 and 3



*Data after 2011 was nowcasted.
Source: IRP database, Exiobase v3.4 and Cabernard et al. 2019

Figure 2: Domestic extraction, domestic material consumption, and material footprint per capita in the United Kingdom and in the G20 (1995-2015)



Source: IRP database

From 1995 to 2015

Population increased by **12%** while GDP more than doubled (with some fluctuations).

The domestic extraction and domestic consumption of materials decreased and fell below the G20 average.

Material footprint fluctuated between **20** tonnes per capita (1995), **27** tonnes per capita (2007) and **23** tonnes per capita (2015). The G20 average in 2015 was 15 tonnes per capita.

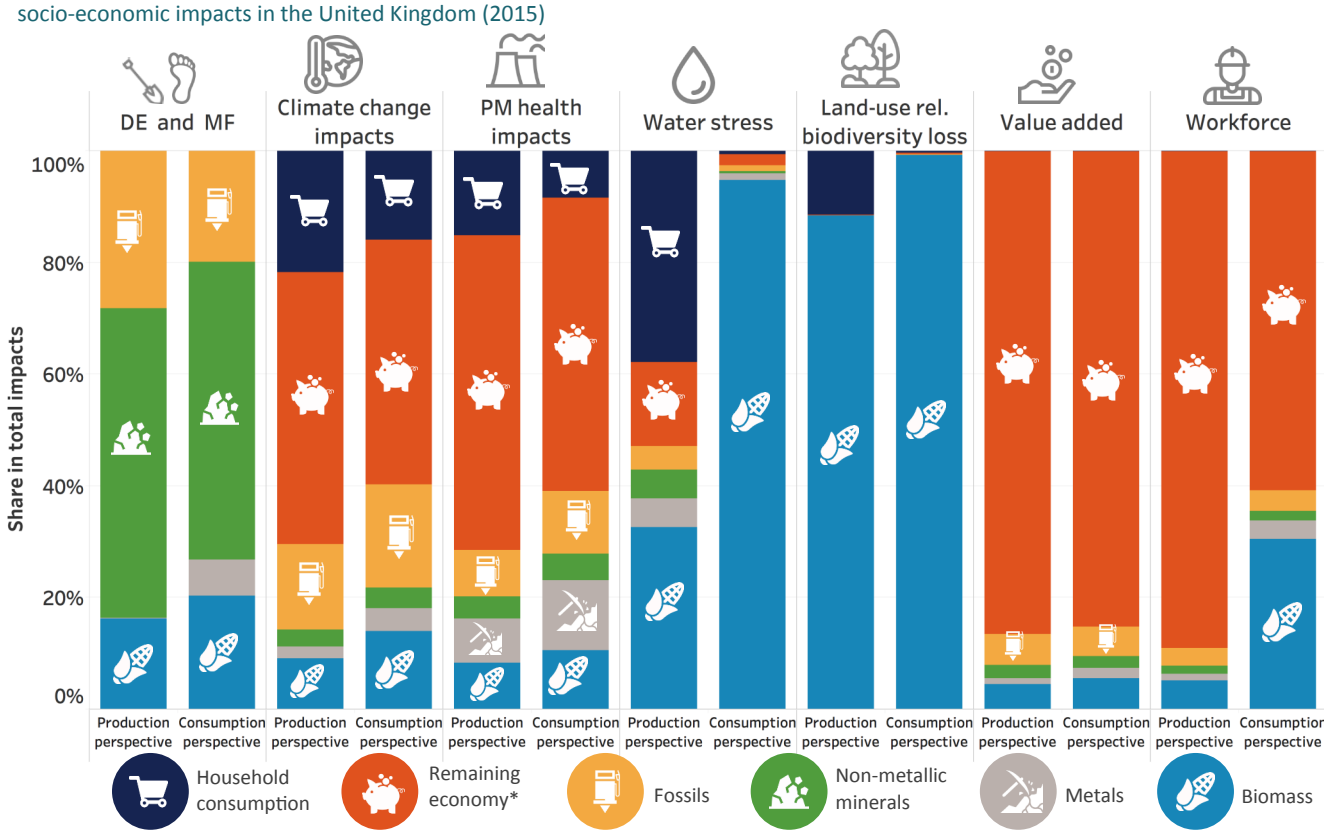
Domestic extraction, domestic material consumption, material footprint and all environmental impacts decoupled from GDP. However, material-related climate change impacts were **25%** higher than G20 average in a consumption perspective in 2015.

From a consumption perspective, water stress was slightly higher than G20 average and remained stable.

From both a production and consumption perspective, particulate matter health impacts (related to resource extraction and material processing) showed the strongest absolute decoupling of all environmental impacts from GDP.

Contribution of Natural Resources by Category

Figure 3: Contribution of resource types to domestic extraction, material footprint, material-related environmental and socio-economic impacts in the United Kingdom (2015)



*Remaining economy refers to activities other than resource extraction and processing (e.g. manufacturing of finished products, construction).
Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

Non-metallic minerals like sand and gravel dominated domestic extraction amounts and material footprint, but only caused a minor share of environmental impacts.

There is nearly no metal mining within the United Kingdom.

From a production perspective, the extraction and processing of natural resources accounted for 30% of the United Kingdom's total climate change and particulate matter health impacts. It accounted for 40% of these impacts from a consumption perspective.

In line with other G20 countries, water stress and land use-related biodiversity impacts were mainly caused by biomass production from a consumption perspective.

The material sector contributed to a minor share of value added as well as domestic jobs (both less than 20%). It relied on low-income workforce in agriculture outside the United Kingdom for food imports.

For all indicators, the share related to material extraction and processing was comparable or higher from a consumption perspective than from a production perspective.

Glossary

Consumption perspective: The consumption perspective allocates the use of natural resources or the related impacts throughout the supply chain to the region where these resources, incorporated in various commodities, are finally consumed by industries, governments and households

Decoupling: Decoupling is when resource use or some environmental pressure either grows at a slower rate than the economic activity that is causing it (relative decoupling) or declines while the economic activity continues to grow (absolute decoupling)

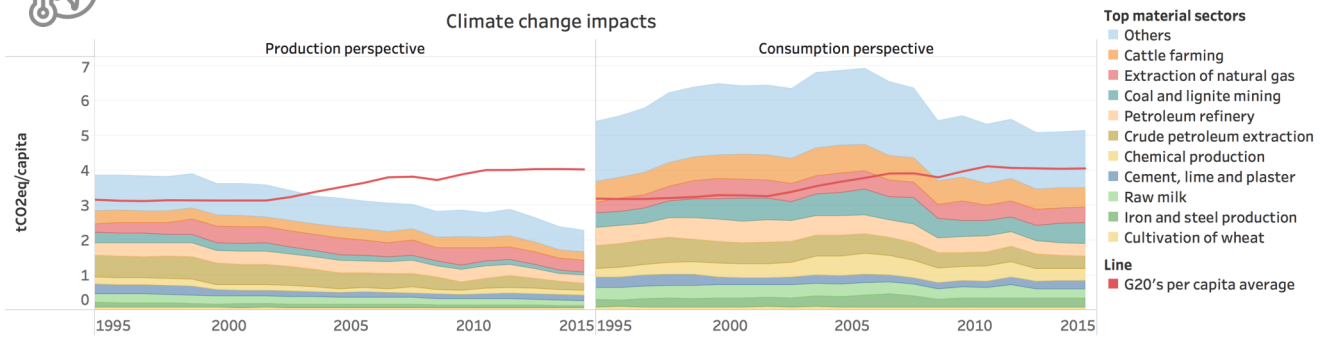
Domestic extraction (DE): Direct, gross physical extraction of materials within a country's territory (production perspective)

Domestic material consumption (DMC): Amount of materials directly used by an economy (DMC = DE + Material Imports – Material Exports)

Material resources:
- metals,
- non-metallic minerals,
- biomass,
- fossils

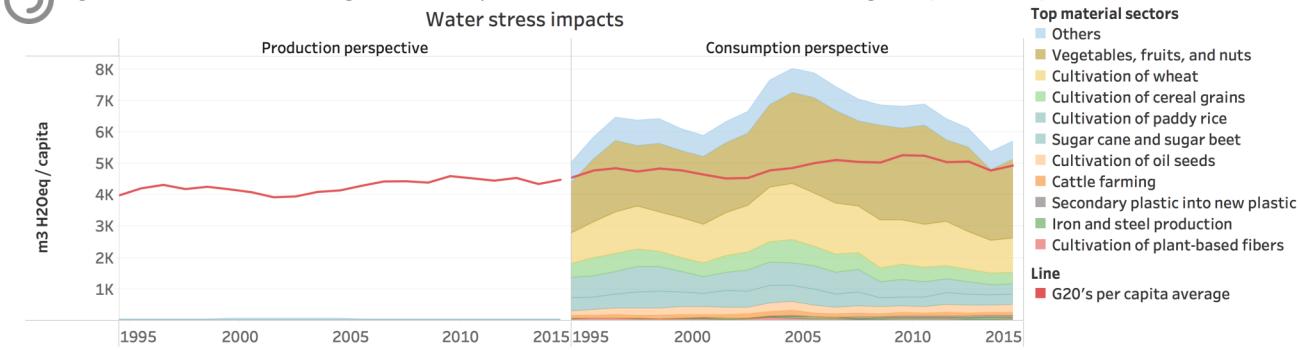
Key Sectors and Resources

Figure 4: Climate change impacts from material sectors in the United Kingdom (1995-2015)*



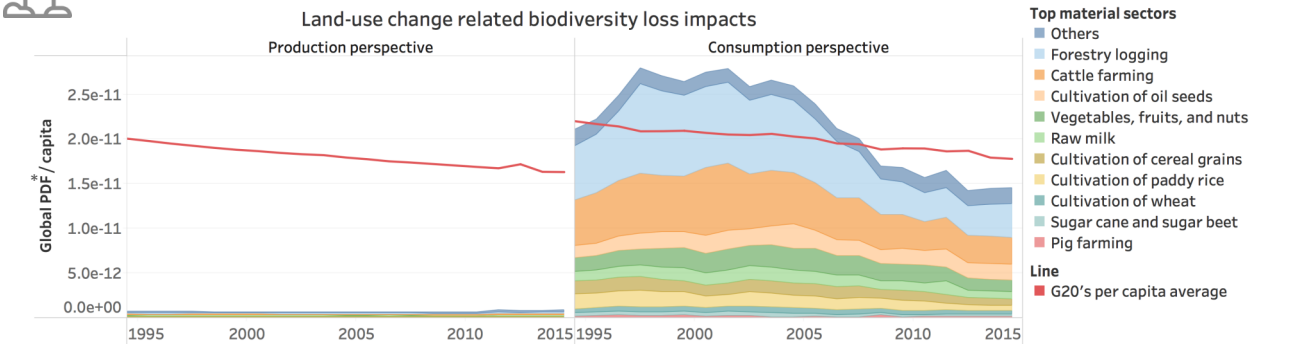
*Data after 2011 was nowcasted.
Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

Figure 5: Water stress from agricultural crop and material sectors in the United Kingdom (1995-2015)*



*Data after 2011 was nowcasted.
Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

Figure 6: Land-use related biodiversity loss from agricultural crops and material sectors in the United Kingdom (1995-2015)*



*Data after 2011 was nowcasted.
PDF: Potentially disappeared fraction of species
Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

- From a production perspective, material-related climate change impacts were mostly caused by natural gas extraction, petroleum extraction and refining, and cattle farming. Climate change impacts decreased below the G20 average.
- From a consumption perspective, material-related climate change impacts were more than 25% higher than the G20 average. This is due to imports of goods with large embodied greenhouse gas emissions for domestic consumption (e.g. coal, steel, chemicals and cattle products).
- Materials with large climate impacts are often directly consumed by households, especially fossil fuels for mobility and heating, and food.
- The construction sector was the largest industrial end-user of climate-intensive materials.
- From a consumption perspective, water stress was slightly larger than the G20 average, due to imports of vegetables, fruits, nuts, wheat and other cereals, rice, sugar, and oil seeds from water-scarce locations. From a production perspective, water stress is not relevant due to the availability of sufficient amounts of renewable water.
- From a production perspective, land use-related biodiversity loss was very low compared to the G20 average.
- From a consumption perspective, land use-related biodiversity loss was slightly lower than the G20 average after 2008. Main causes of this biodiversity footprint are imports of wood, beef, oil seeds, vegetables, fruits and nuts from regions with high ecological value.

Material footprint (MF): A nation's MF fully accounts for material extraction in other countries used for local consumption in the nation of interest (consumption perspective)

Material intensity (MI): Indicates efficiency of material use (MI = DMC / GDP)

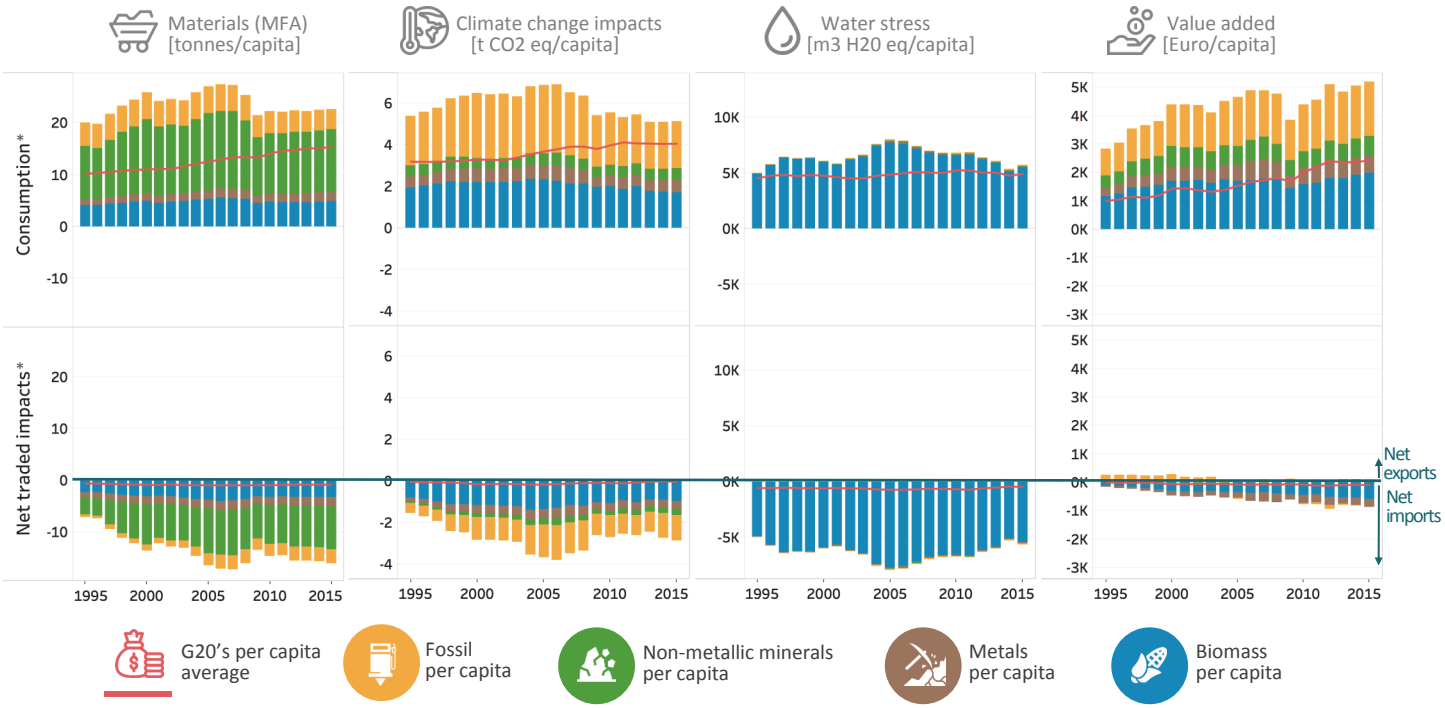
Material-related impacts: Impacts related to the extraction and processing of material resources (including the upstream supply chain, such as electricity generation and transport)

Net traded materials/impacts: Difference between material-related impacts from a production and consumption perspective. In the case of environmental impacts, a positive value means that the material-related impacts from exports are greater than the impacts from imports (and vice-versa: environmental impacts with negative values mean that the material-related impacts from imports are greater than the impacts from exports)

Production perspective: The production perspective allocates the use of natural resources or the impacts related to natural resource extraction and processing to the location where they physically occur

The environmental effects of trade

Figure 7: Per-capita consumption footprints (above) and net traded impacts (below) in United Kingdom (1995-2015)*



*Data after 2011 was nowcasted.
Consumption: Impacts throughout the supply chain from goods imported and consumed in the United Kingdom.
Net traded impacts: Difference between material-related impacts from a production and consumption perspective.
Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

The United Kingdom is a net importer of all material types (much higher reliance on trade than the G20 average).

More environmental impacts are caused by material imports than by material exports. Almost all water stress and land-use related biodiversity loss is due to imports of agricultural products.

While most material-related environmental footprints are caused abroad, a comparably low net value added was generated outside of United Kingdom for material imports.

Future trends and potential Decoupling

Scenarios developed by the IRP forecast an increase of GDP by more than 100% with a rather small population increase (24%-27%) until 2060.

If ambitious resource efficiency policies are introduced, domestic material extraction could increase by about 40% and domestic material consumption could increase by about 30% until 2060.

From a consumption perspective, material footprint and all environmental impacts per capita remained above or comparable to the G20 average. From a production perspective they declined. Resource efficiency and circular economy strategies, as well as responsible sourcing along the entire supply chain (with a special focus on agricultural products for water stress and land-use related biodiversity loss) are critical to lower these impacts.

This factsheet from the International Resource Panel, was prepared in cooperation with the Ministry of Environment of Japan and the Institute for Global Environmental Strategies, as a contribution to the G20 Resource Efficiency Dialogue 2019 in Japan. The document is based on research completed by the IRP for the report "Global Resources Outlook 2019: Natural Resources for the Future We Want." The data analysis and text for the G20 was prepared by Livia Cabernard, Stephan Pfister Stefanie Hellweg (ETH Zurich), and Maria Jose Baptista (UNEP) with inputs from Victor Valido (UNEP), Yingying Lu and Heinz Schandl (CSIRO). The layout and infographics were designed by Yi-Ann Chen with support from Qinhan Zhu on figure layout. Icons used are from Freepik.

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