NATIONAL INFRASTRUCTURE COMMISSION

Performance data for water, energy and telecoms

Technical annex to Strategic Investment and Public Confidence
October 2019

Performance data for water, energy and telecoms

The National Infrastructure Commission used a wide variety of evidence inputs to the *Strategic Investment and Public Confidence* study. Performance data for the water, energy and telecoms sectors was a crucial part of the evidence base. This data helped the Commission understand how the sectors are performing across a range of industry and consumer outcomes, how these have changed over time, and how the UK system compares to other countries.

As explained in the section 2.4 of the main report, the Commission believes that transparent monitoring and assessment of sector performance by regulators is vital if they are to be effectively held to account by Parliament and the general public.

This technical annex uses a framework for performance data that the Commission have found helpful for understanding outcomes across the sectors and setting them in historical and international context. This framework is based on the Commission's performance measures for infrastructure.

Data includes outcome measures such as volumes and capacity, efficiency, resilience, service quality, quality of user experience, environment, prices and bills. These measures are important for understanding whether the system is delivering on outcomes that matter for quality of life, competitiveness and economic growth.

In addition, the framework includes financial data such as capital expenditure (investment), operational expenditure and the cost of capital for companies operating in the three sectors. These are inputs, rather than outcomes that are experienced by consumers directly. Nevertheless, the legitimacy of these sectors depends on the public being able to see how the money that they pay through bills is being spent. As inputs, these are also likely to be useful leading indicators of future outcomes.

Where possible, the performance data has been presented as a time series. Institutional and technological changes may alter the desirable levels over time, and methodological changes to statistics can make exact comparisons difficult. Nevertheless, historical context is important to understand whether or not performance has improved.

The data is presented without commentary, which is covered in the main report. Explanatory footnotes are provided for information.

The Commission is grateful to stakeholders, particularly Ofwat, Ofgem, Ofcom, Office for National Statistics, Environment Agency, Consumer Council for Water, Drinking Water Inspectorate and London Economics, who helped identify much of this data. They are not responsible for the final product, including any errors that have arisen translating the data from their original sources to the charts presented here.

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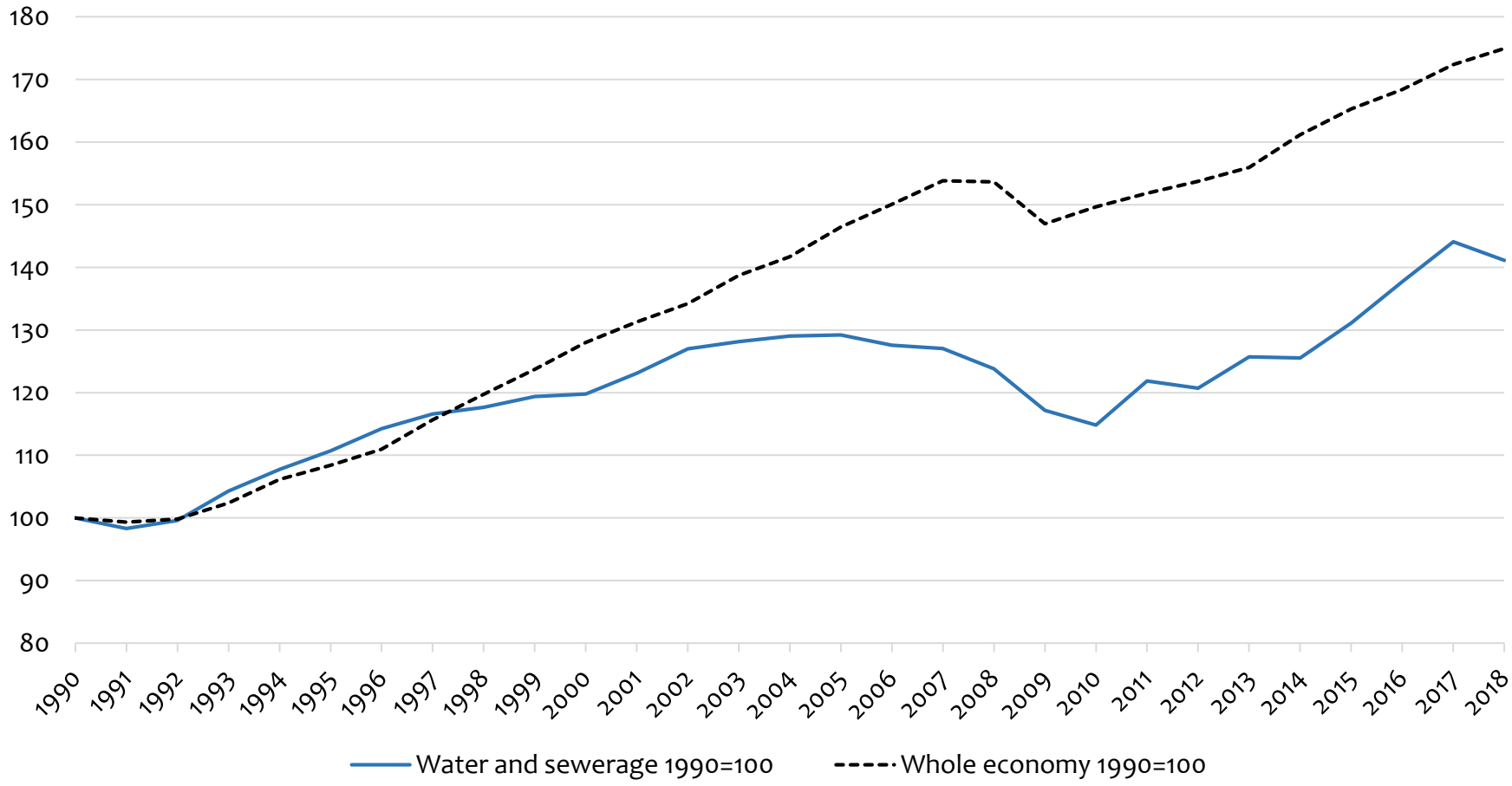
Water

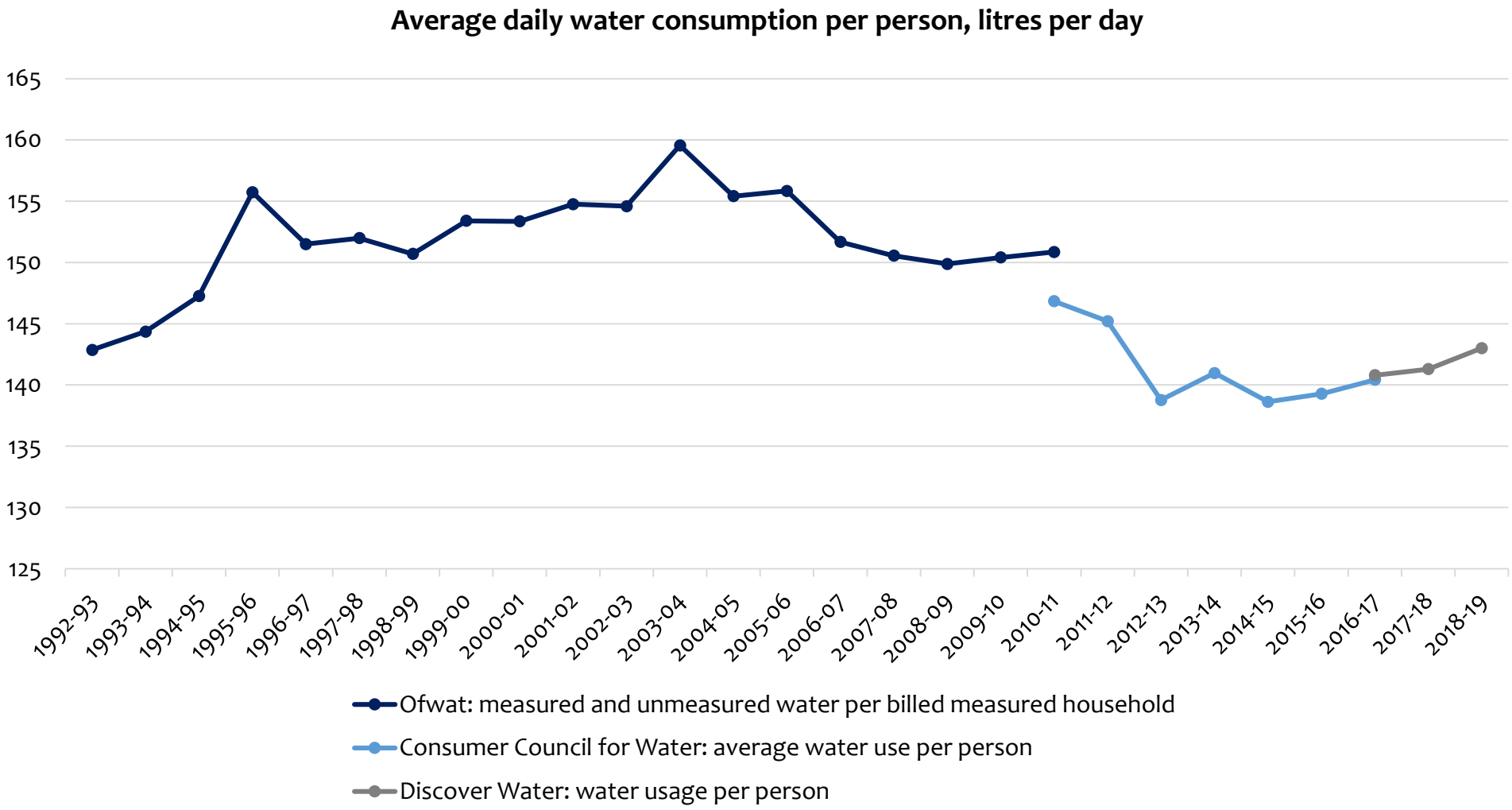
Volume

Water and sewerage output (Gross Value Added) relative to whole economy
1990=100



Source: Commission calculations using ONS (2019) GDP(O) low level aggregates, Chained Volume Measure.
SIC 2007 divisions 36 (Water collection, treatment and supply) and 37 (Sewerage)

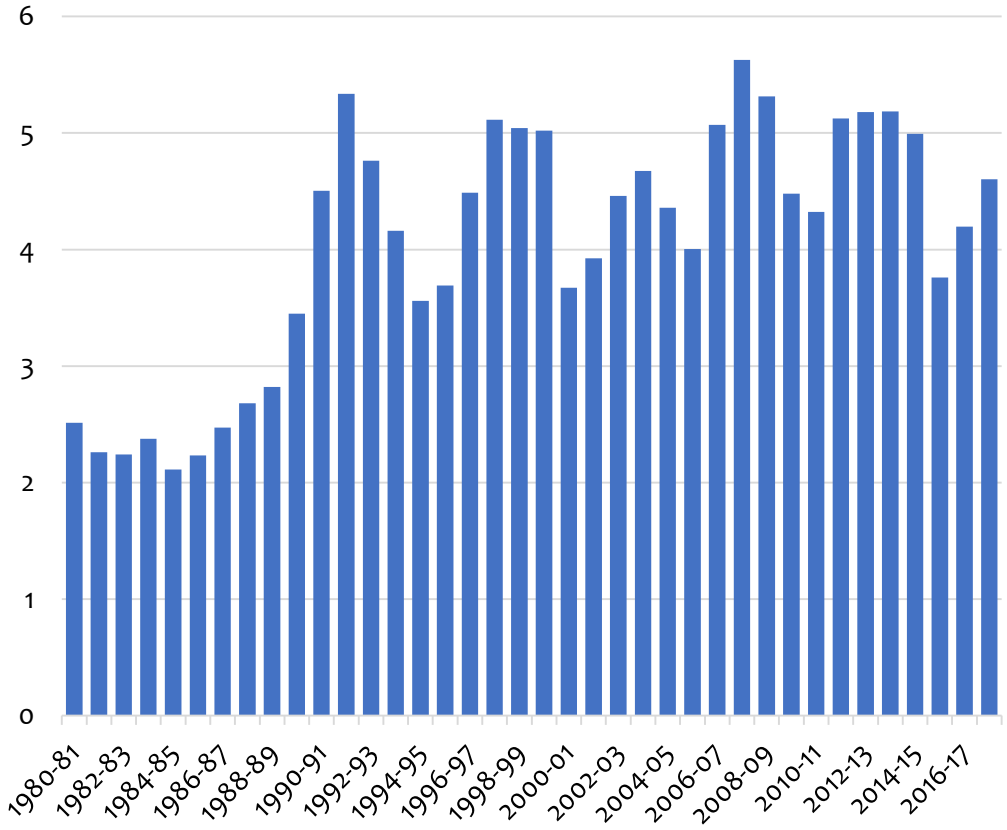
Volume



Source: water company data provided by Ofwat, Consumer Council for Water, Discover Water/Water UK
Note: methodology changes may affect comparisons over time

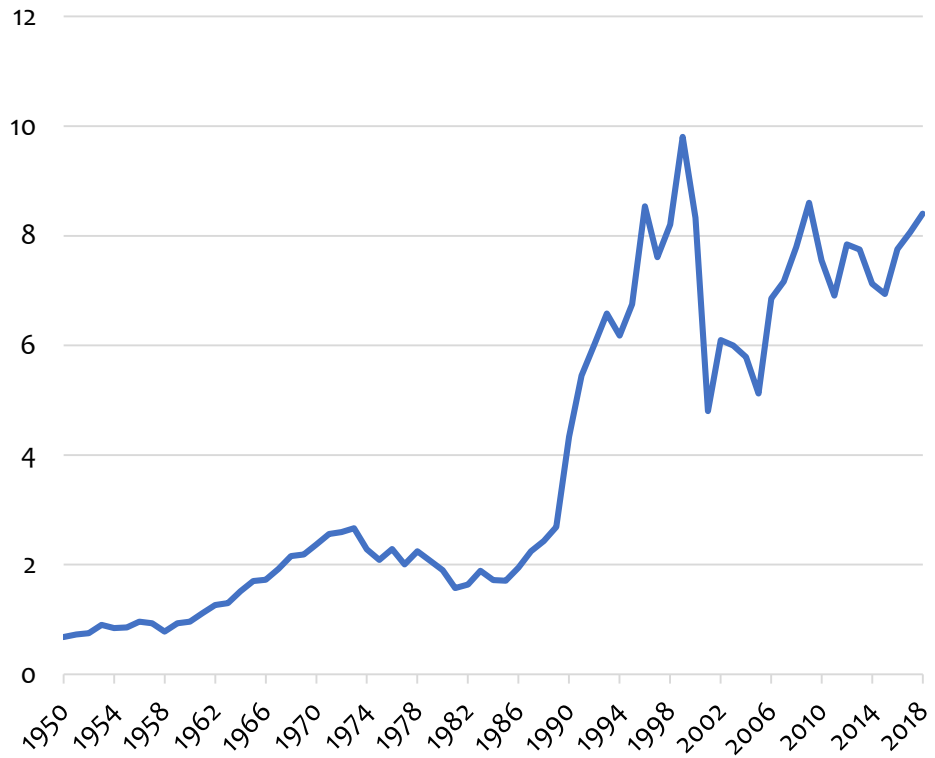
Investment

Water and sewerage investment (capital expenditure)
£ billion, 2018/19 prices



Source: Commission calculations using water company data provided by Ofwat.
Note: 2018/19 prices using GDP deflator

Gross Fixed Capital Formation in Water, Sewerage and Waste (experimental measure)
£ billion, 2018 prices

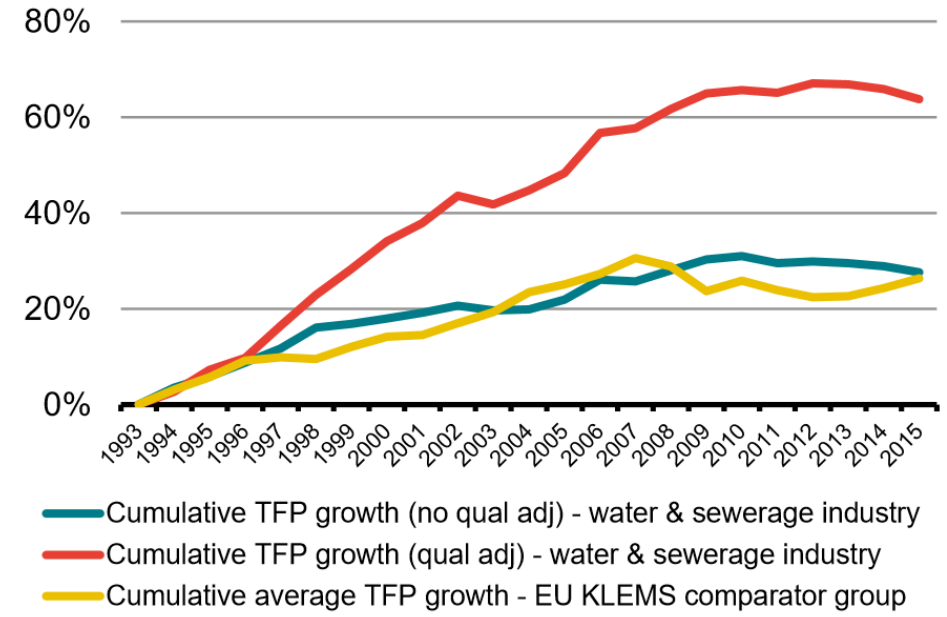


Source: Commission calculation using ONS (2019) Multi-factor productivity estimates: Experimental estimates to October to December 2018.
Notes: 2018 prices using experimental implied GFCF deflator. In these historic estimates of Gross Fixed Capital Formation, waste is bundled with water supply and sewerage in the SIC 2007 classification Section E.

Efficiency

Estimated total factor productivity (TFP) growth

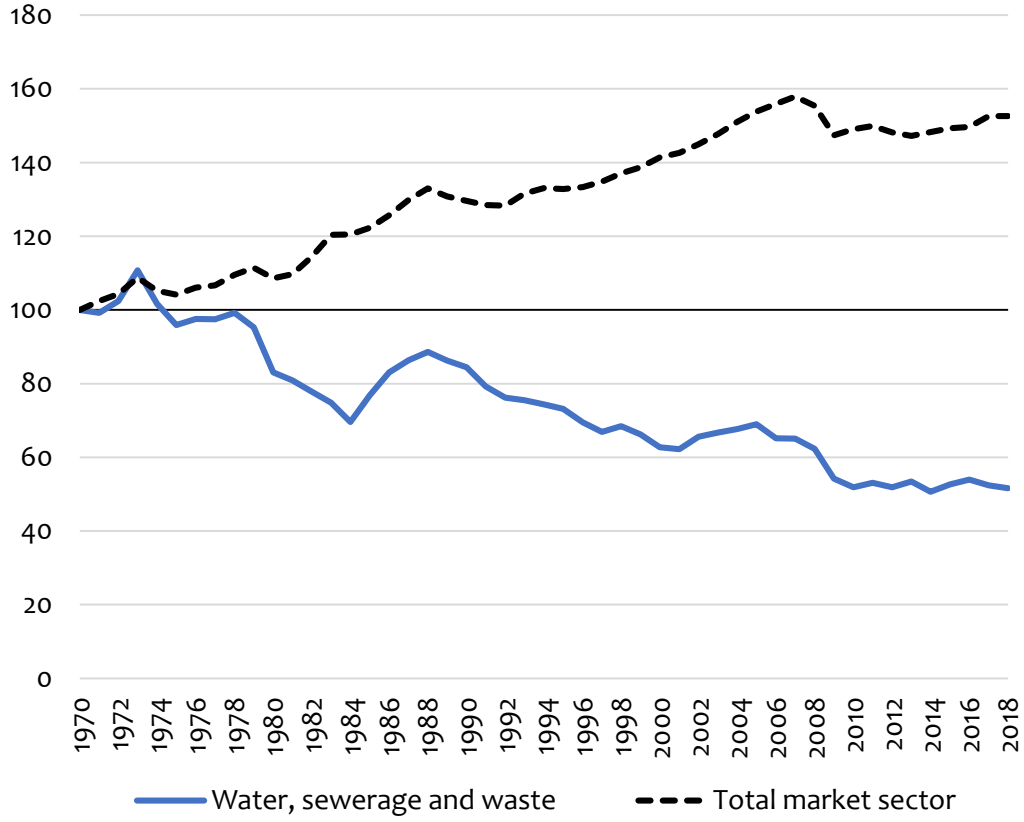
Figure 21 Cumulative TFP growth in the Water & Sewerage Industry and the EU KLEMS comparator group



Source: Frontier Economics, EU KLEMS

Source: Frontier Economics (2017) Productivity improvement in the water and sewerage industry in England since privatisation
Notes: Quality adjustments to output aim to take into account changes to the quality of service offered by the water industry, eg reductions in water pollution.
UK water & sewerage industry is compared to productivity of EU KLEMS (capital, labour, energy, materials and services) comparator group, including EU water, energy, telecoms, construction and some manufacturing sectors. TFP of EU KLEMS sectors is not quality adjusted in the same way as UK water & sewerage TFP, which may affect comparability.

Multi-factor productivity (experimental measure) GVA/combined inputs, 1970=100



Source: Commission calculation using ONS (2019) Multi-factor productivity (experimental): estimates.
Notes: Waste is bundled with water supply and sewerage in the SIC 2007 classification Section E. This measurement of productivity may not reflect changes to quality of outputs.

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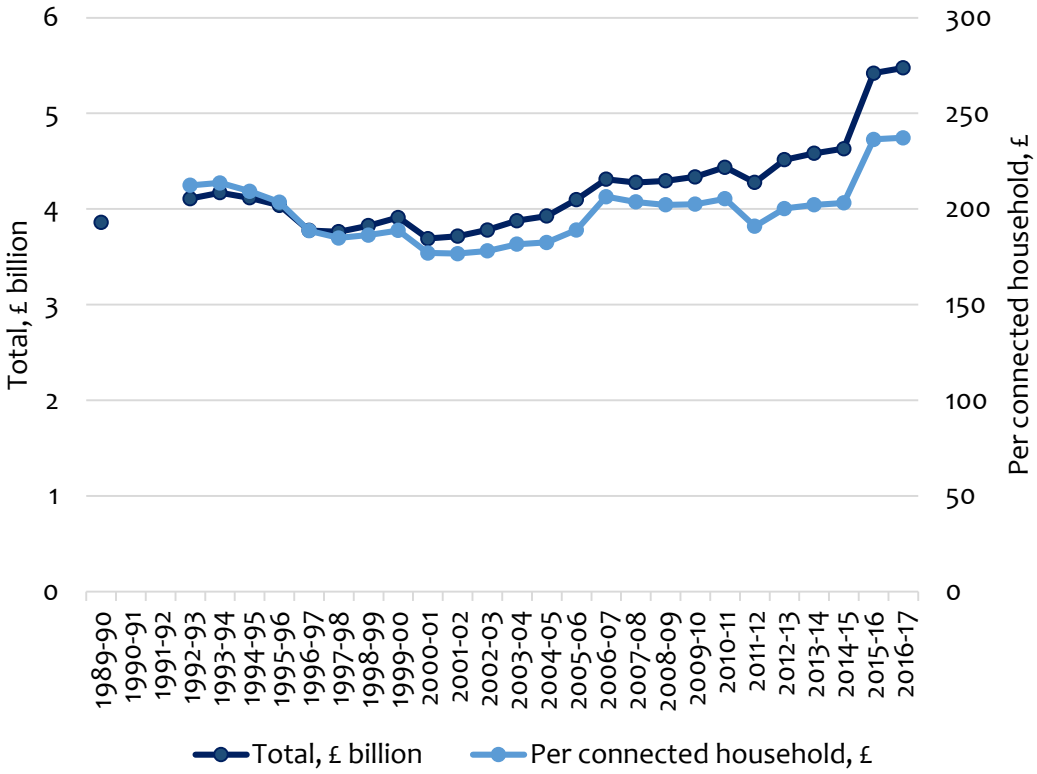
Efficiency

Water and sewerage operating expenditure, 2018/19 prices
Total, £ billion (left axis)
Per connected household, £ (right axis)



Source: Commission calculations using water company data provided by Ofwat
Note: 2018/19 prices using GDP deflator

Growth in labour productivity, investment and profitability around water privatisation in 1989

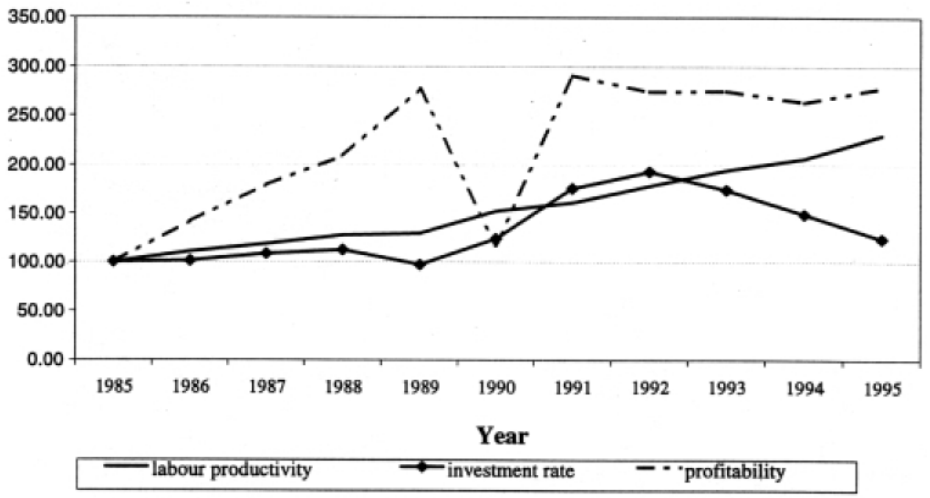
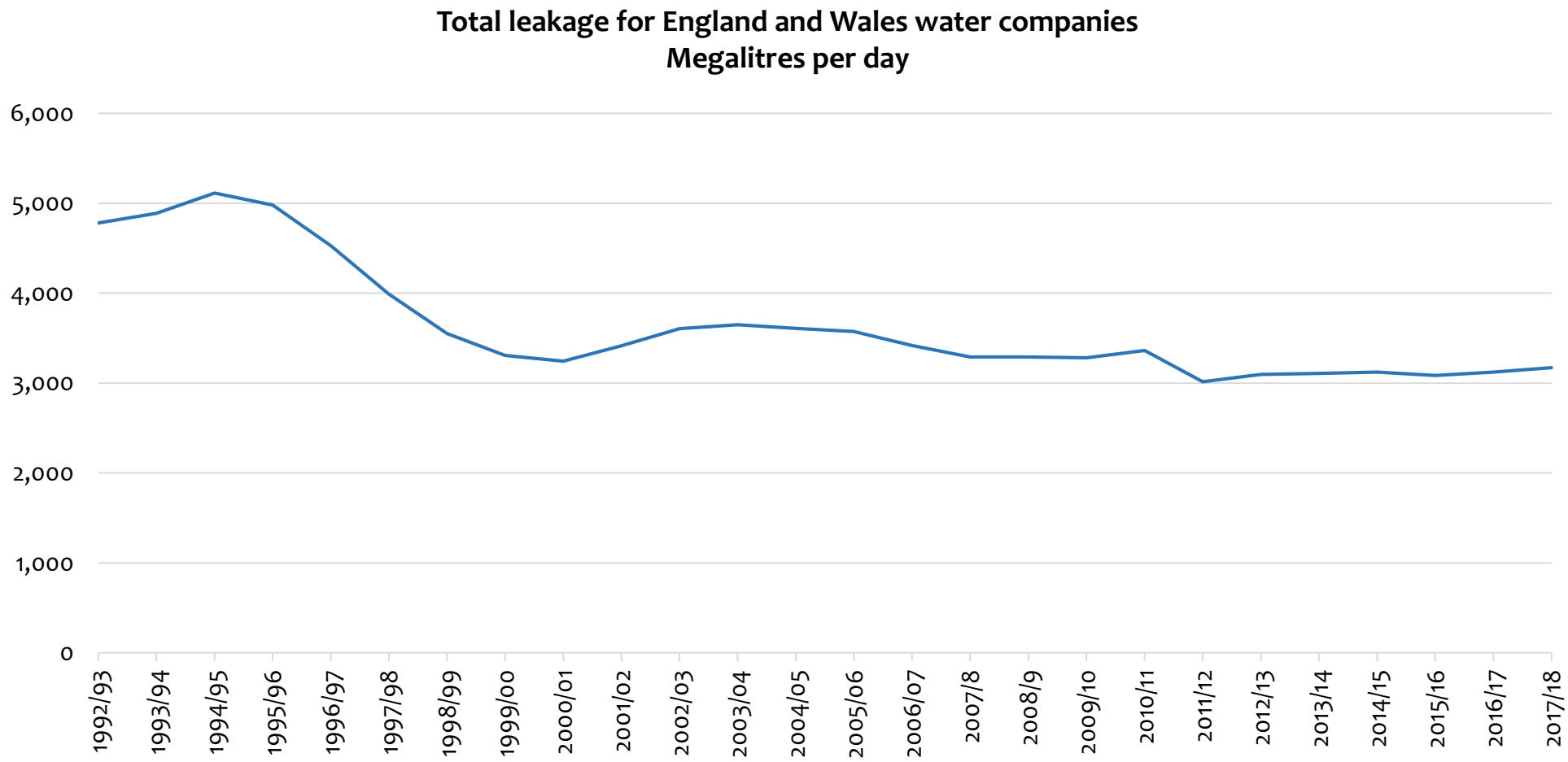


Figure 4. – Investment, labour productivity and profitability in the regulated part of the 10 water companies (1985=100)
Note: Labour productivity = turnover in 1985 prices/no of employees; investment rate = capital expenditure/turnover; profitability = profits after tax/turnover
Source: Ofwat, 1995 and Water Services Association, 1996.

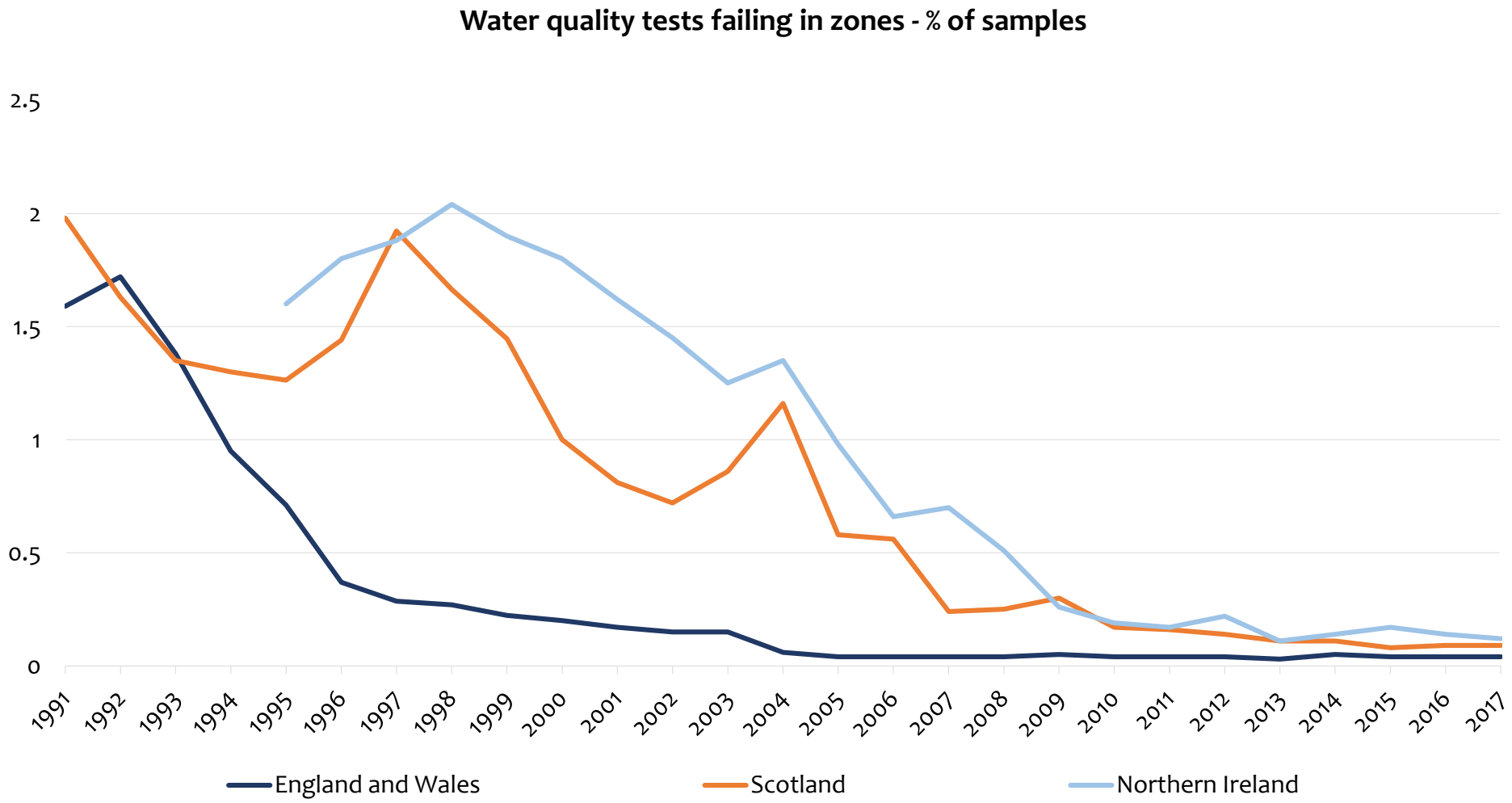
Source: Markou and Waddams Price (1999) UK utilities: past reform and current proposals

Efficiency



Source: Water company data provided by Ofwat and Consumer Council for Water

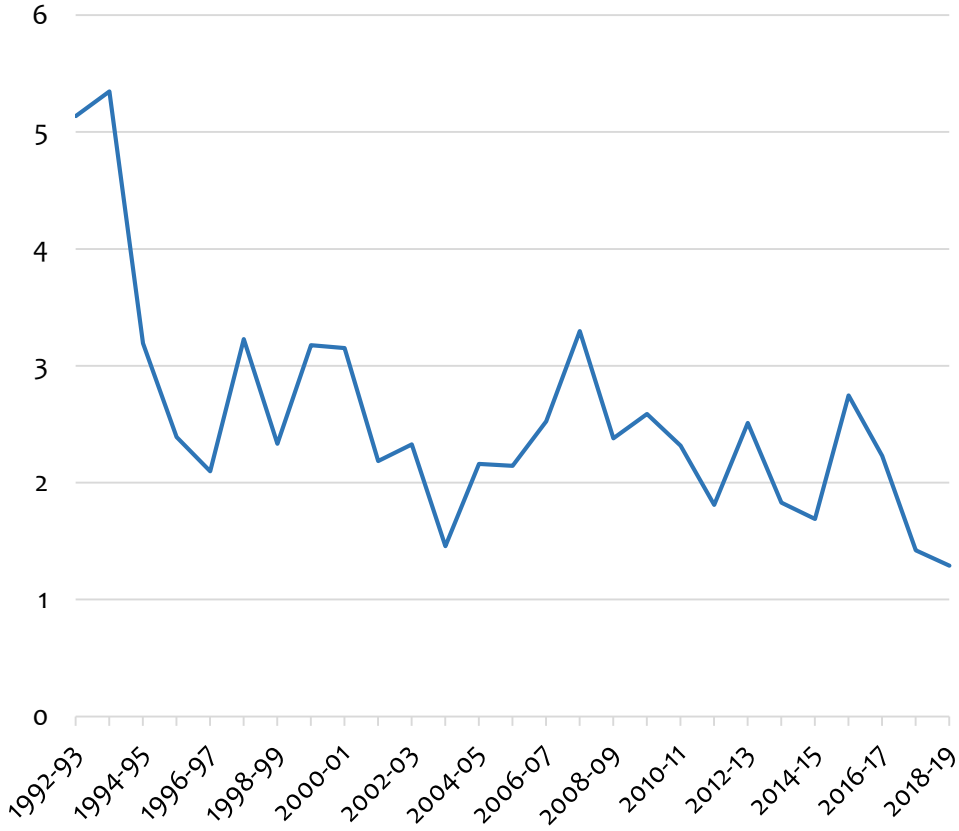
Service quality



Source: Drinking Water Inspectorate

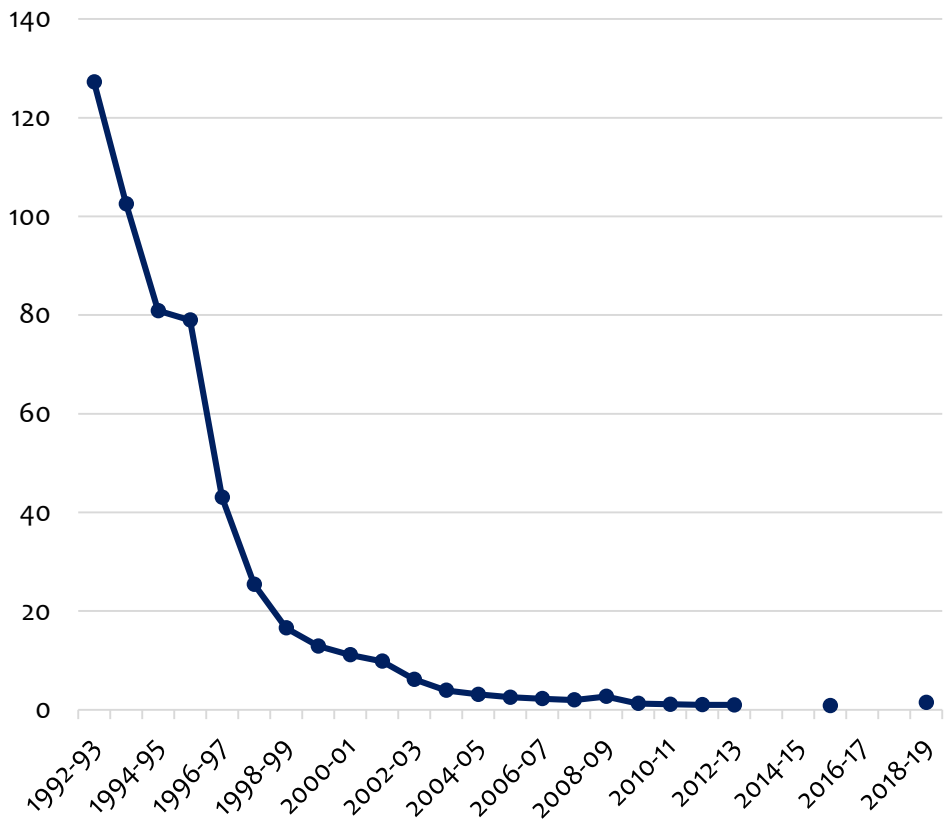
Everyday resilience

Sewer flooding: flooded properties per 10,000 connected to sewerage



Source: Commission calculations using water company data provided by Ofwat, Water UK, Discover Water
Note: methodology changes may affect comparisons over time

Properties below minimum standard of water pressure per 10,000 connections



Source: Commission calculations using water company data provided by Ofwat, Water UK, Discover Water
Note: methodology changes may affect comparisons over time

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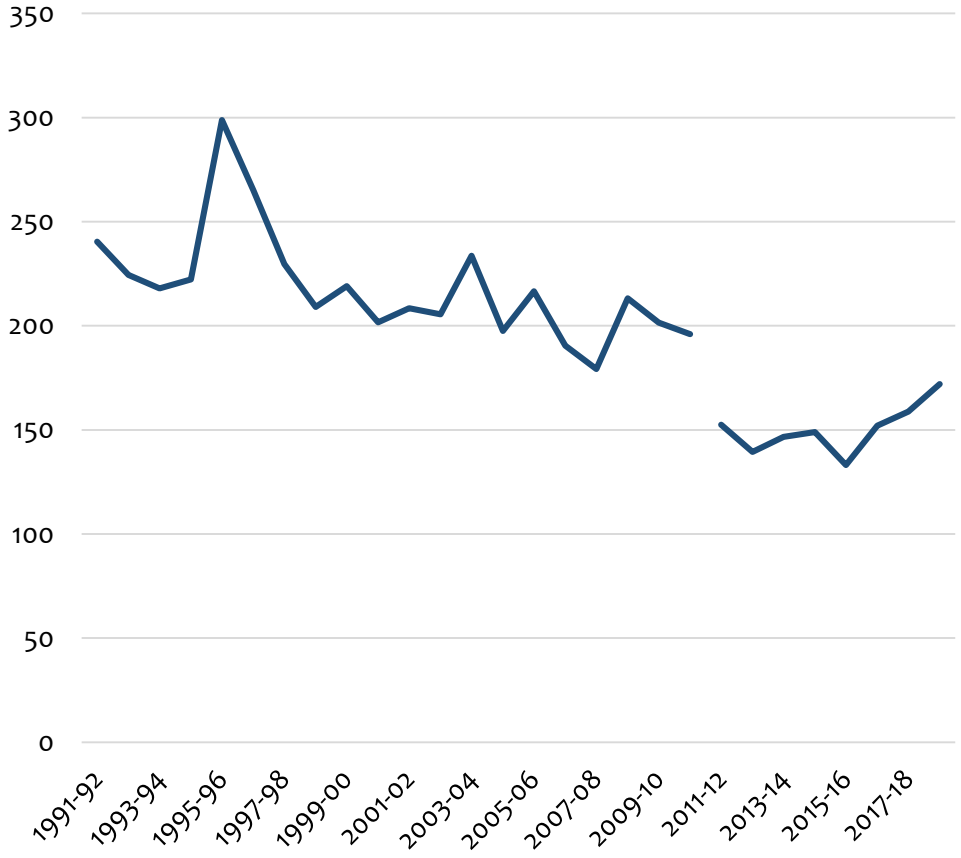
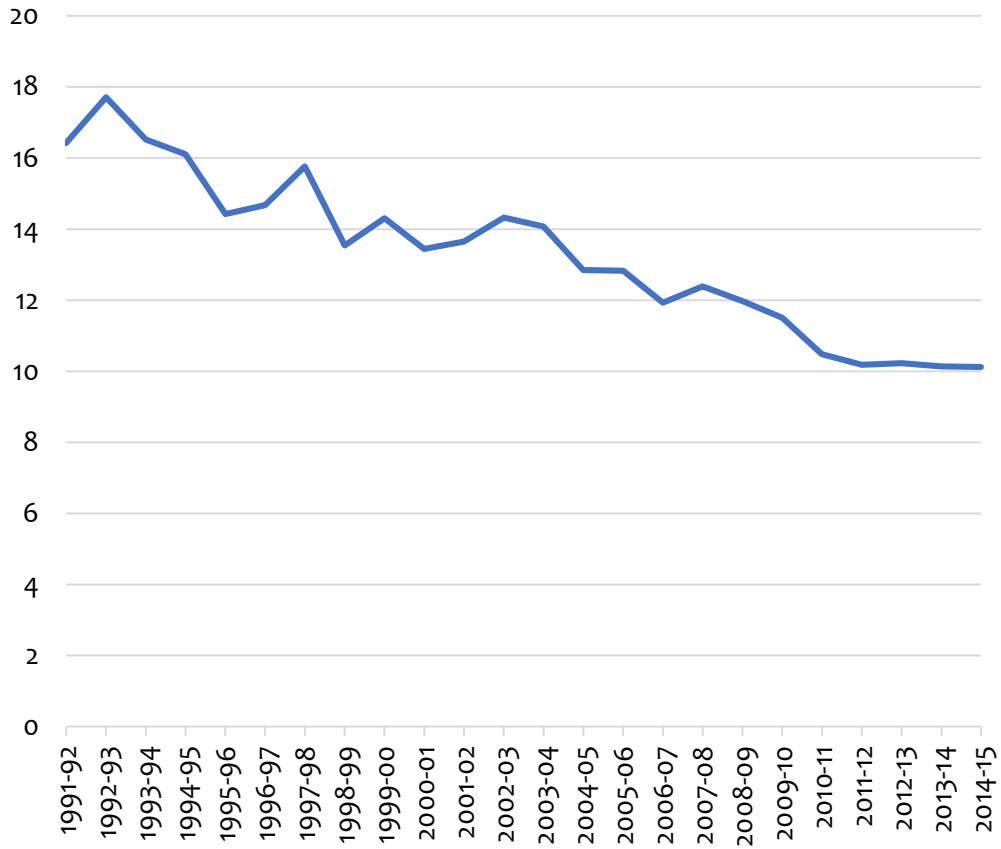
Service quality

Annual mains bursts per 1,000 km



Source: Commission calculations using water company data provided by Ofwat, Water UK, Discover Water
Note: methodology changes may affect comparisons over time

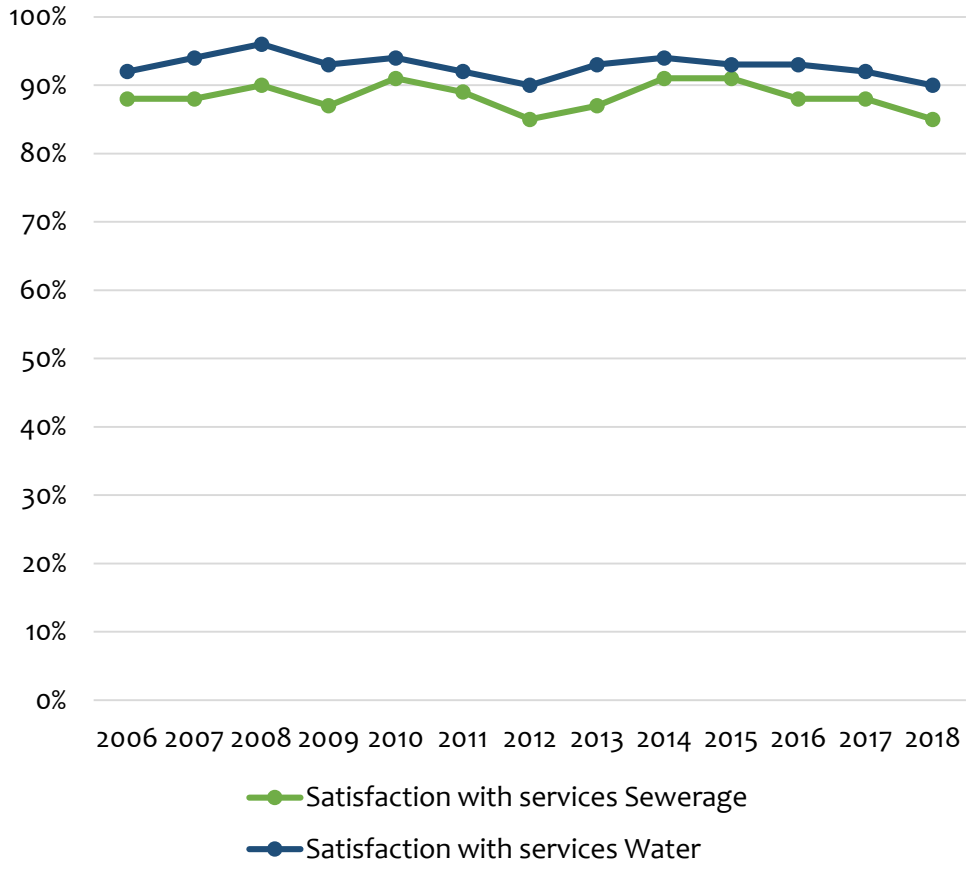
Annual sewer collapses per 1,000km



Source: Commission calculations using water company data provided by Ofwat
Note: methodology changes may affect comparisons over time

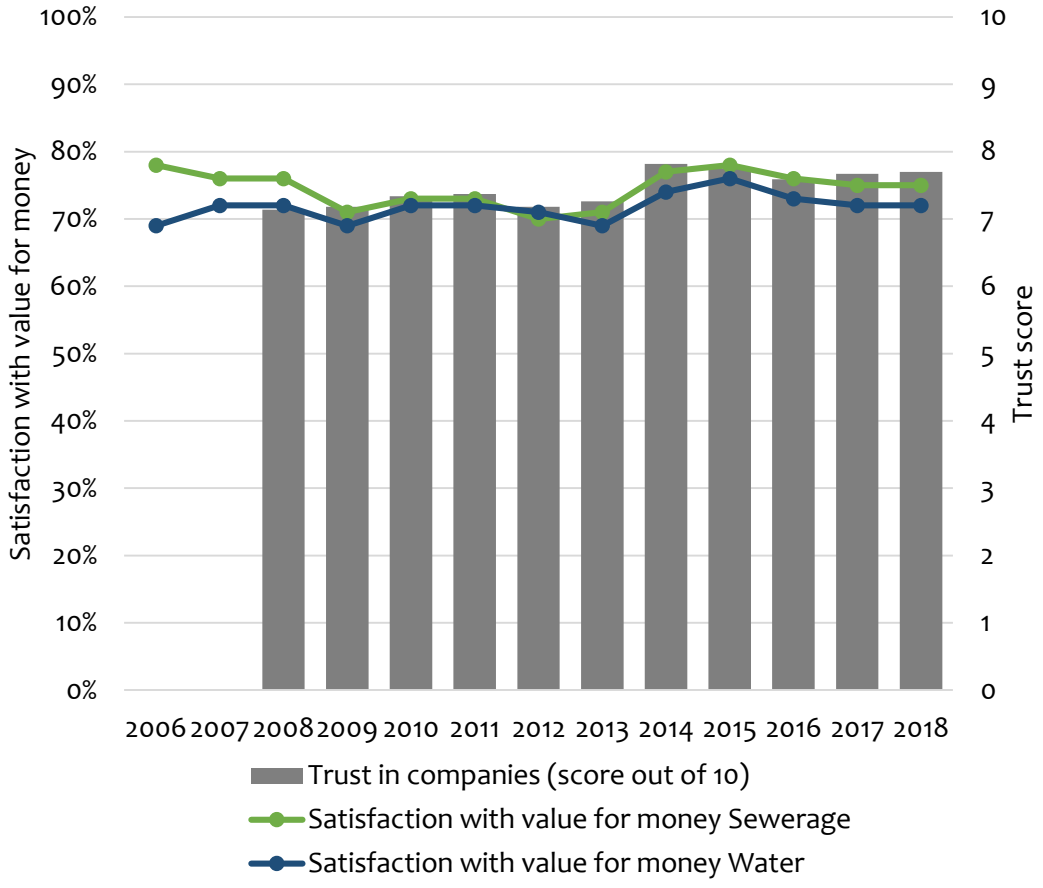
Quality of user experience

Overall satisfaction with water and sewerage companies



Source: Commission analysis of Consumer Council for Water annual tracking reports

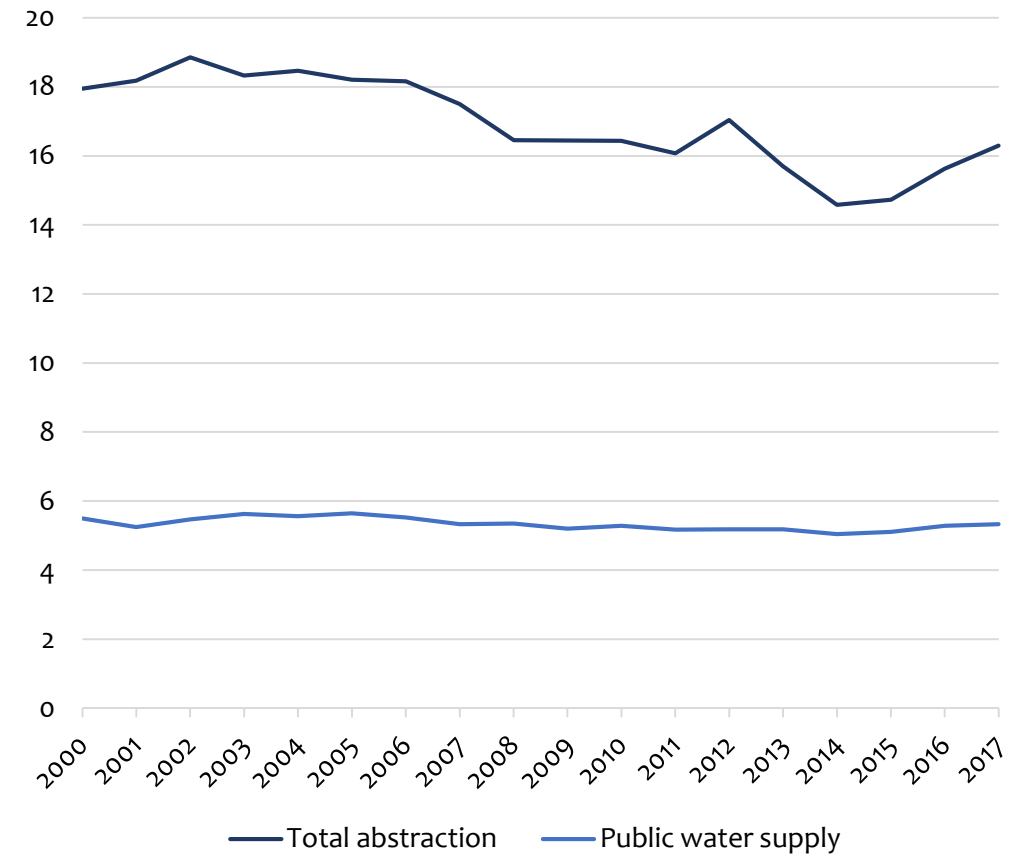
Satisfaction with value for money (left axis) and trust (right axis) for water and sewerage



Source: Commission analysis of Consumer Council for Water annual tracking reports

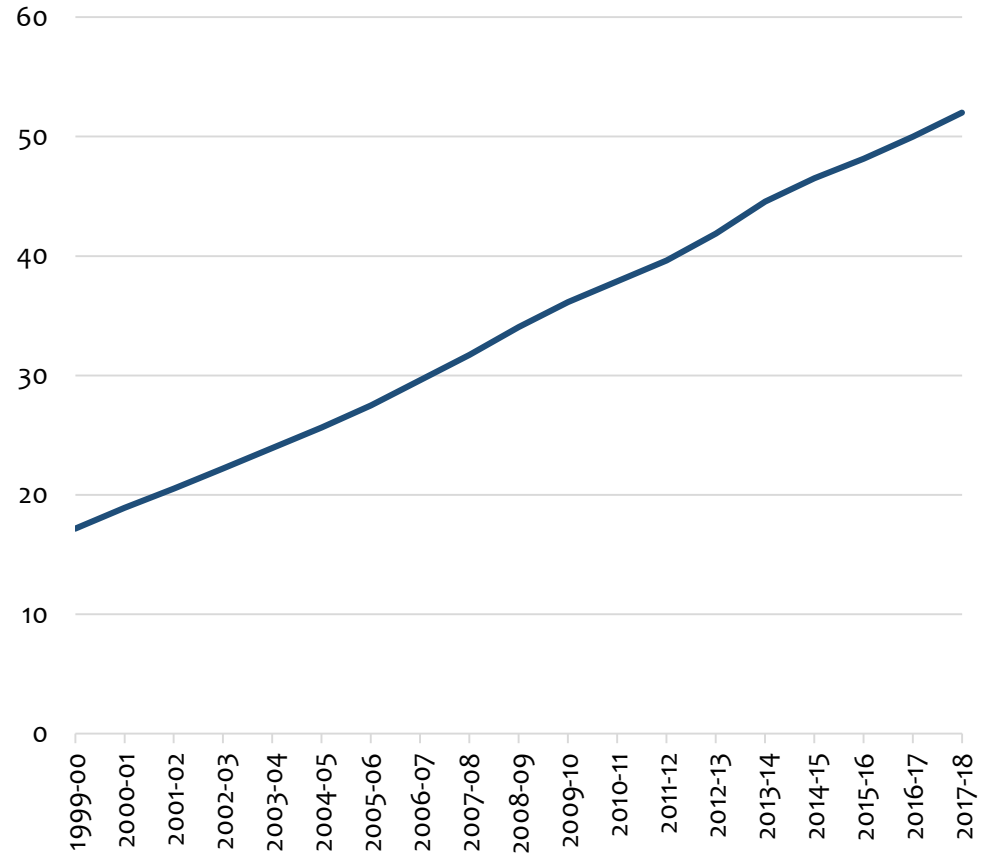
Sustainability/environment

Water abstraction in England: all surface and groundwaters, billion cubic metres



Source: Environment Agency, Defra (2019) ENV15 - Water abstraction tables for England

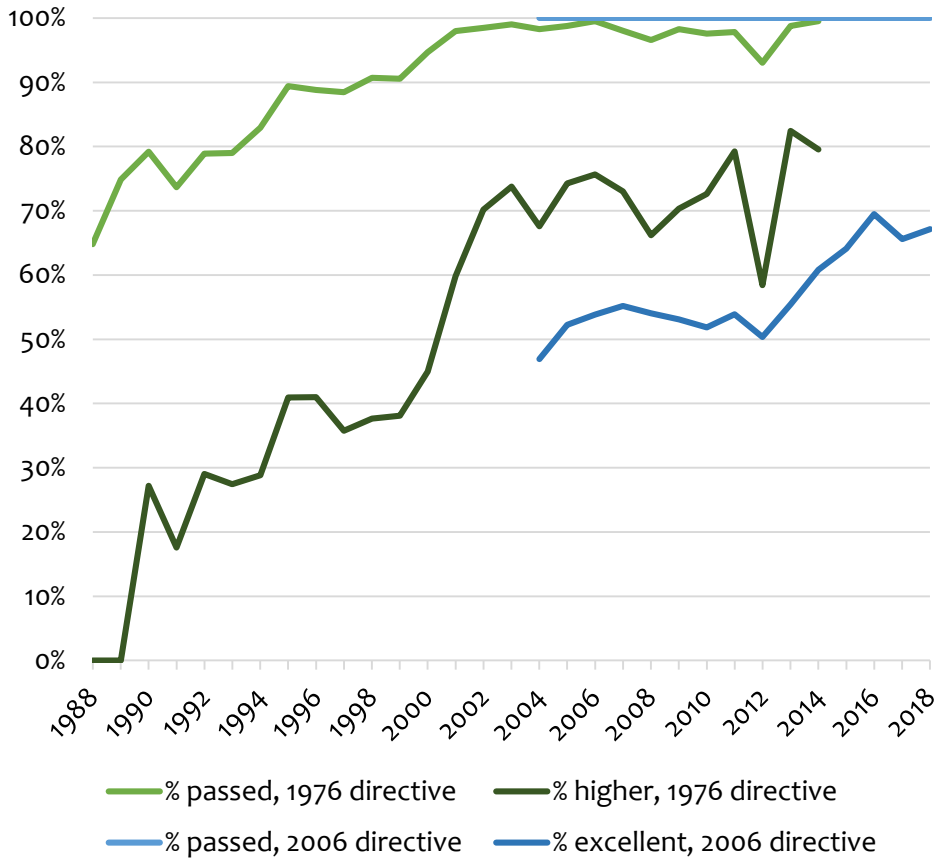
Household water meter penetration in England, %



Source: Environment Agency, Defra (2018) Water conservation report

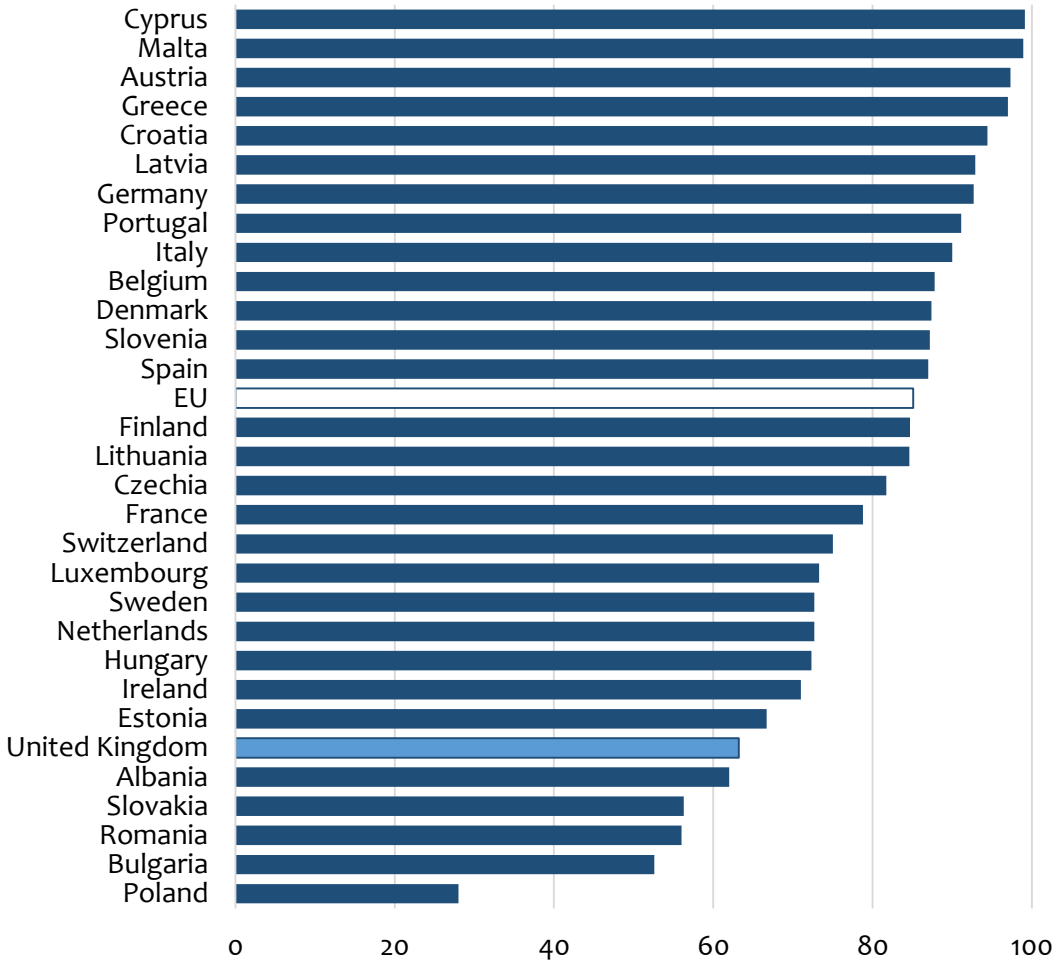
Sustainability/environment

Bathing water quality in England
% meeting standards



Source: Environment Agency (2019) Bathing water data

% of bathing water sites with excellent water quality, 2018



Source: European Environment Agency (2019) European Bathing Water Quality in 2018. Annex 1, Bathing water quality results in 2018.

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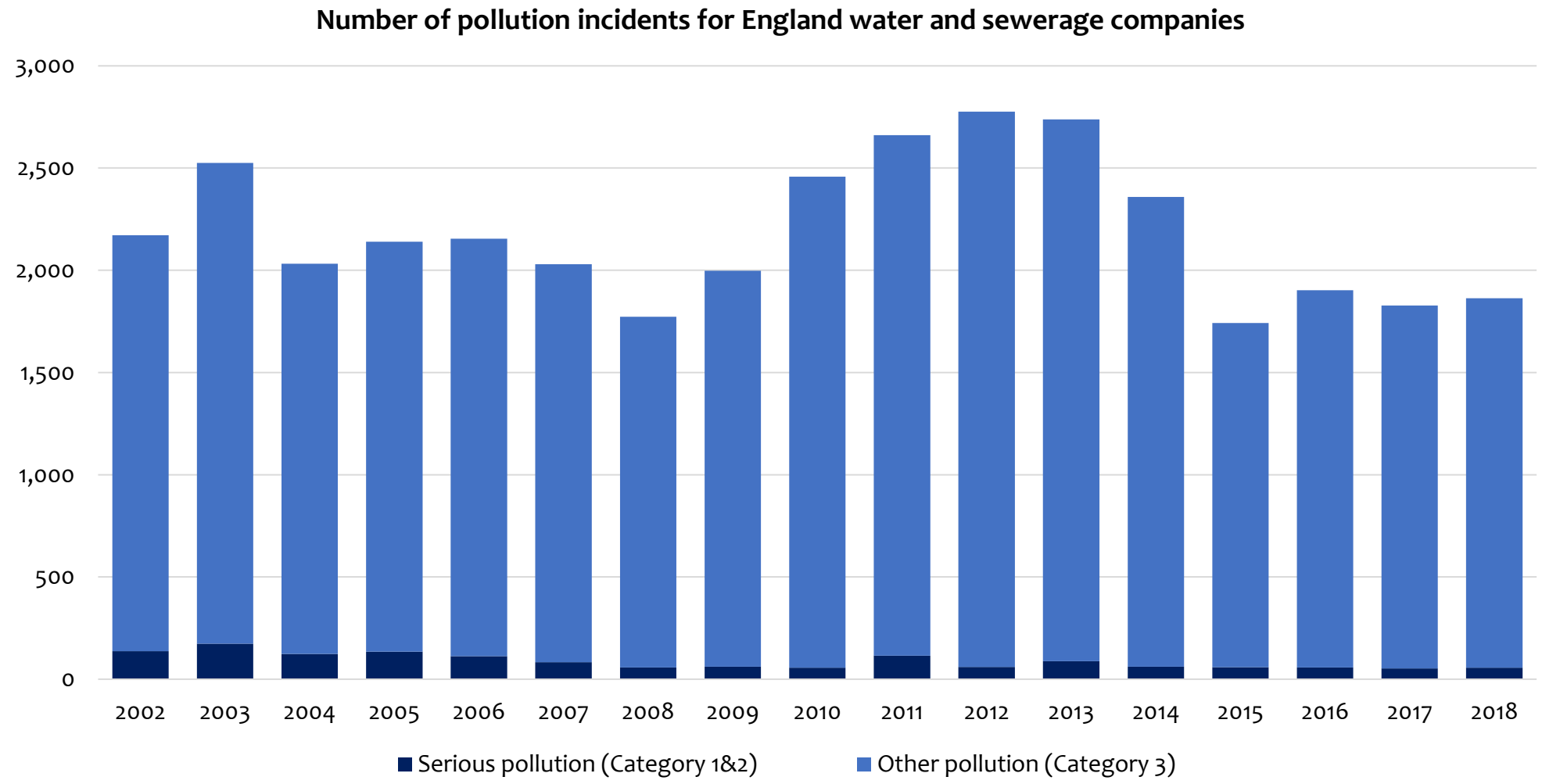
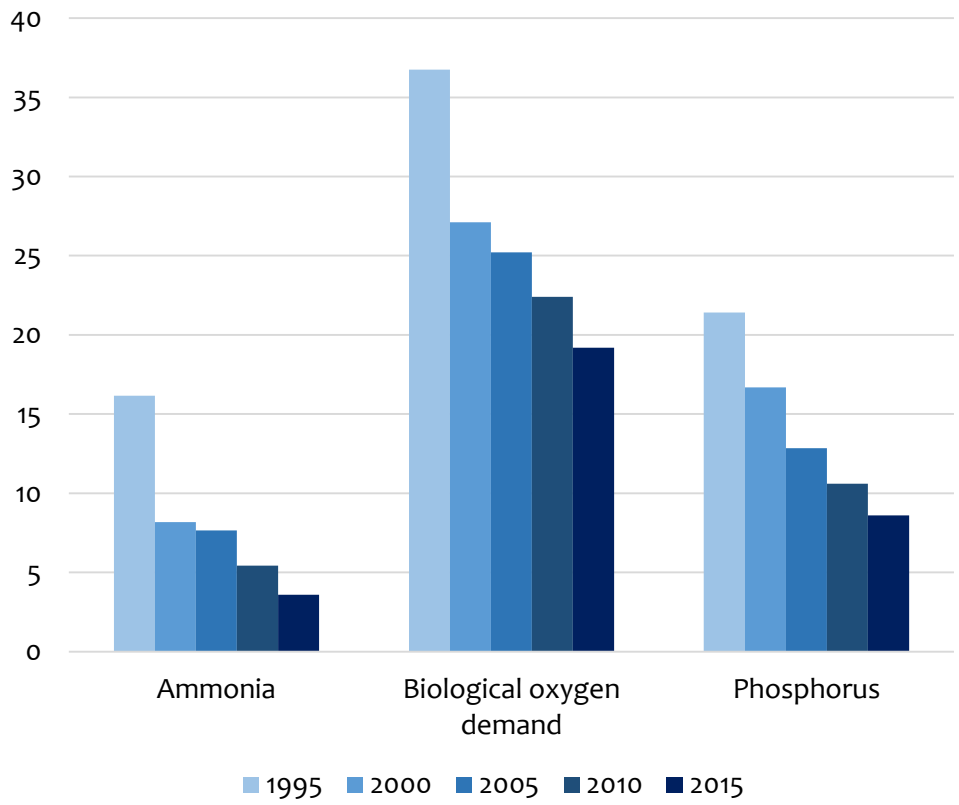
Sustainability/environment



Source: Environment Agency (2019) Environmental performance of the water and sewerage companies in 2018

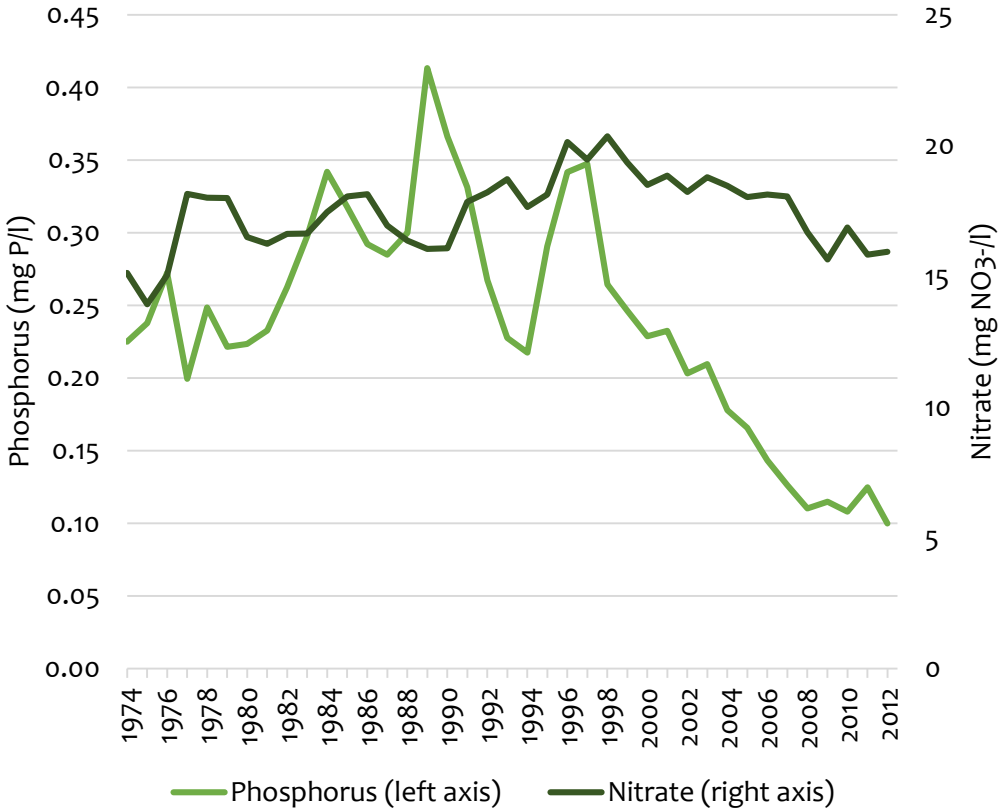
Sustainability/environment

Pollutant loads to rivers from the water industry
Annual load, thousand tonnes per year



Source: Environment Agency (2018) The state of the environment: water quality

Average annual concentrations of total reactive phosphorus and nitrates in English rivers



Source: Environment Agency (2018) The state of the environment: water quality

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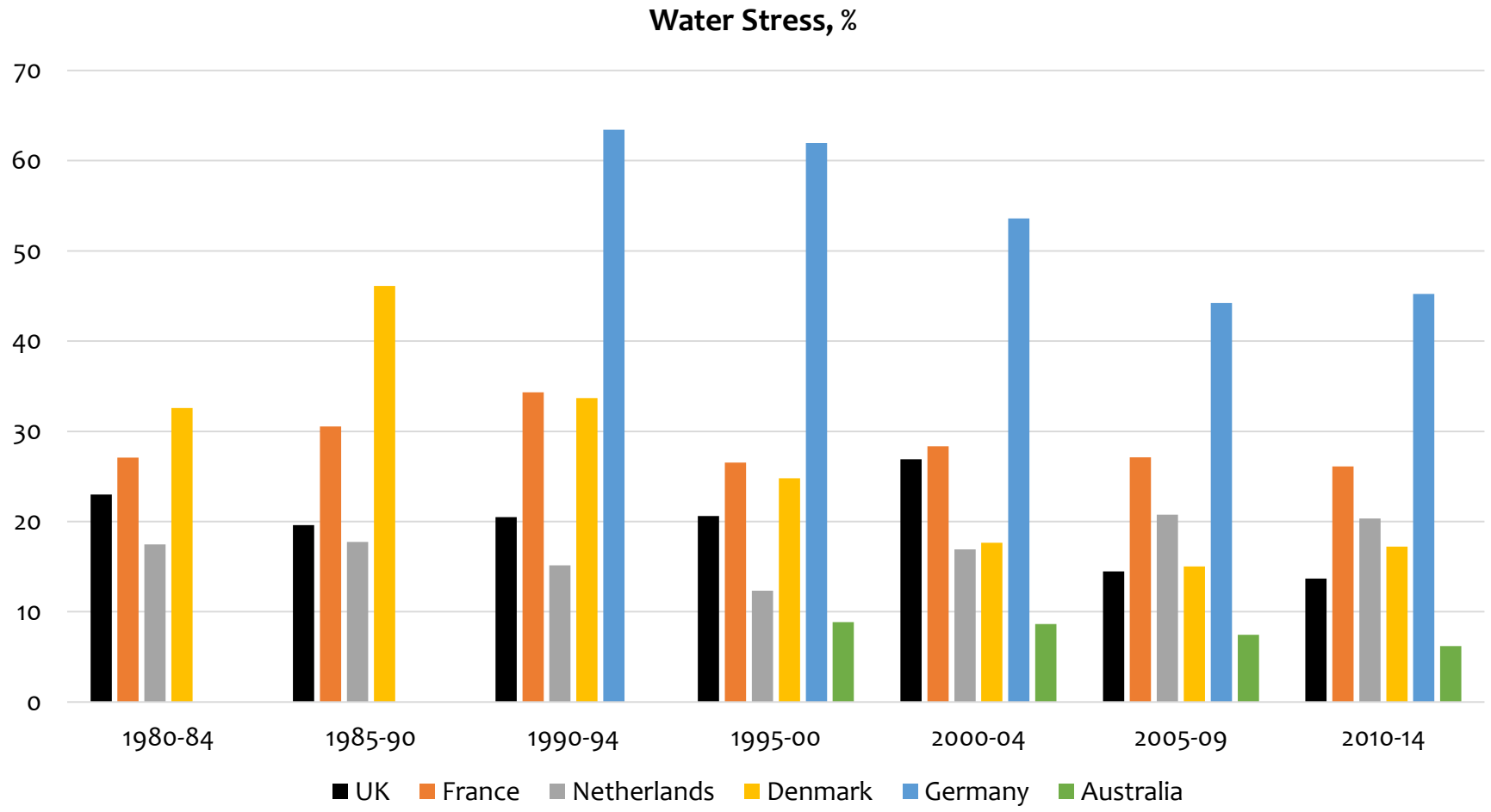
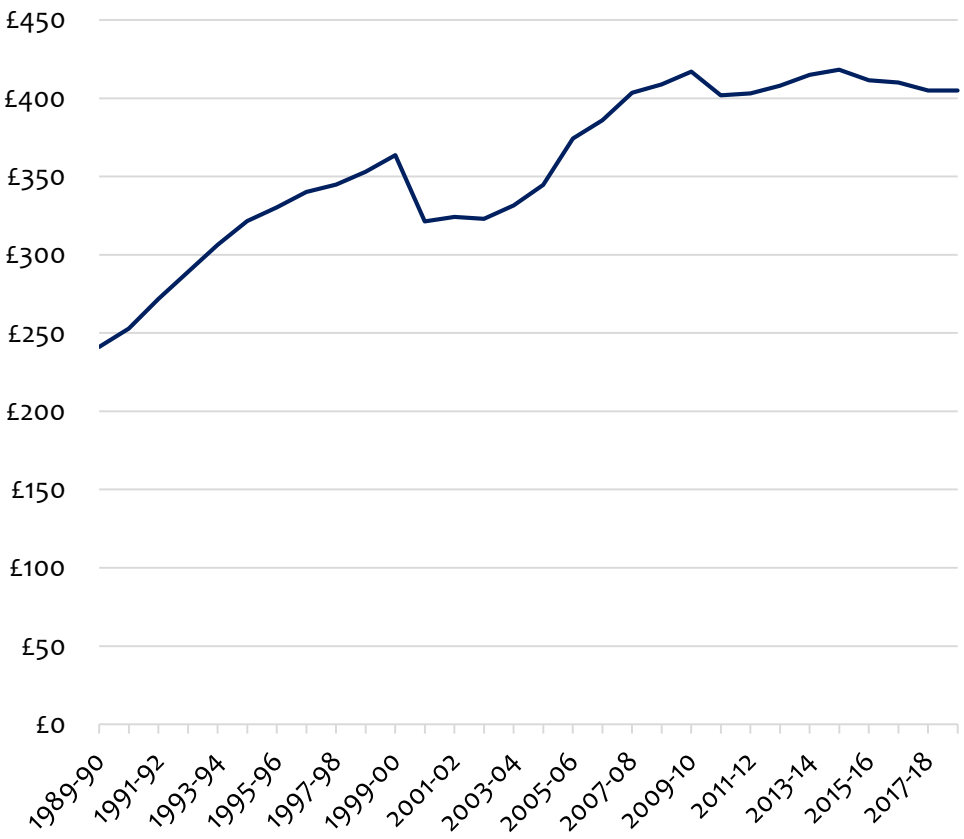
Sustainability/environment



Source: Commission analysis of data from Food and Agriculture Organization of the United Nations, Aquastat
Note: Water stress = Total freshwater withdrawal, primary and secondary/(Total renewable water resources-Environmental Flow Requirements)

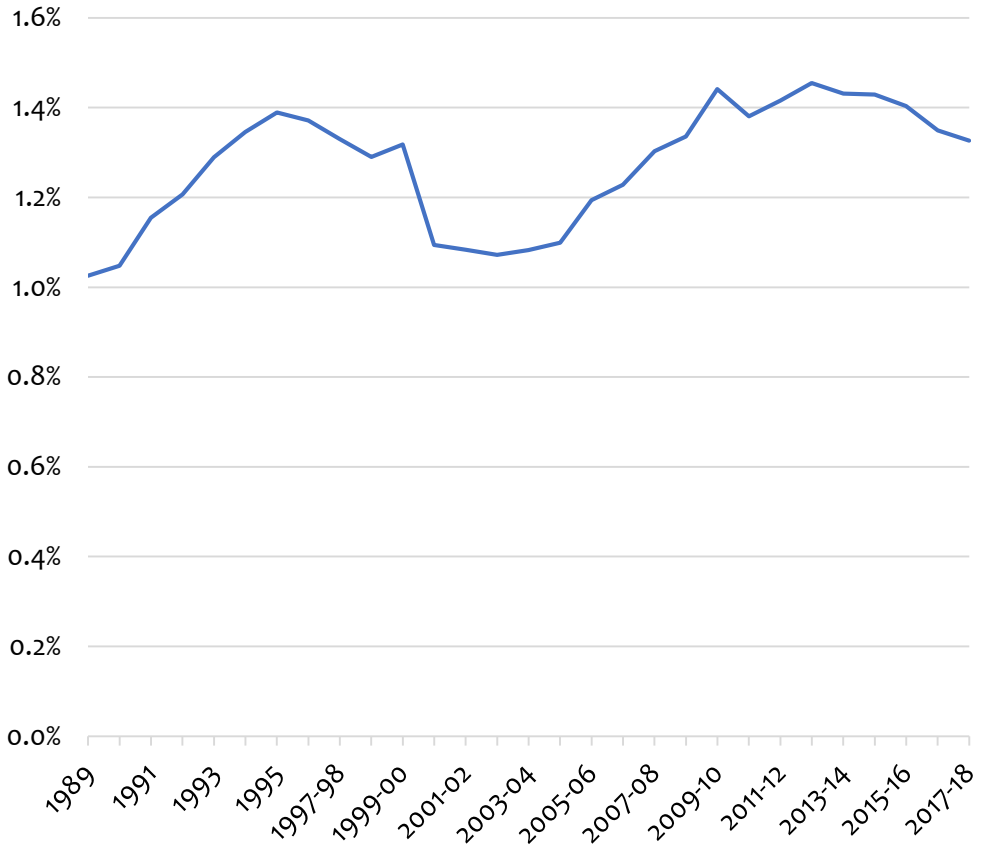
Prices and bills

Average water and sewerage bills for England and Wales, 2018-19 prices



Source: Commission calculations using water company data provided by Ofwat
Note: 2018/19 prices using CPI deflator

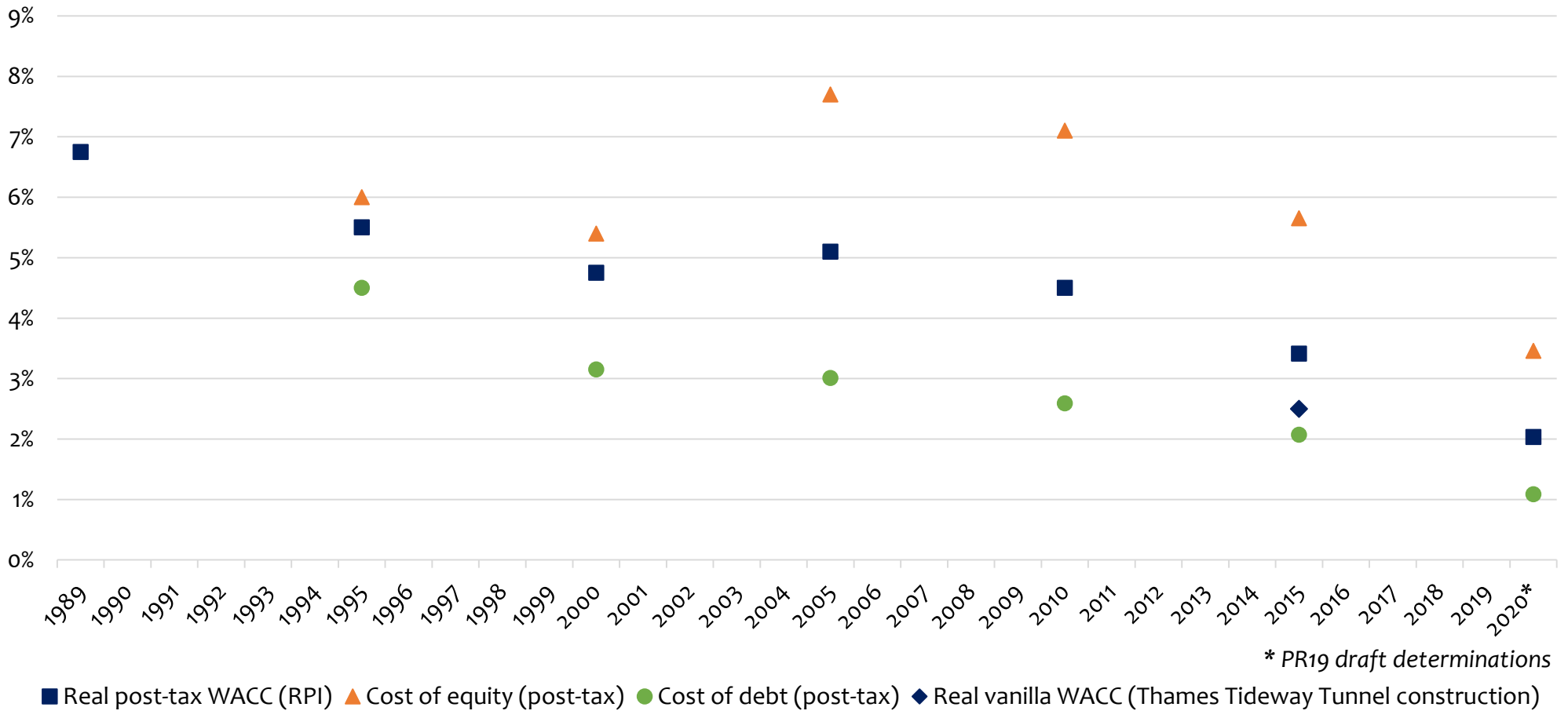
Average water and sewerage bills as % of average household spending



Source: Commission calculations using water company data provided by Ofwat and Living Costs and Food Survey, Office for National Statistics

Financial performance

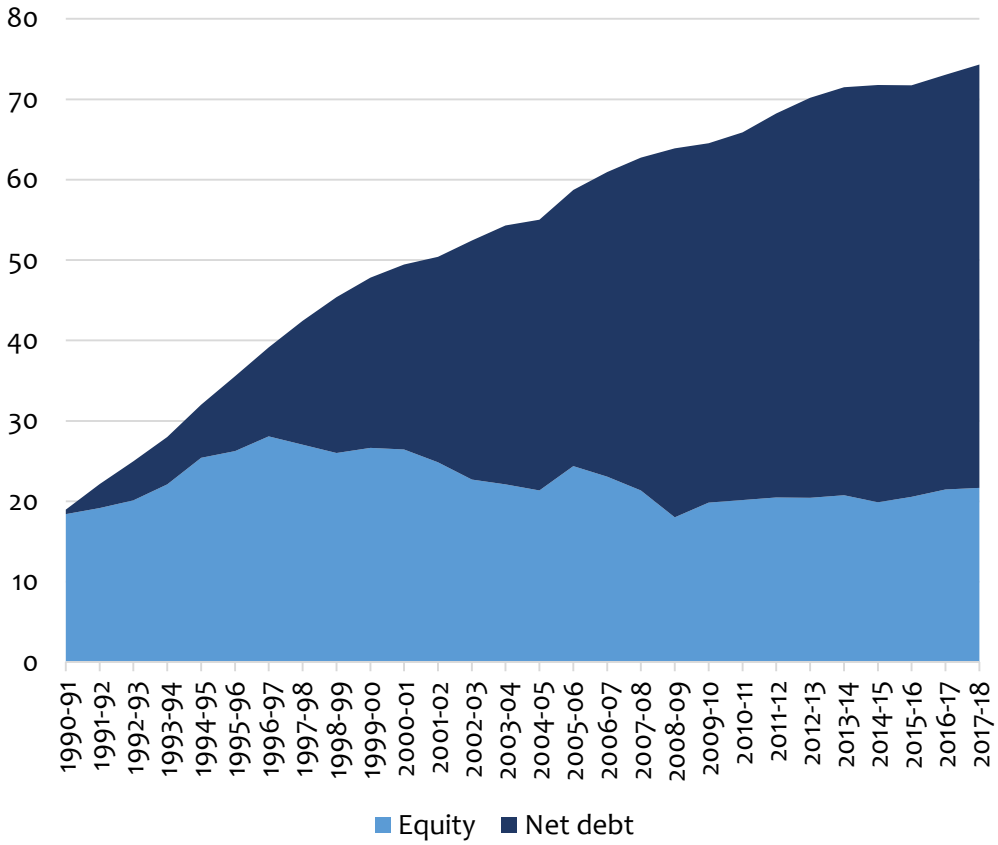
Allowed Weighted Average Cost of Capital (WACC), cost of equity and cost of debt for water and sewerage price controls



Source: Commission calculations using various Ofwat reports
Notes: WACC shown in post-tax terms due to lack of 'vanilla' WACC data for older price controls, except for Thames Tideway Tunnel WACC for which only 'vanilla' format is available. All WACCs and components are measured in real terms, using the Retail Price Index (RPI), and are plotted in the first year of the price control to which they applied.

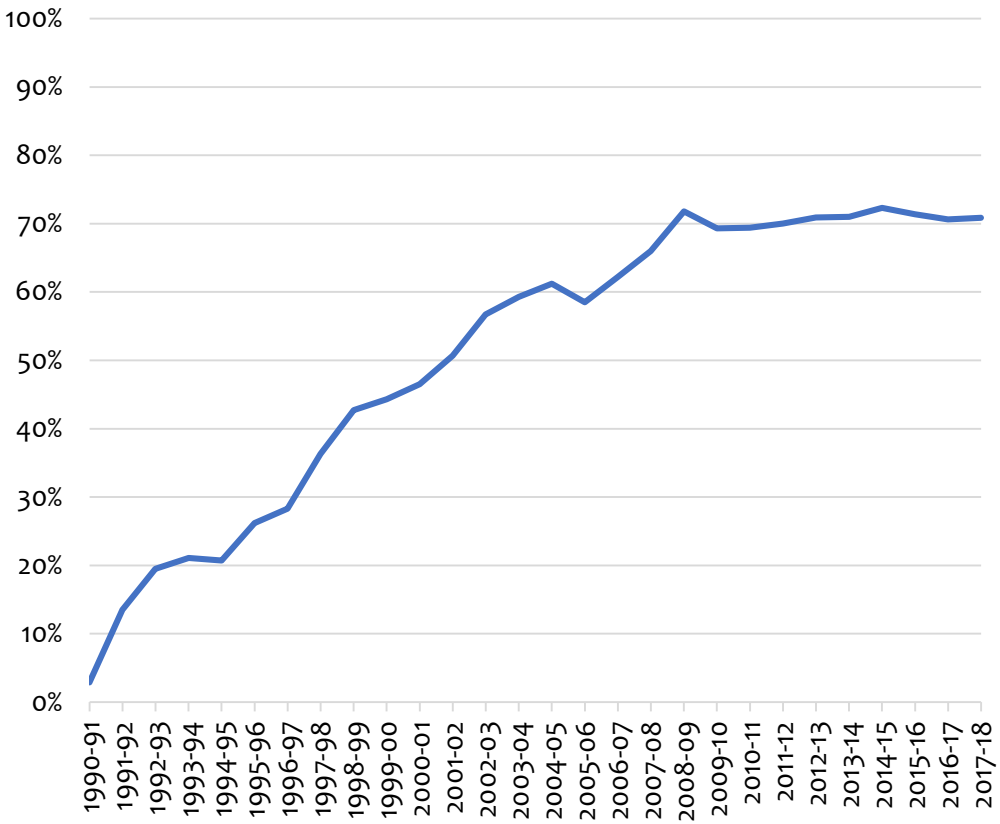
Financial performance

Debt and equity in the water industry
£ billion, Mar 2019 prices



Source: Commission calculations using water company data provided by NAO (2015) The economic regulation of the water sector, and Ofwat (2019) Financial monitoring report 2017-18
Notes: Regulatory Capital Value (RCV) = Equity + Net debt
March 2019 prices using RPI deflator

Water industry gearing



Source: Commission calculations using water company data provided by NAO (2015) The economic regulation of the water sector, and Ofwat (2019) Financial monitoring report 2017-18
Note: Gearing = Net debt / Regulatory Capital Value (RCV)

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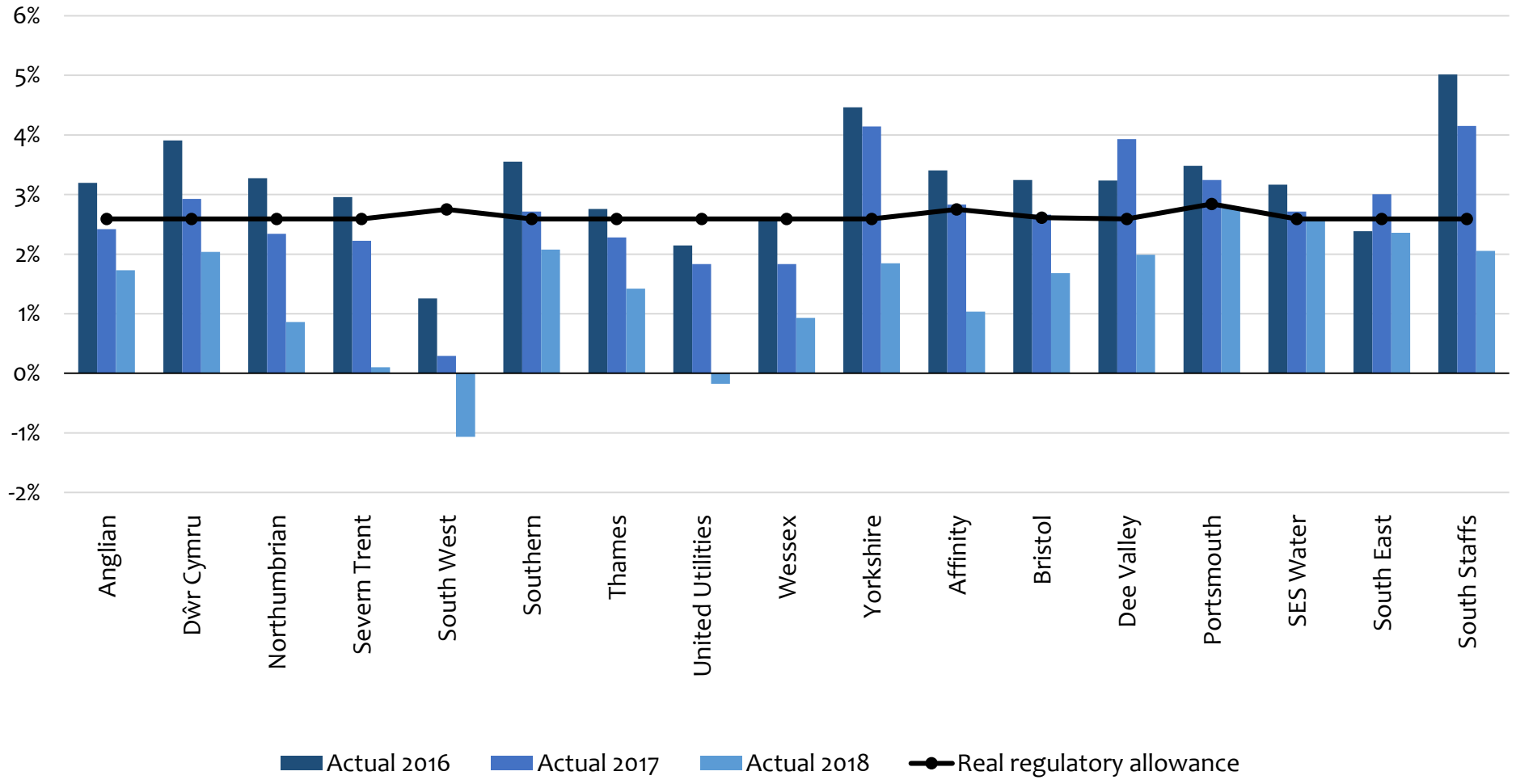
Financial performance

Actual real cost of debt vs the regulatory allowance, 2016 to 2018



Source: Commission calculations using water company data provided by Ofwat (2019) Financial monitoring report 2017-18

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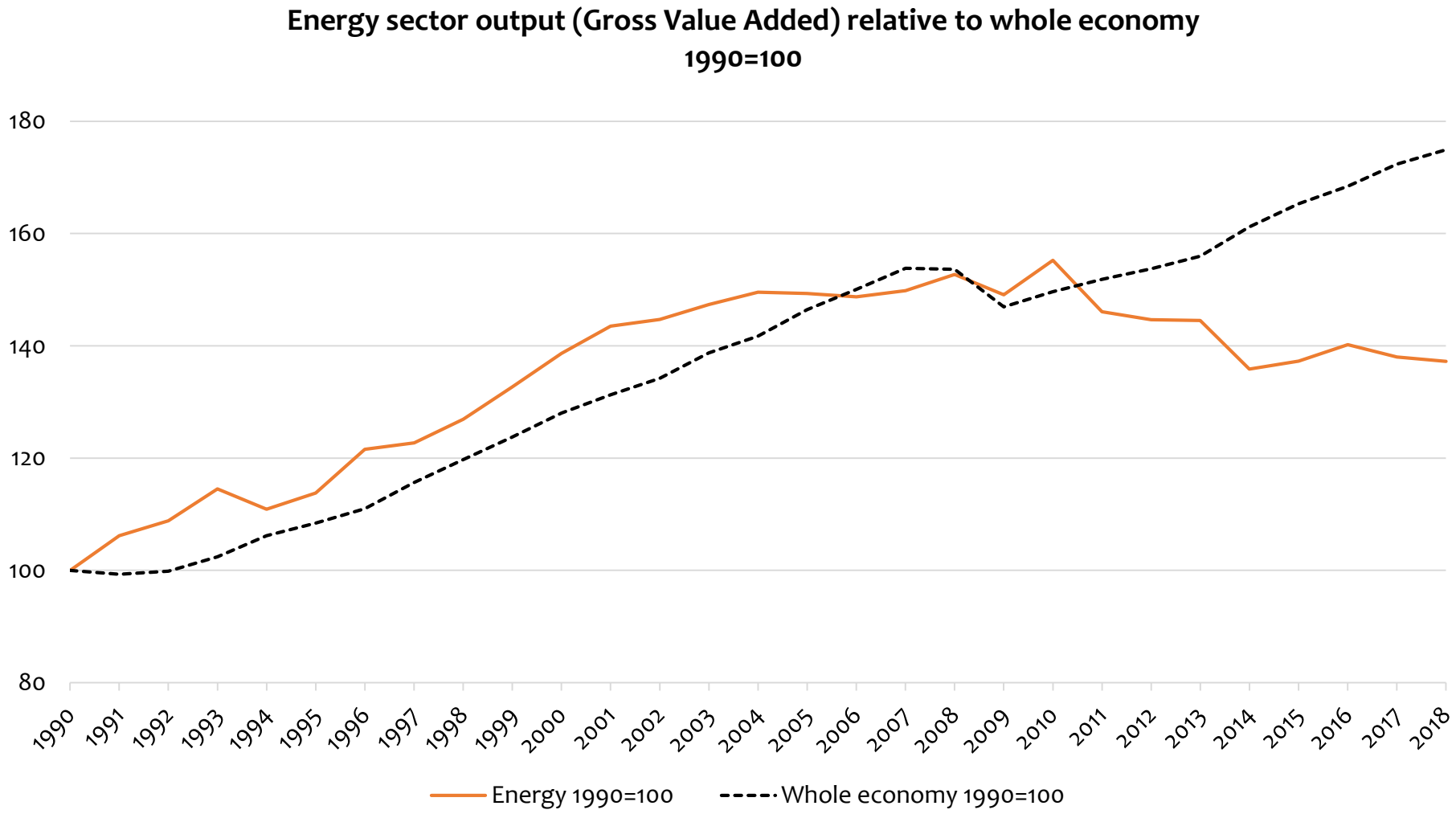
Energy

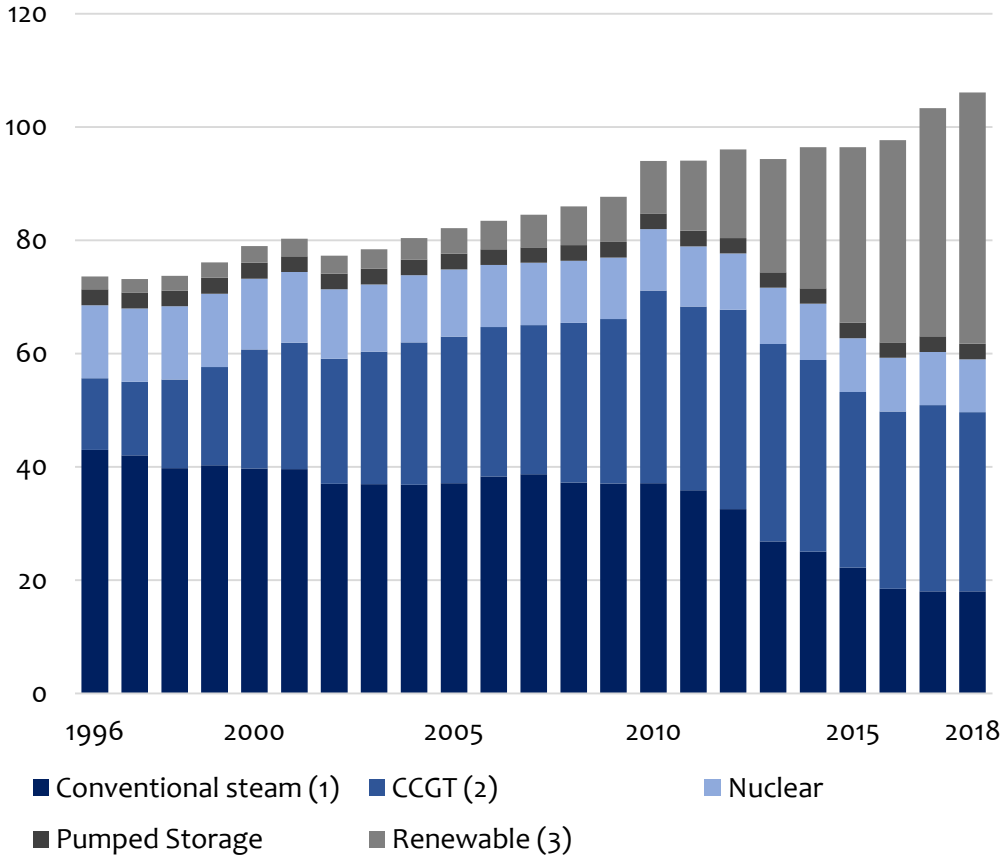
Volume



Source: Commission calculations using ONS (2019) GDP(O) low level aggregates, Chained Volume Measure.
SIC 2007 section D (Electricity, gas, steam and air conditioning supply)

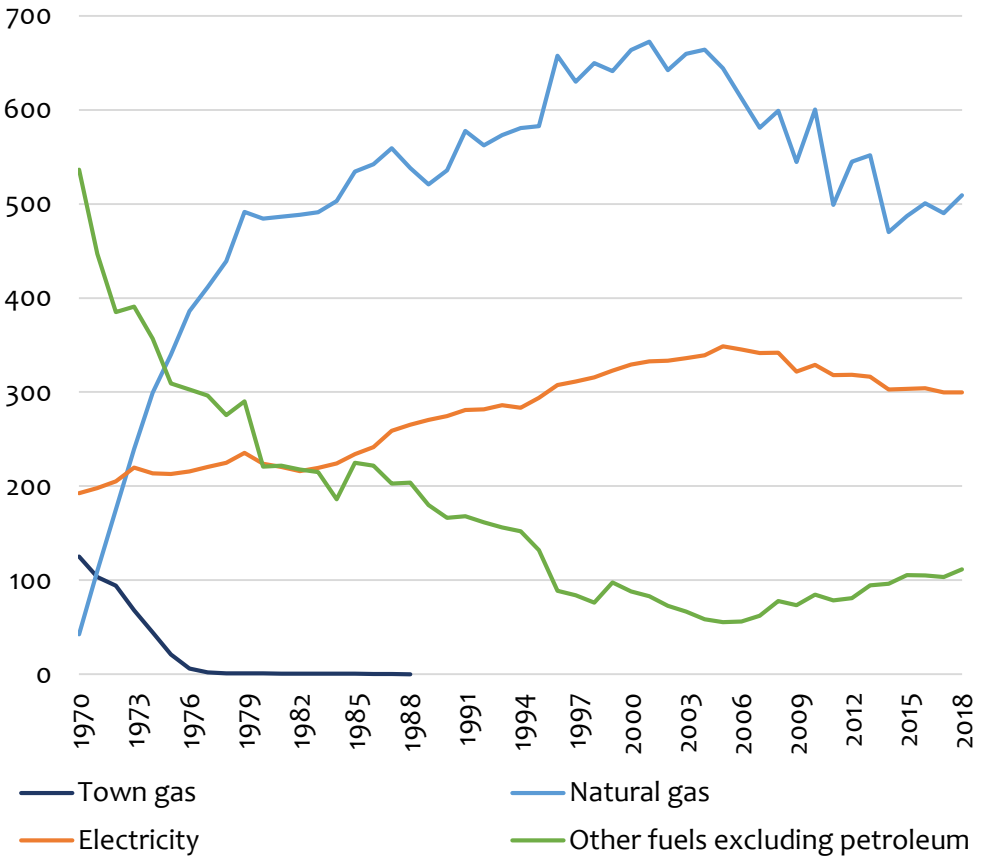
Volume

Electricity generation capacity, GW



Source: Department for Business, Energy & Industrial Strategy (2019) UK energy in brief, Table 25 Electricity Capacity
Notes: (1) Includes coal, non-CCGT gas, oil and mixed/dual fired. Does not include thermal renewables. (2) CCGT = Combined Cycle Gas Turbine. (3) Renewable capacity is on an Installed Capacity basis. Data for other fuels/technologies relates to Declared Net Capacity from 1996 to 2005, data for 2006 onwards is transmission entry capacity (TEC)

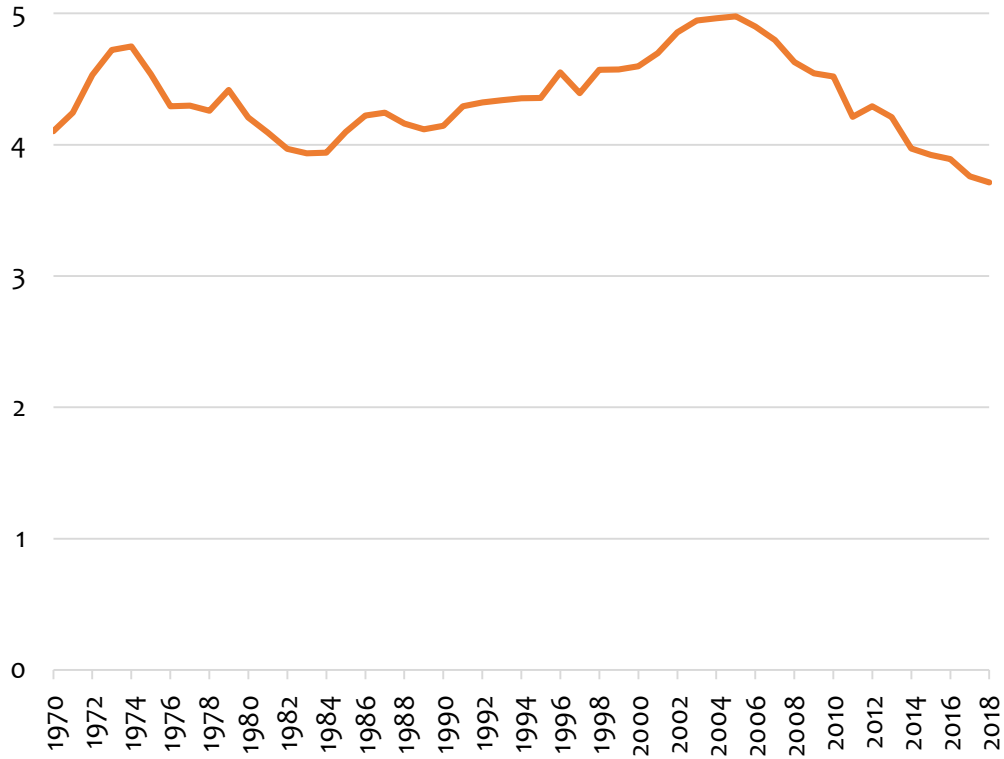
Final energy consumption by fuel, excluding petroleum, TWh



Source: Commission calculations using Department for Business, Energy & Industrial Strategy (2019) Energy Consumption in the UK, Table C1: Final Energy Consumption by sector and fuel

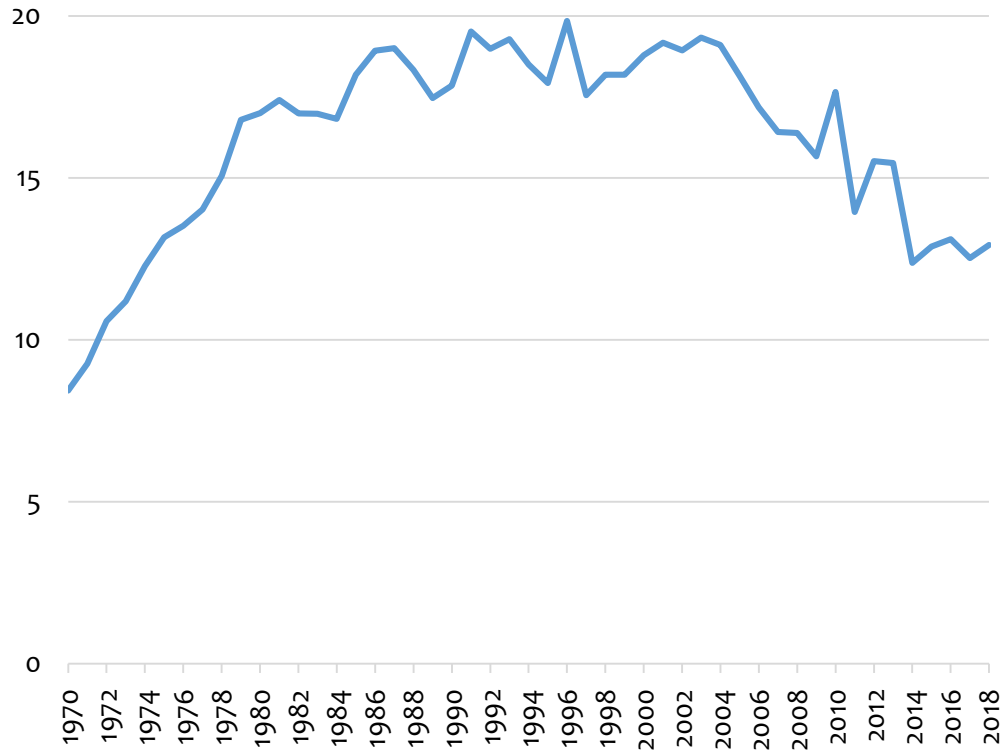
Volume

Average electricity consumption per household MWh/year



Source: Ofgem (2019) State of the Energy Market, using data from Department for Business, Energy & Industrial Strategy (2019) Energy consumption statistics in the UK (1970-2018), and BEIS (2017) Historical gas data: gas production and consumption and fuel input (1920 to 2016).
Note: The figure is not weather corrected as weather corrected data are available only since 2002

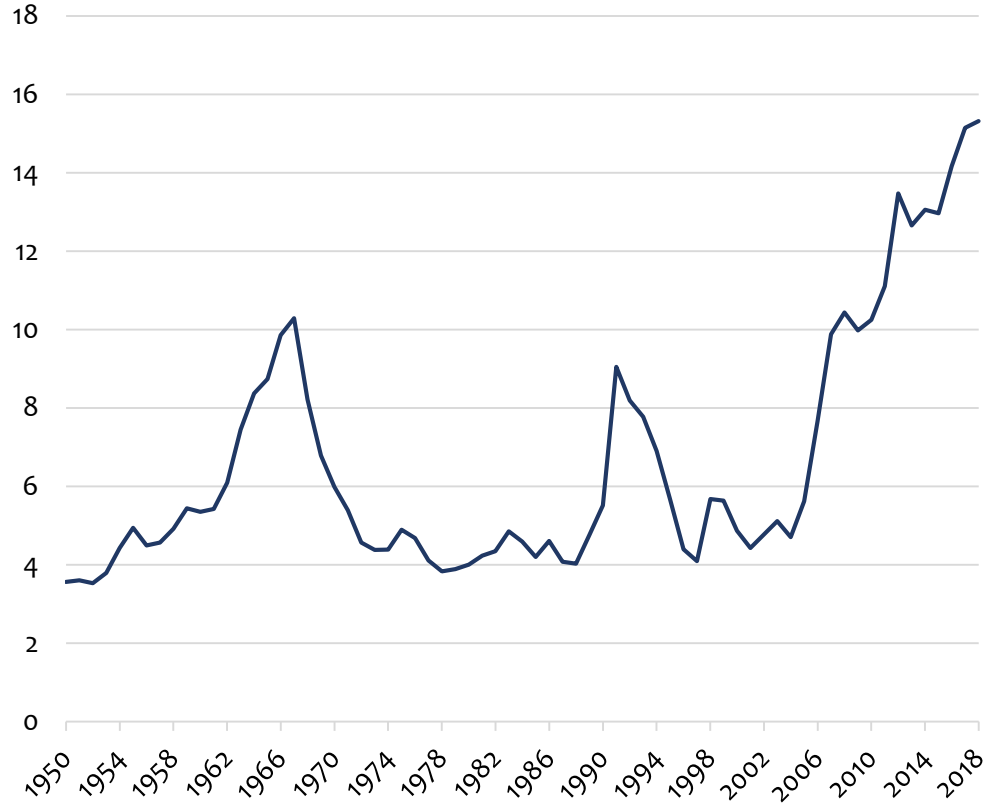
Average gas consumption per gas consuming household MWh/year



Source: Ofgem (2019) State of the Energy Market, using data from Department for Business, Energy & Industrial Strategy (2019) Energy consumption statistics in the UK (1970-2018), and BEIS (2017) Historical gas data: gas production and consumption and fuel input (1920 to 2016).
Note: The figure is not weather corrected as weather corrected data are available only since 2002

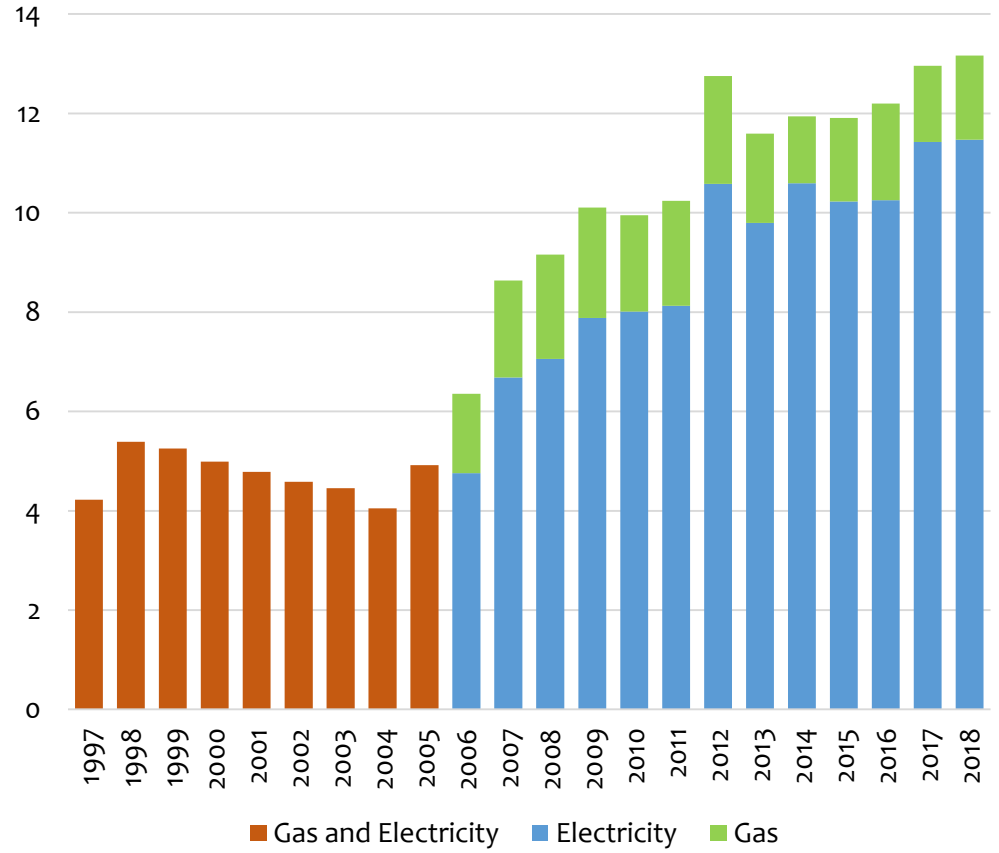
Investment

Gross Fixed Capital Formation in Electricity, gas, steam and air conditioning supply (experimental measure)
£ billion, 2018 prices



Source: Commission calculation using ONS (2019) Multi-factor productivity estimates: Experimental estimates to October to December 2018.
Notes: SIC 2007 Section D: Electricity, gas, steam and air conditioning supply 2018 prices using experimental implied GFCF deflator.

Annual investment in gas and electricity
£ billion, 2018 prices



Source: Commission calculation using ONS (2019) Quarterly acquisitions and disposals of capital assets survey (QCAS) investment made by energy industries
Note: 2018 prices using GDP deflator

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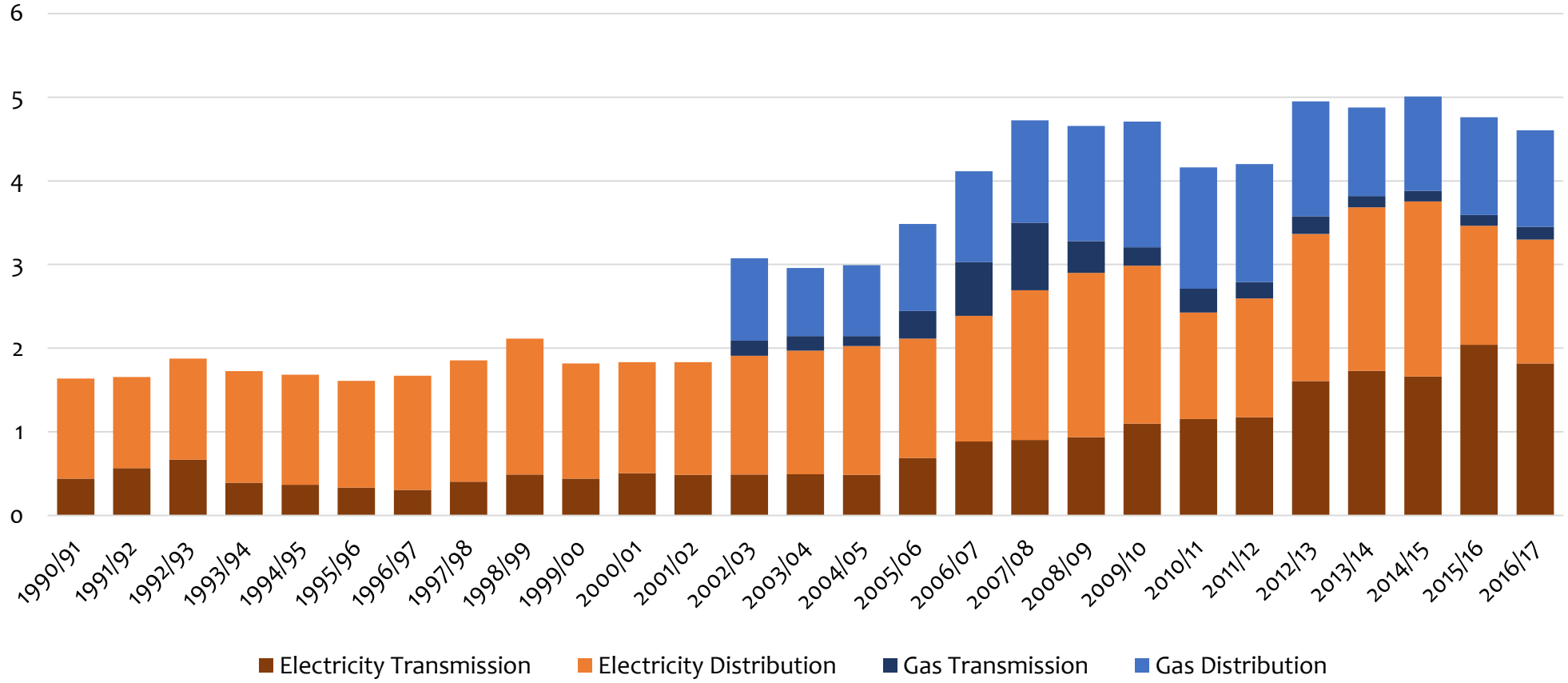
Investment

Annual capital expenditure on electricity and gas networks (gas since 2002/03)
£ billion, 2018/19 prices



Source: Commission calculation using data from Ofgem
Note: 2018/19 prices using GDP deflator

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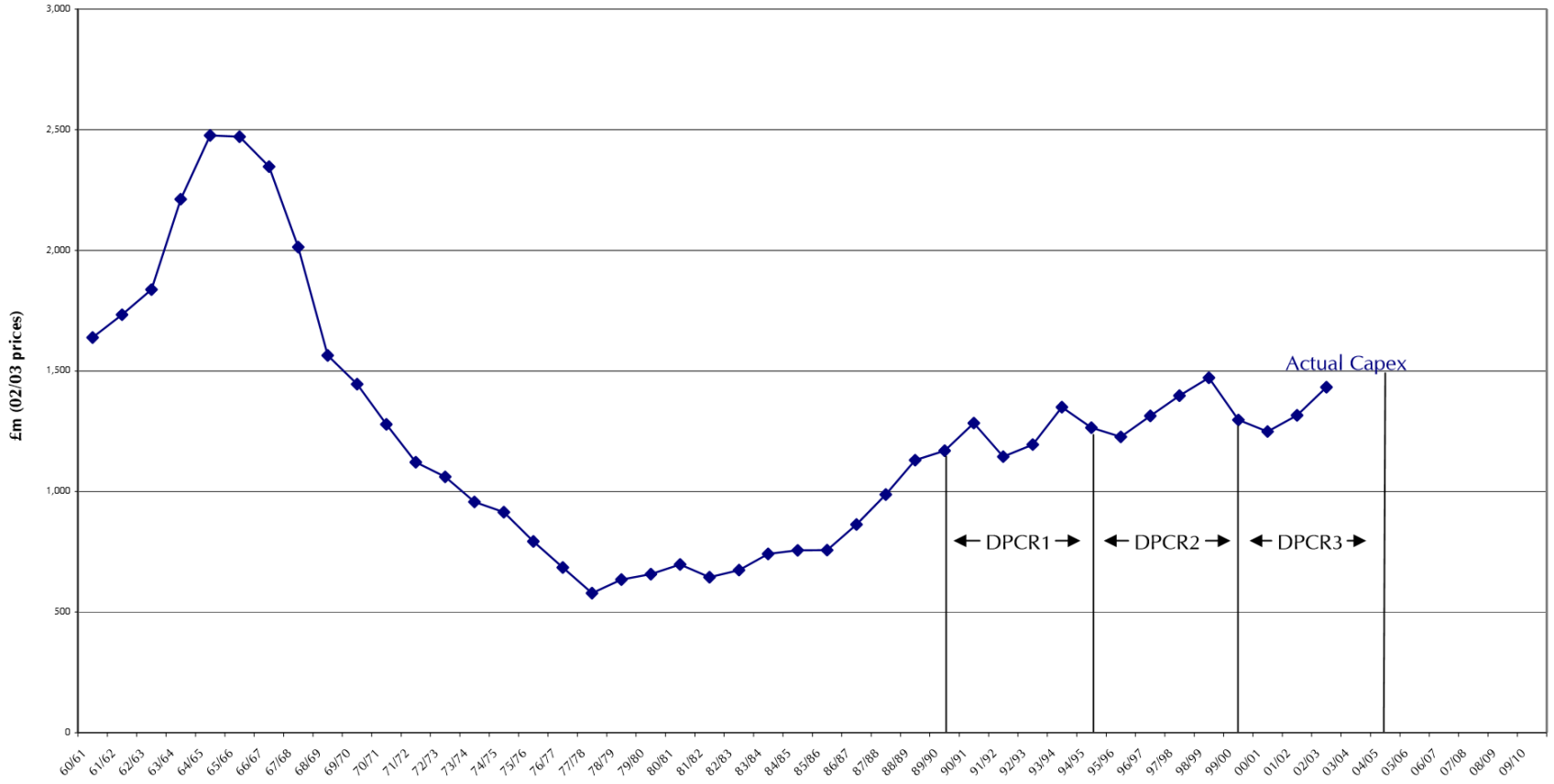
Investment

Historic gross capital expenditure by District Network Operators (DNOs)

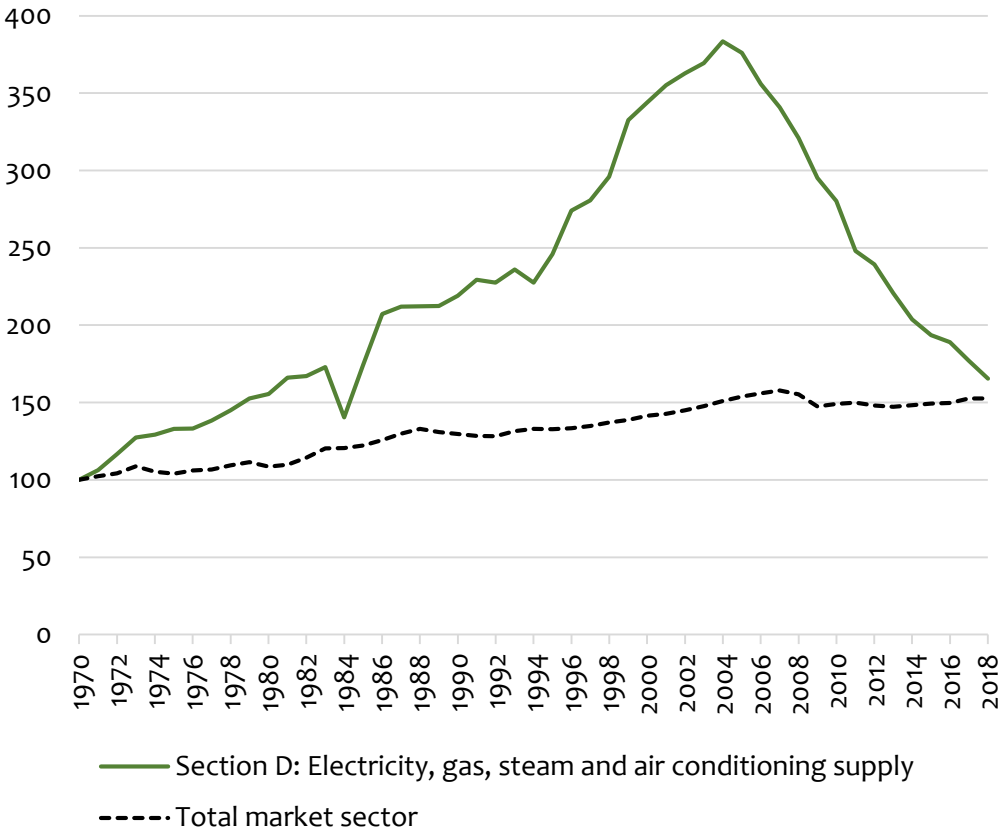
Figure 6.1 Actual DNO Gross Capital Expenditure (1960 to 2010)



Source: Ofgem (2004) Electricity Distribution Price Control Review – Policy document
Notes: Historical trend of outturn capital expenditure by Distribution Network Operators: not a comprehensive measure of energy network investment.
The chart also shows the first three Distribution Price Control (DPCR) periods.
2002/03 prices

Efficiency

Multi-factor productivity (experimental measure)
GVA/combined inputs, 1970=100



Source: Commission calculation using ONS (2019) Multi-factor productivity (experimental): estimates.
Notes: SIC 2007 Section D: Electricity, gas, steam and air conditioning supply. This measurement of productivity may not reflect changes to quality of outputs.

Growth in labour productivity, investment and profitability around gas privatisation in 1986

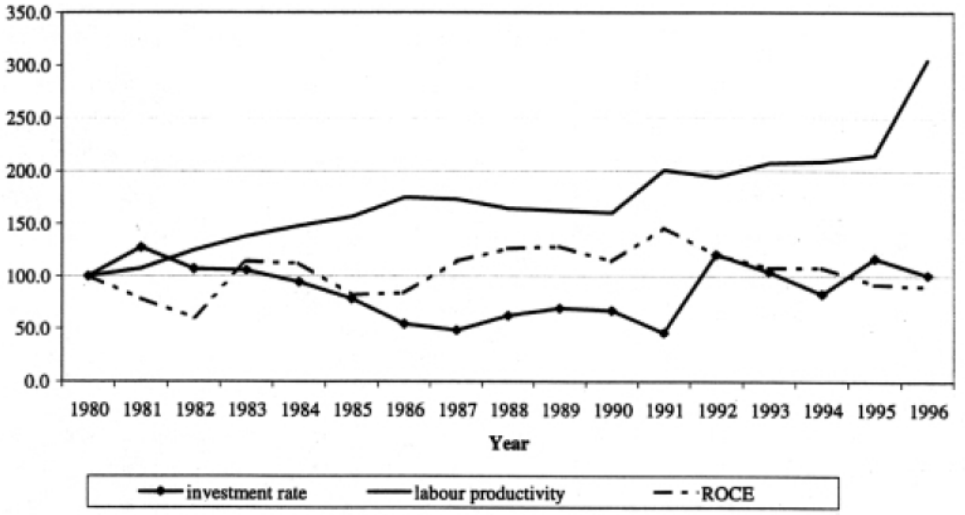


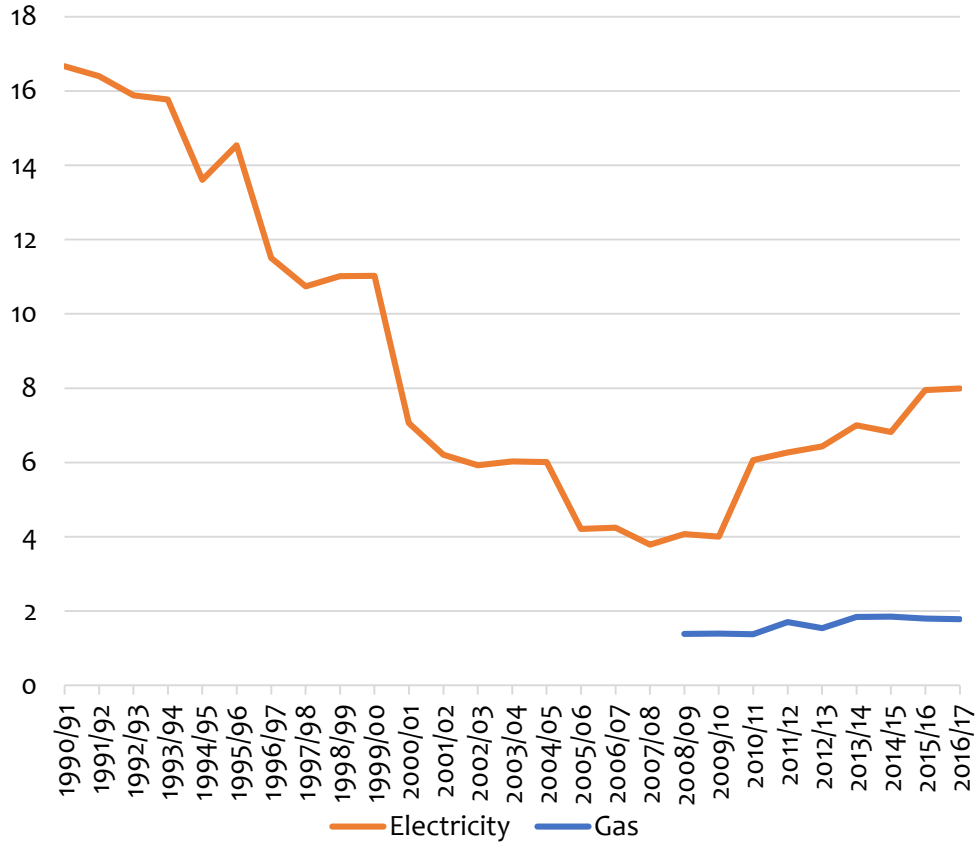
Figure 3. – Investment, labour productivity and profitability in BG (1980 = 100)

Note: investment = (purchase of fixed assets-capital expenditure on exploration and production)/turnover; labour productivity = (real turnover)/number of employees; ROCE = return on average capital employed.
Source: see Table 5.

Source: Markou and Waddams Price (1999) UK utilities: past reform and current proposals

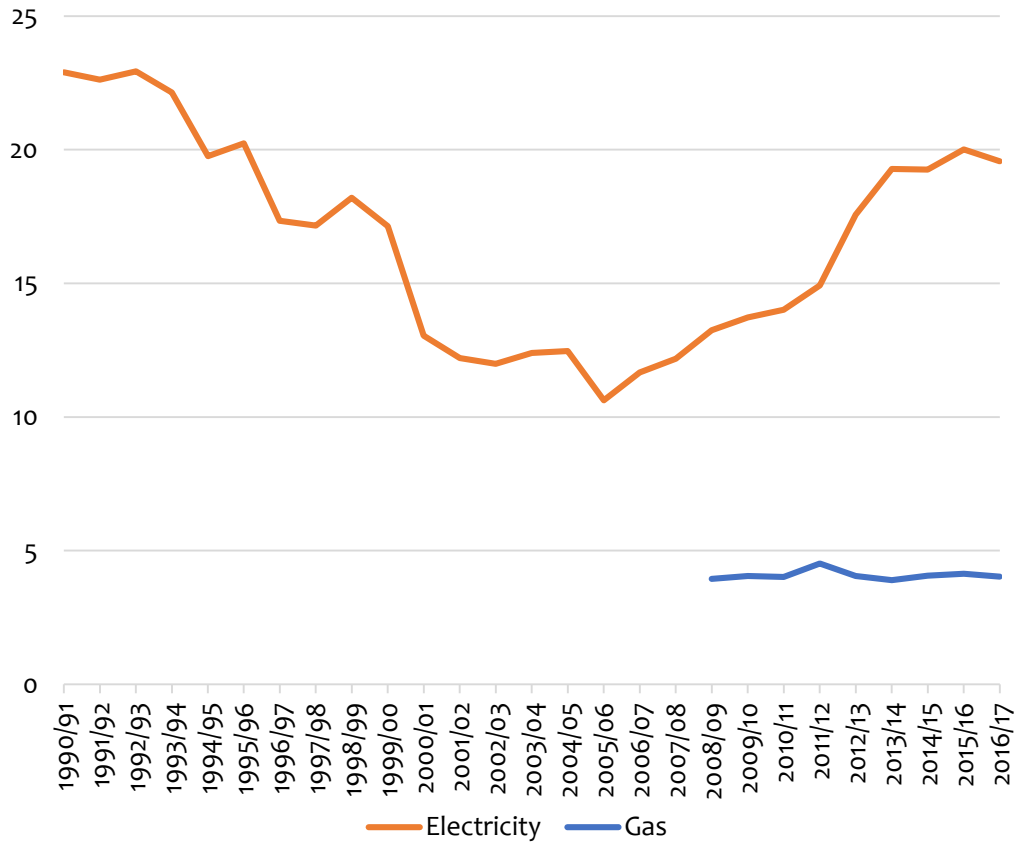
Efficiency

Network operational expenditure per units supplied
£ per MWh, 2018/19 prices



Source: Commission calculation using data from Ofgem
Notes: Operational expenditure (opex) for all electricity and gas distribution and transmission companies, divided by total electricity/gas supplied.
2018/19 prices using GDP deflator

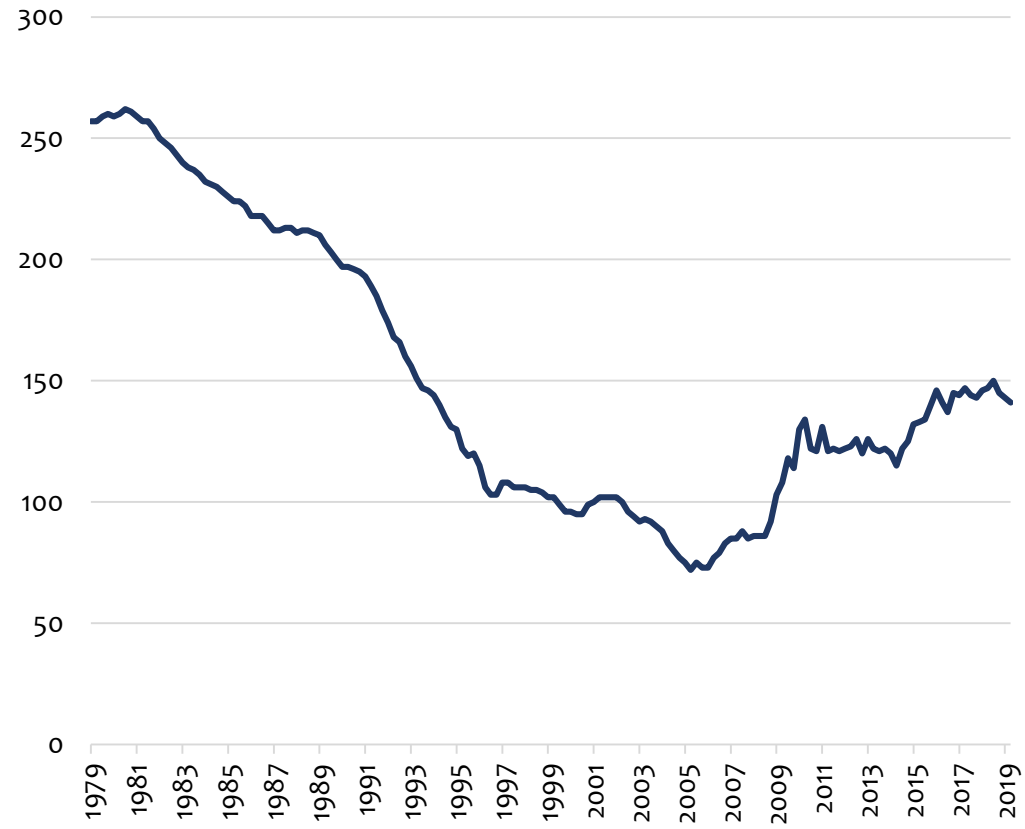
Network total expenditure per units supplied
£ per MWh, 2018/19 prices



Source: Commission calculation using data from Ofgem
Notes: Total expenditure (totex) for all electricity and gas distribution and transmission companies, divided by total electricity/gas supplied.
2018/19 prices using GDP deflator

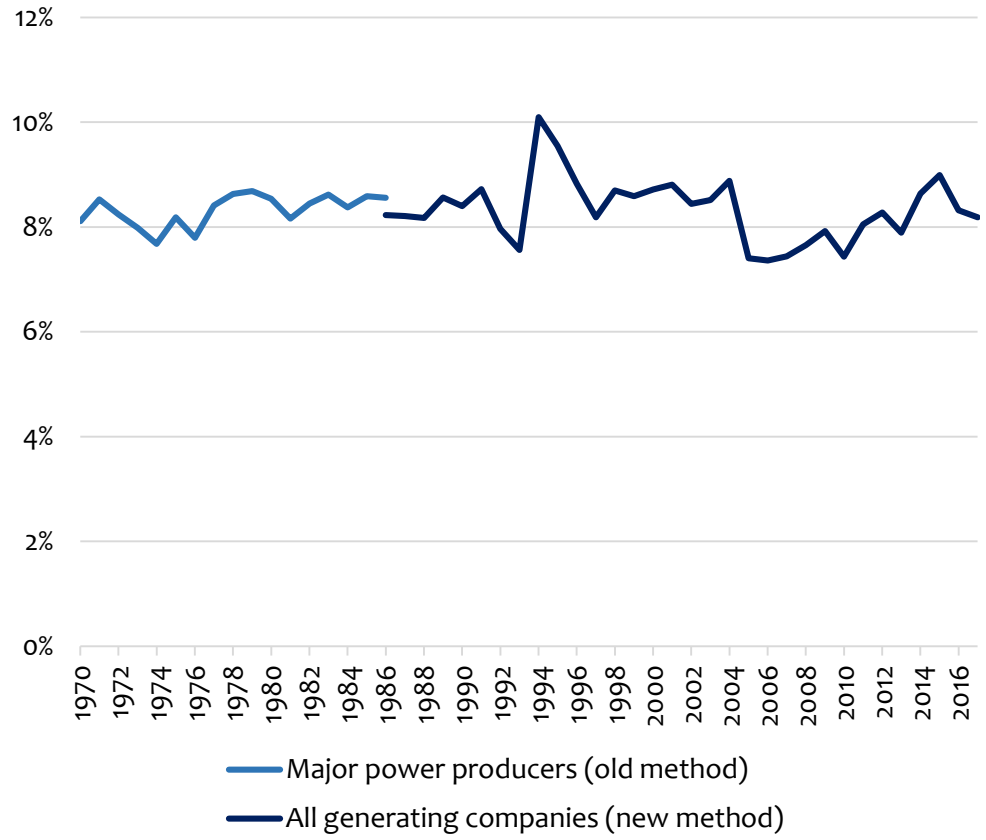
Efficiency

UK workforce jobs in Electricity, gas, steam and air conditioning supply sector, 000s



Source: Office for National Statistics (2019) Workforce jobs by industry
Note: SIC 2007 Section D: Electricity, gas, steam and air conditioning supply

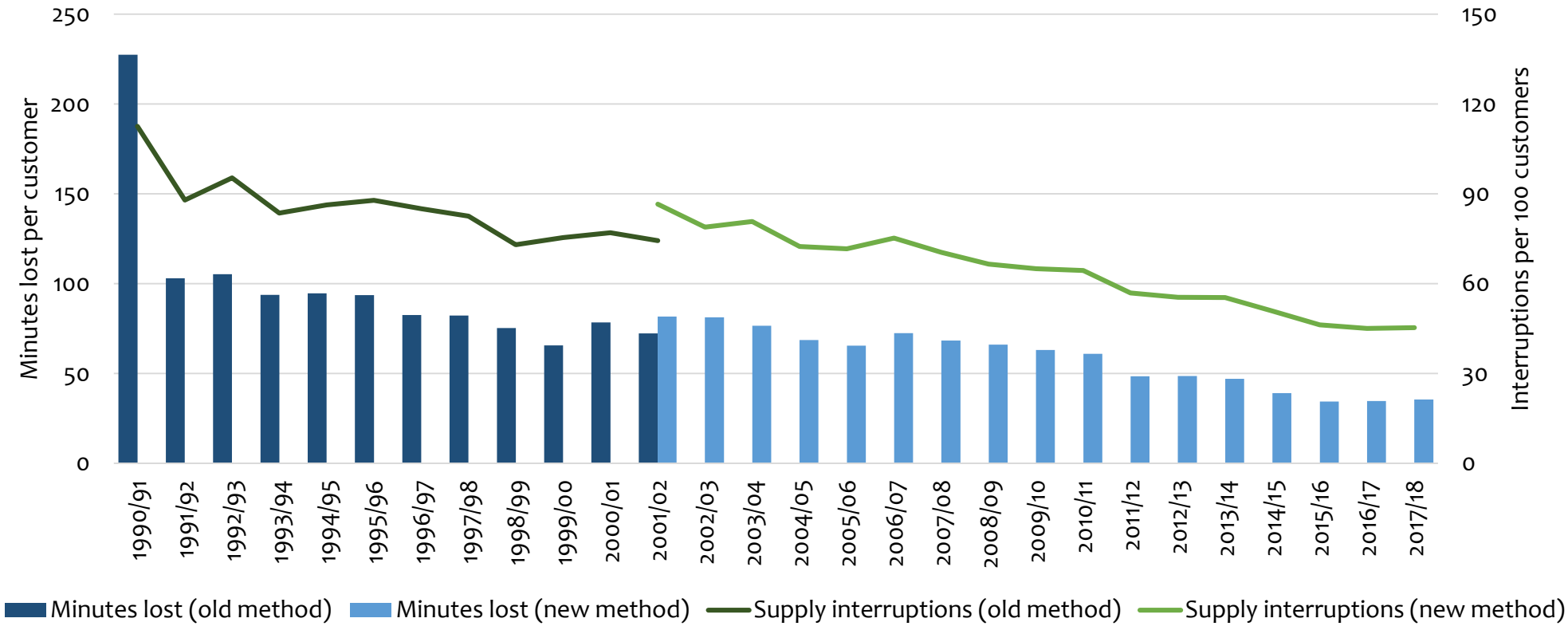
Losses in transmission and distribution, % of net electricity supplied



Source: Commission calculations using Department for Business, Energy & Industrial Strategy (2019) Digest of UK Energy Statistics (DUKES) 2018: long-term trends, Table 5.1.2 Electricity supply, availability and consumption.
Note: Losses on the public distribution system (grid system and local networks) and other differences between data collected on sales and data collected on availability.

Everyday resilience

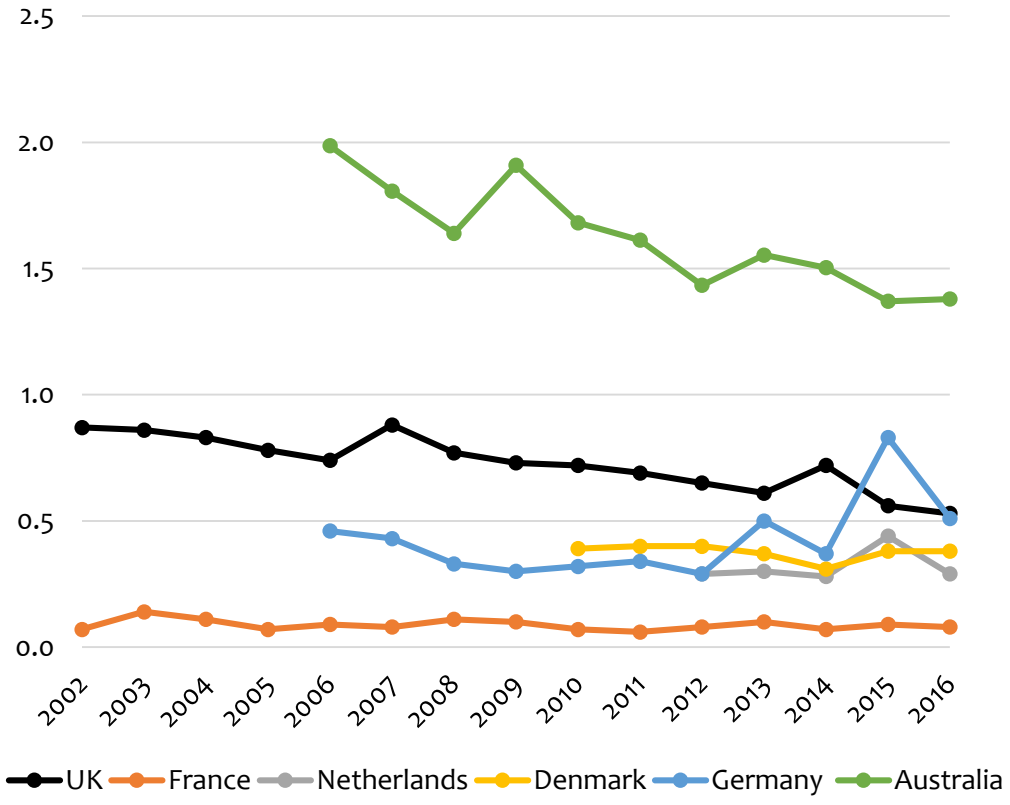
Electricity supply average minutes lost per customer (left axis) and interruptions per 100 customers (right axis)



Source: Various Ofgem and Offer reports on performance of the distribution and transmission system

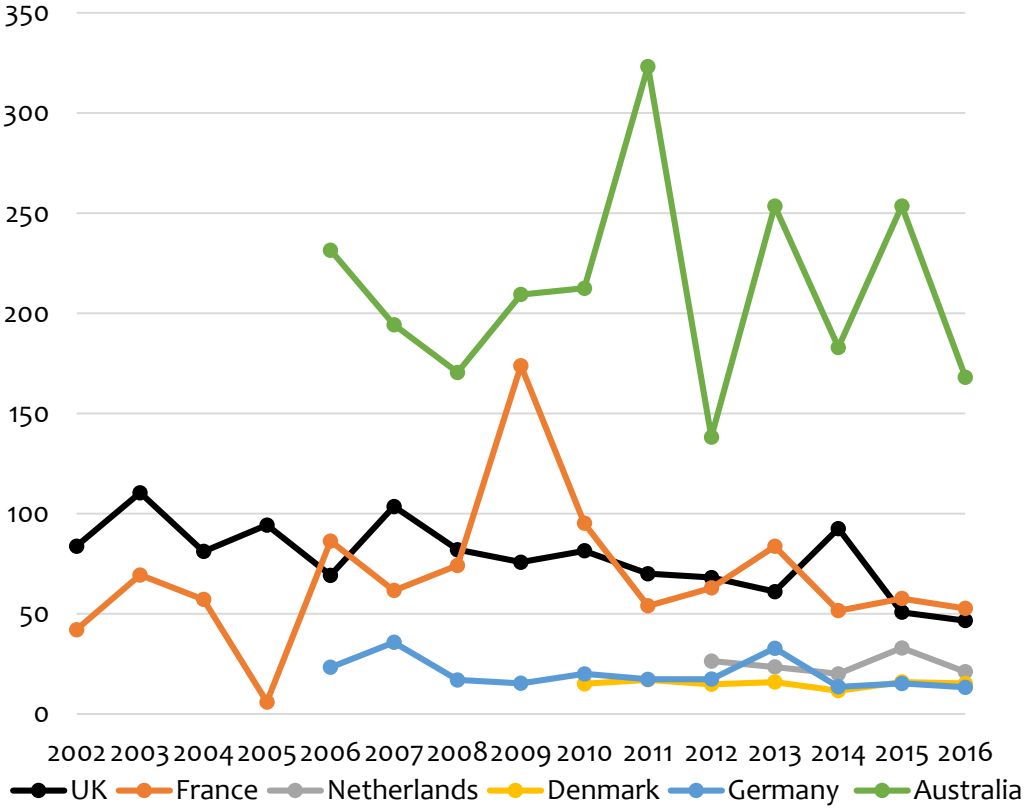
Everyday resilience

Unplanned System Average Interruption Frequency Index (SAIFI), including exceptional events, electricity, interruptions per customer



Source: Council of European Energy Regulators (CEER) - Benchmarking Report 6.1; Australian Energy Regulator (2019) State of the energy market 2018
Notes: System Average Interruption Frequency Index (SAIFI) refers to the average number of energy supply interruptions that a customer would experience. Measured in interruptions per customer.

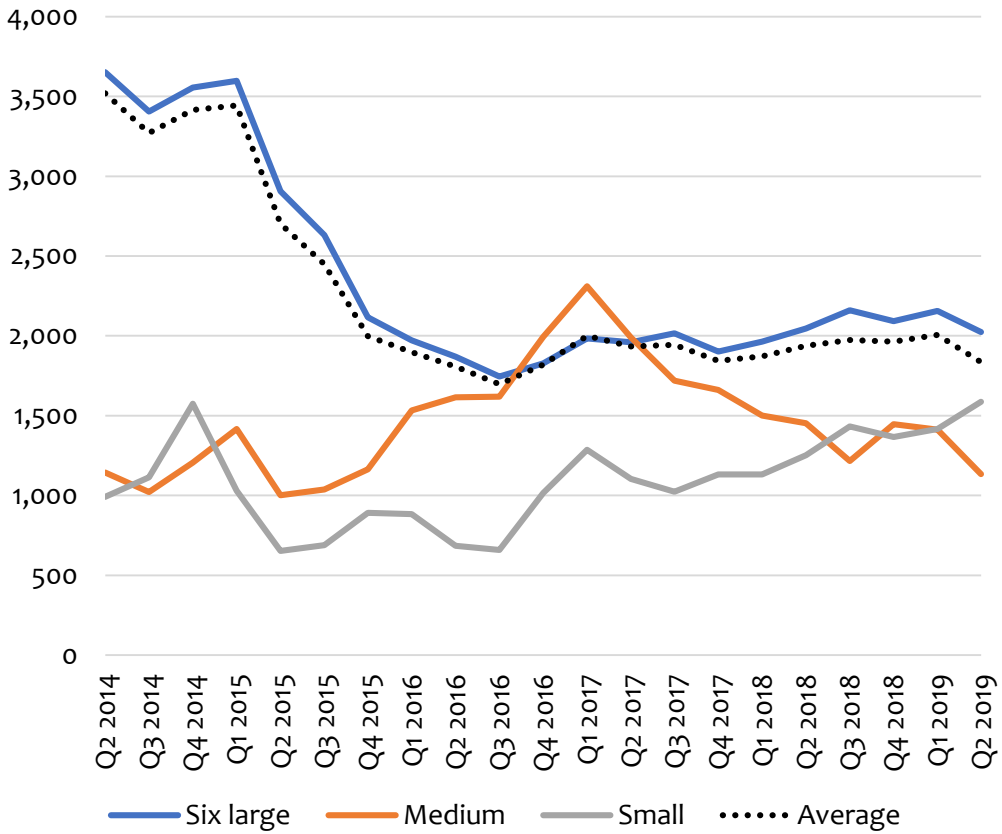
Unplanned System Average Interruption Duration Index (SAIDI), including exceptional events, electricity, minutes per customer



Source Council of European Energy Regulators (CEER) - Benchmarking Report 6.1; Australian Energy Regulator (2019) State of the energy market 2018
Notes: System Average Interruption Duration Index (SAIDI) refers to the average outage (Loss of electricity access) duration for each customer served. Measured in minutes per customer.

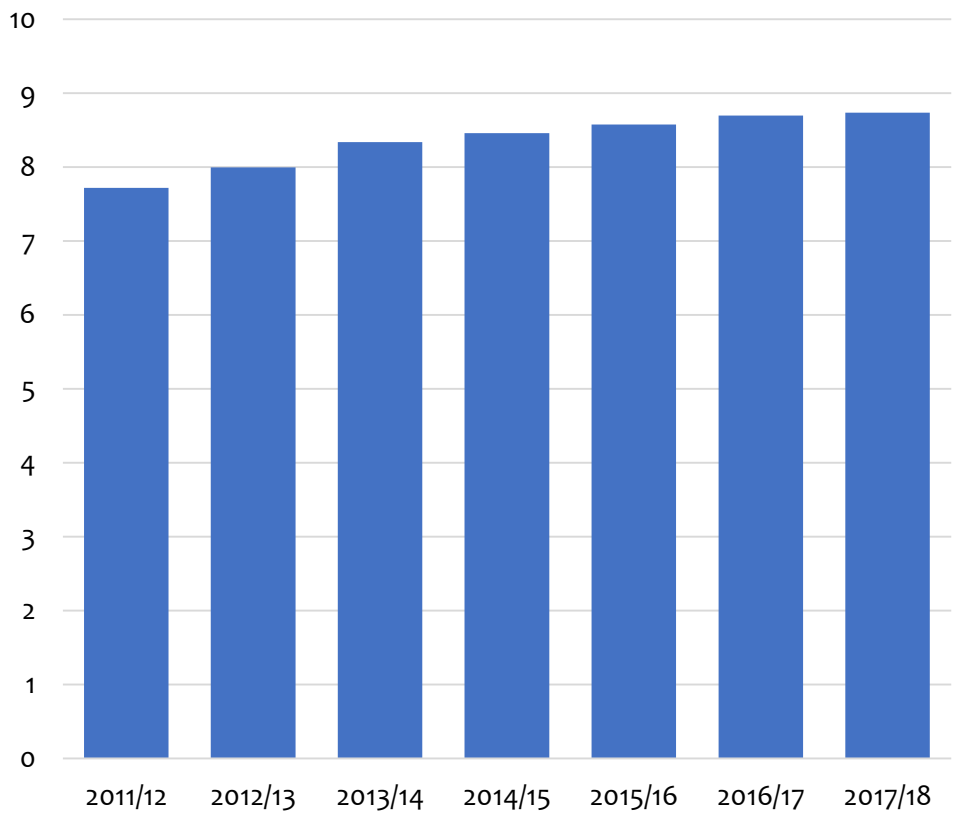
Quality of user experience

Complaints received by energy retail suppliers per 100,000 customer accounts, by supplier group



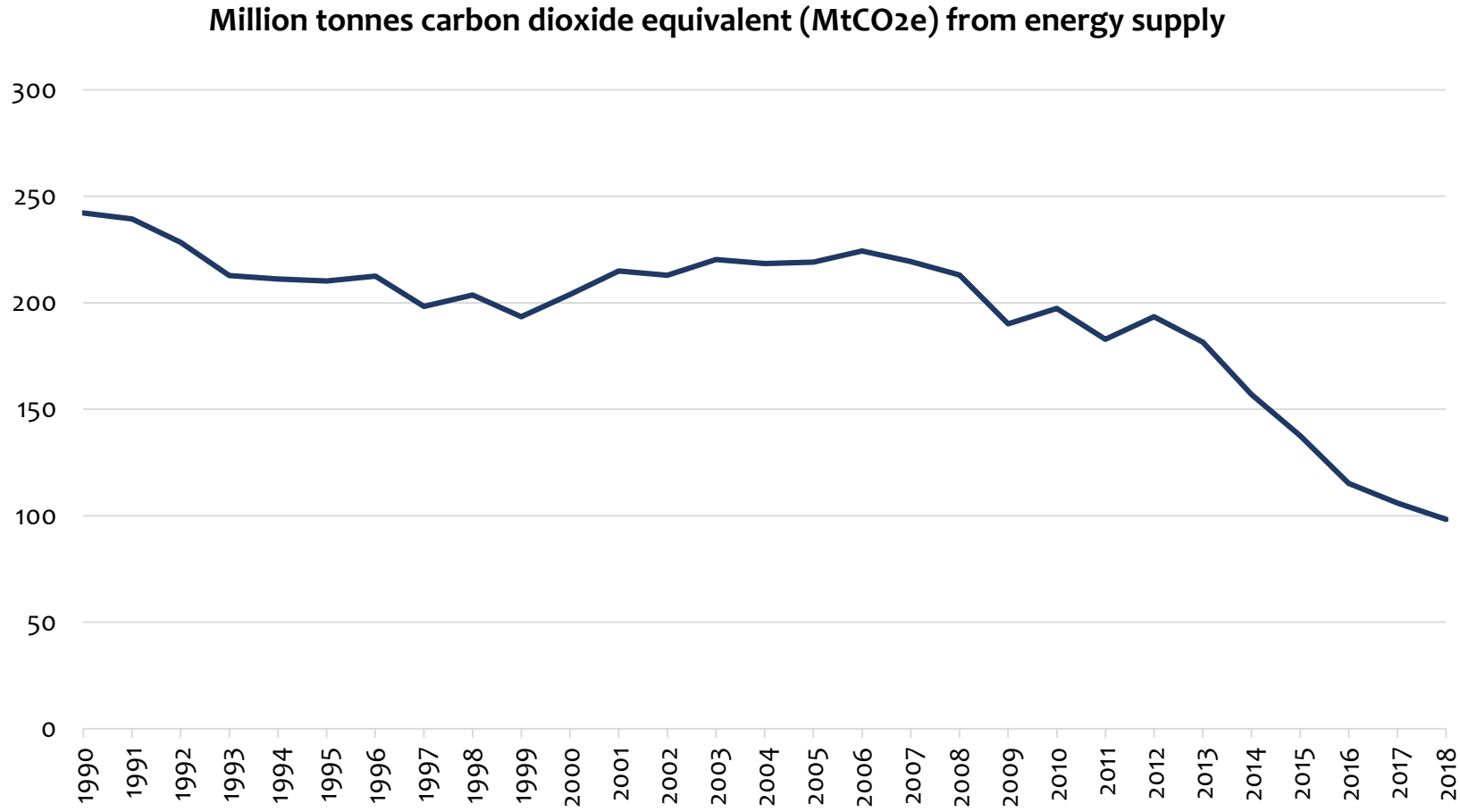
Source: Supplier data from Ofgem data portal, Customer Service
Note: Complaints data for energy retail suppliers

Electricity distribution customer satisfaction, average satisfaction score out of 10



Source: Ofgem
Note: Satisfaction data for electricity distribution network operators

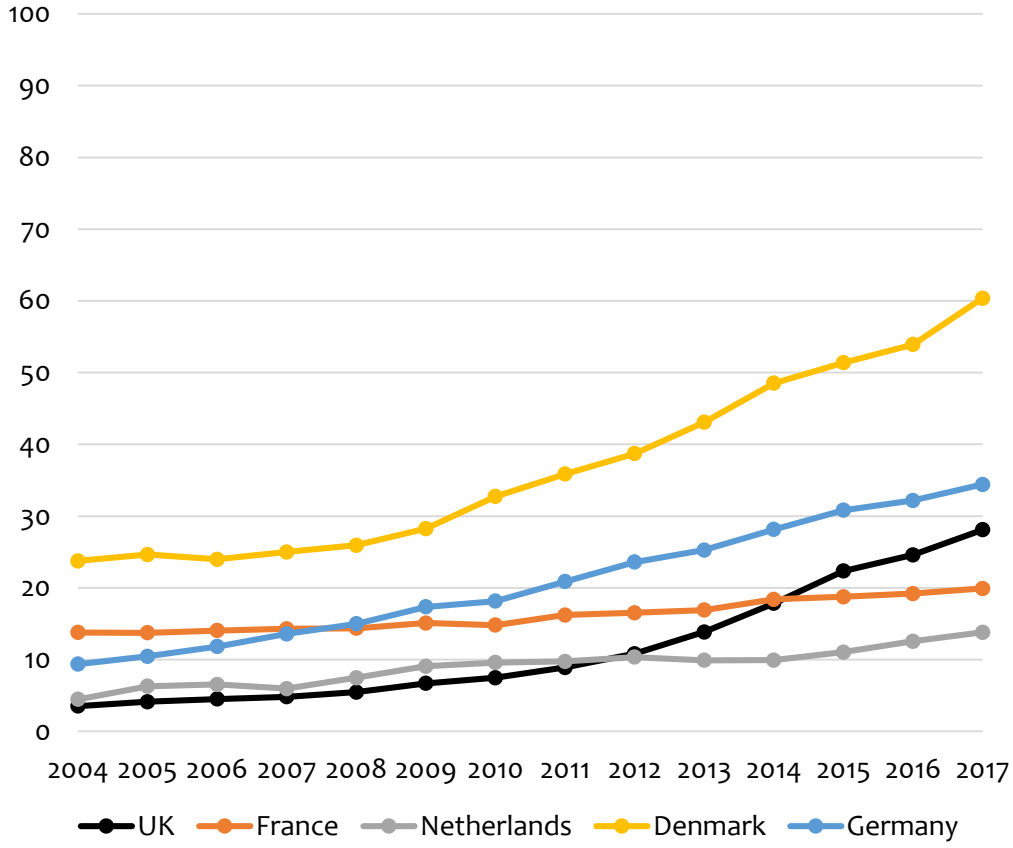
Sustainability/environment



Source: Department for Business, Energy & Industrial Strategy (2019) Provisional UK greenhouse gas emissions national statistics

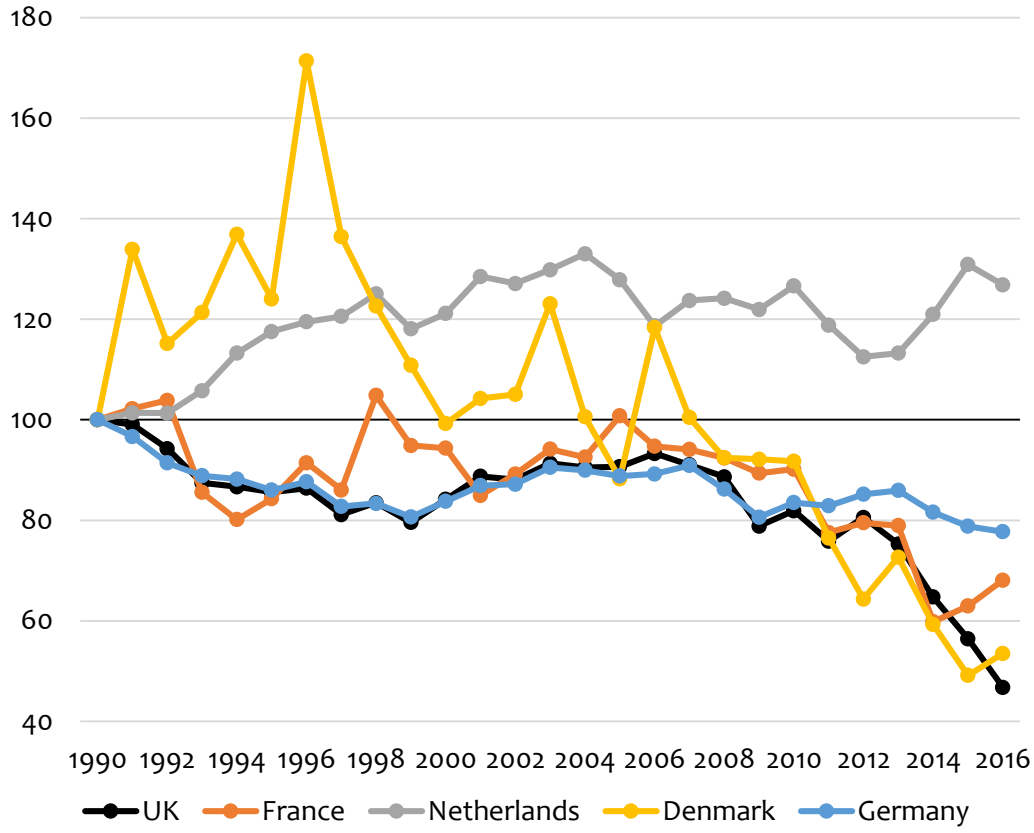
Sustainability/environment

Share of electricity production from a renewable source, %



Source: Eurostat energy database, Share of energy from renewable sources

Greenhouse gas emissions from energy industries
1990 = 100

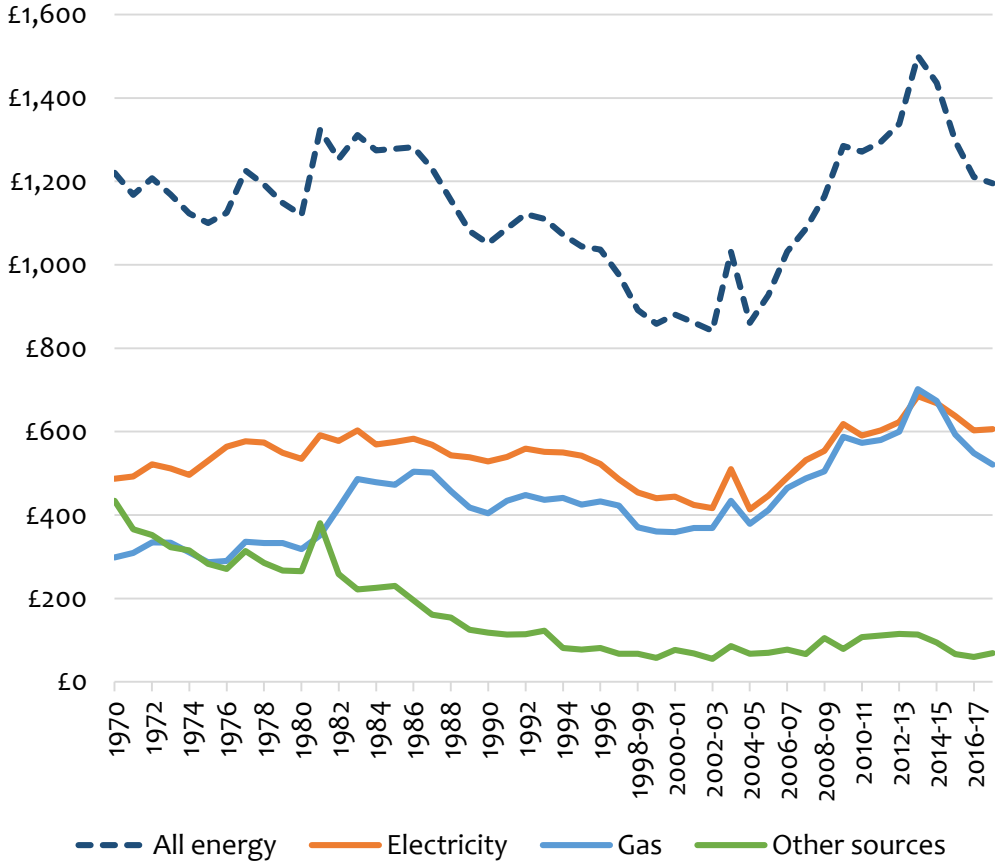


Source: European commission directorate general for energy (EC DG ENER), Energy statistical country datasheets

NATIONAL INFRASTRUCTURE COMMISSION

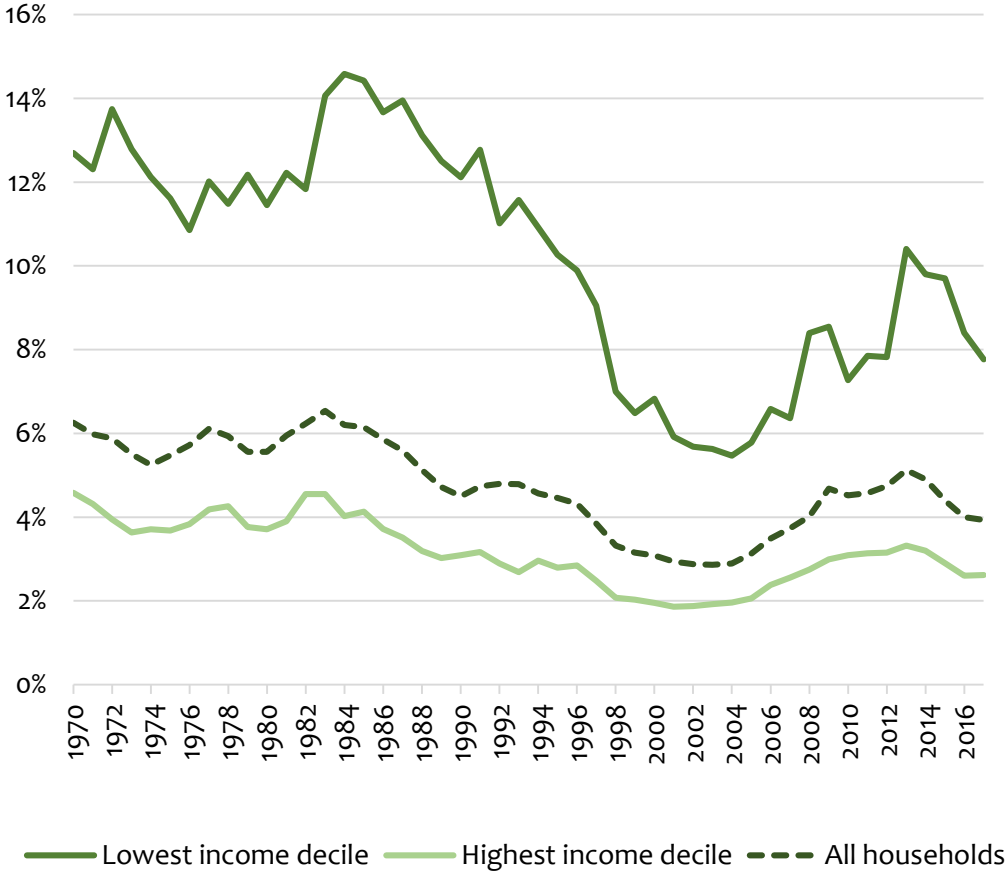
Prices and bills

Average annual household spending on energy, 2018-19 prices



Source: Commission calculations using Office for National Statistics Living Costs and Food Survey
Note: 2018-19 prices using GDP deflator

Energy cost as a % of total household expenditure, by income decile

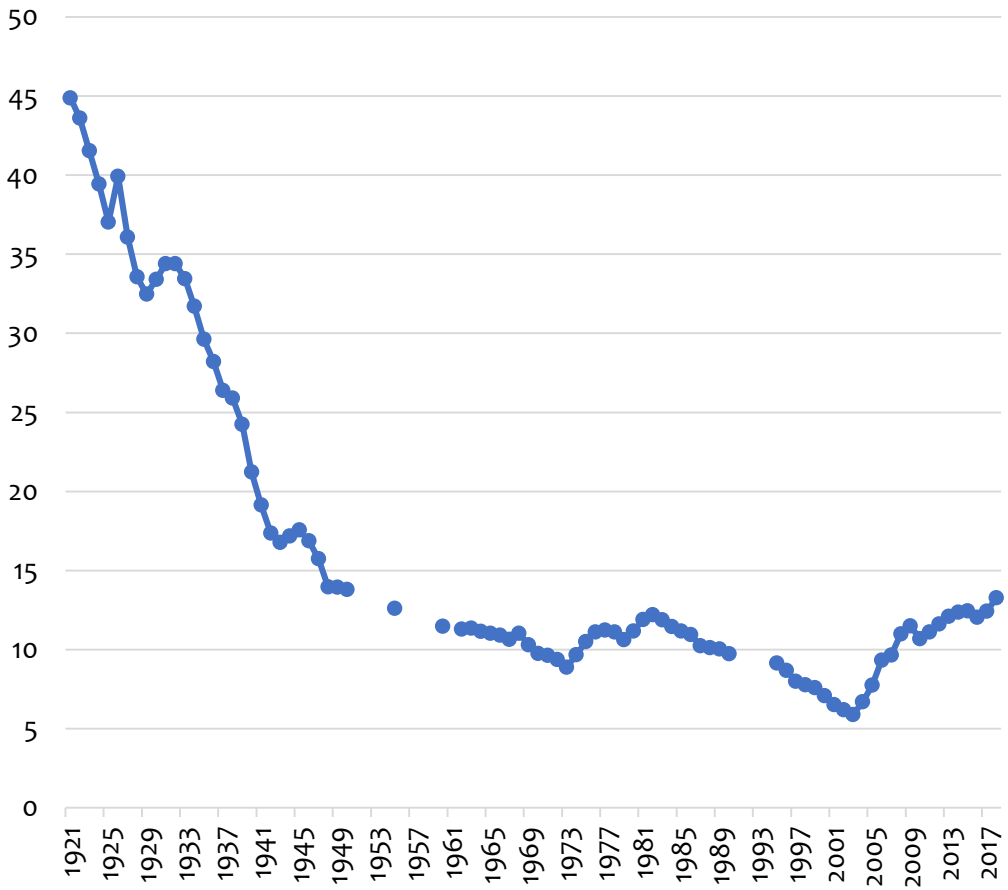


Source: Ofgem and Commission analysis of Office for National Statistics Living Costs and Food Survey

NATIONAL INFRASTRUCTURE COMMISSION

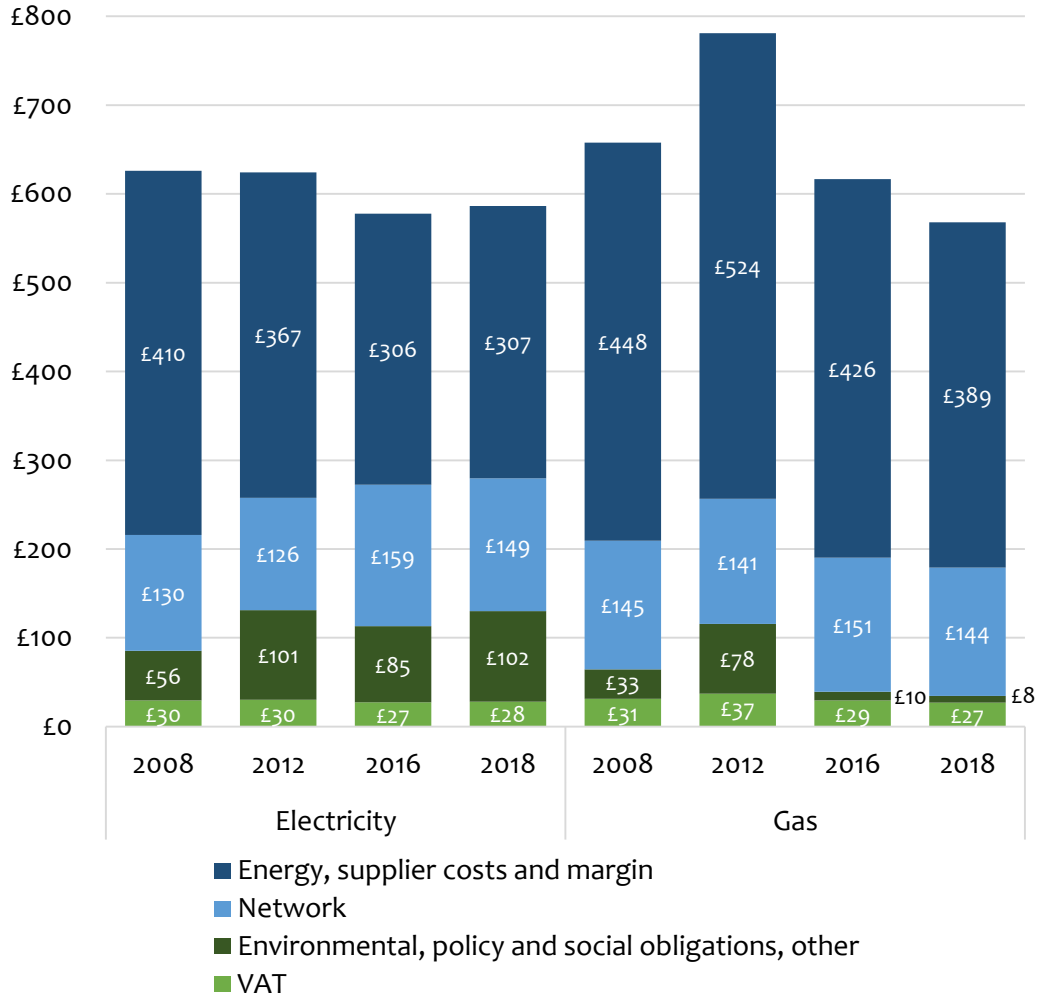
Prices and bills

Average net selling value of electricity - all consumers p/kWh, 2018 prices



Source: Commission calculation using Department for Business, Energy & Industrial Strategy (2019) Historical electricity data
Notes: Net selling values provide an indication of typical prices paid in broad sectors, using data from energy supply companies.
2018 prices using GDP deflator

Average electricity and gas bills components, 2018 prices

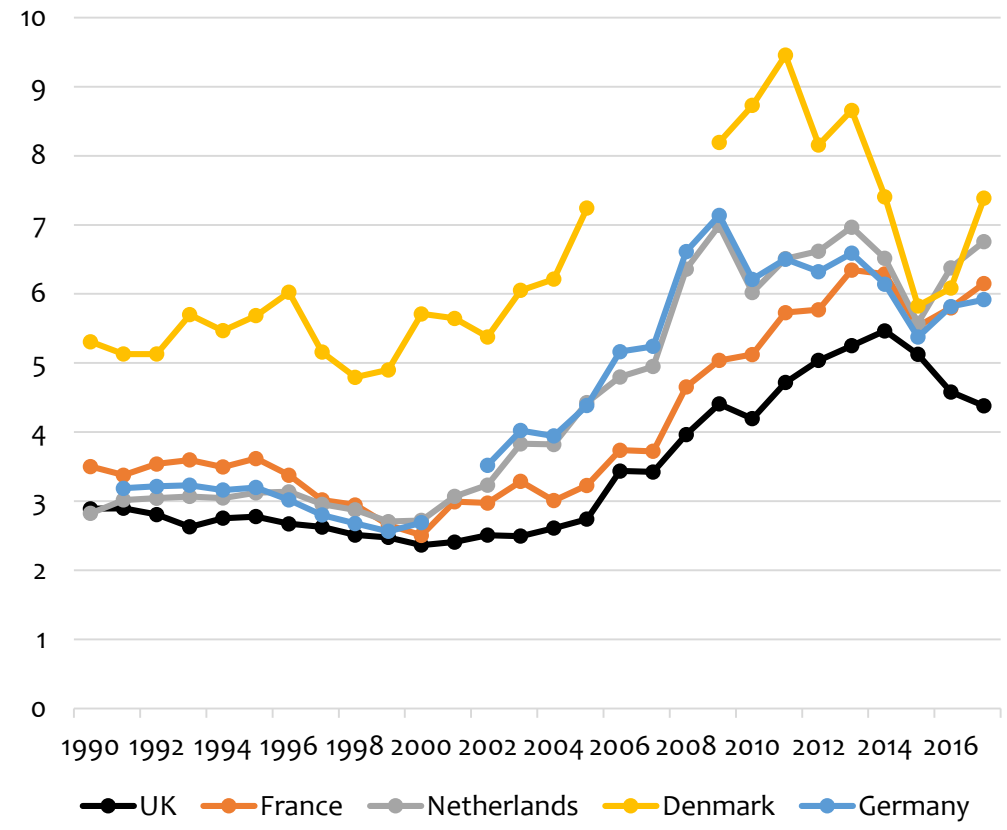


Source: Commission calculations using proportions from breakdowns of typical domestic energy bills from various historic Ofgem publications, and BEIS (2019) Annual domestic energy bills, average actual consumption.
Note: 2018 prices using GDP deflator

NATIONAL INFRASTRUCTURE COMMISSION

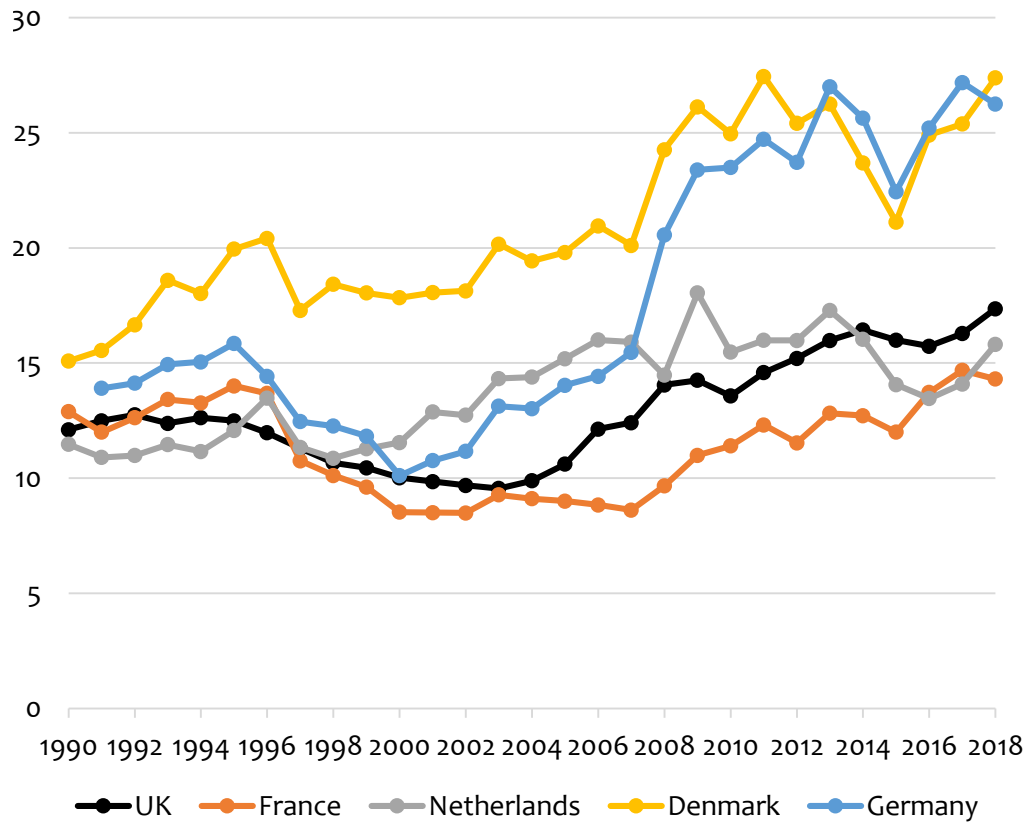
Prices and bills

Domestic gas price in pence per kWh (including taxes) 2018 prices



Source: Department for Business Energy & Industrial Strategy (2019) Domestic gas prices in the IEA
Note: 2018 prices using national GDP deflators, OECD

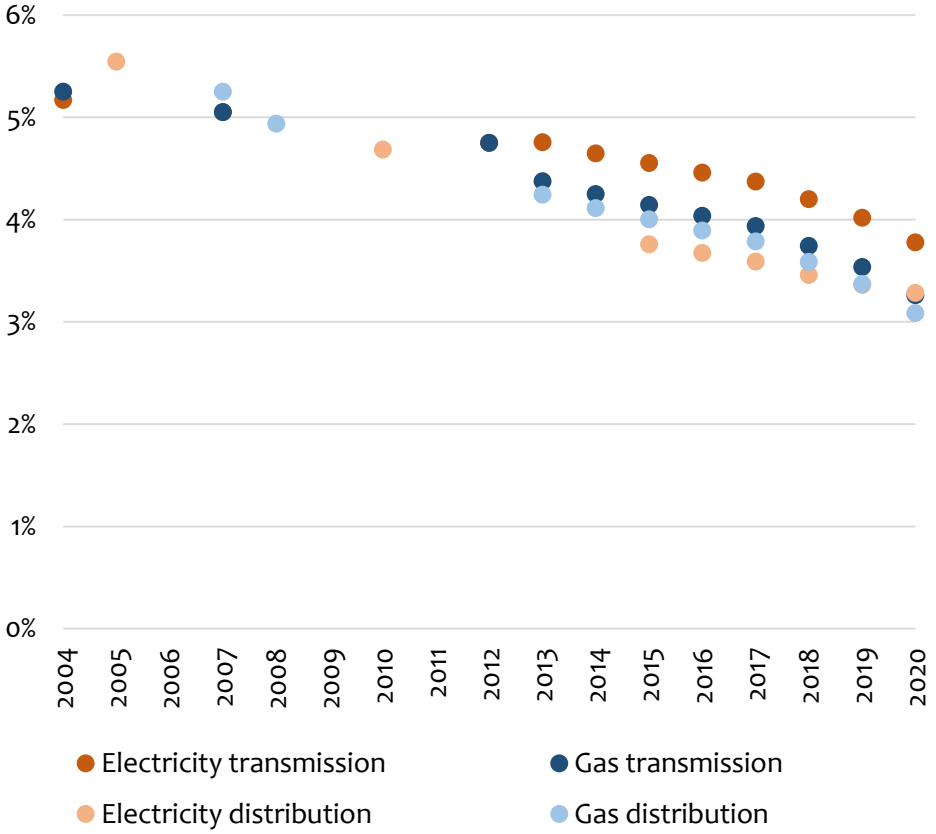
Domestic electricity price in pence per kWh (including taxes) 2018 prices



Source: Department for Business Energy & Industrial Strategy (2019) Domestic electricity prices in the IEA
Note: 2018 prices using national GDP deflators, OECD

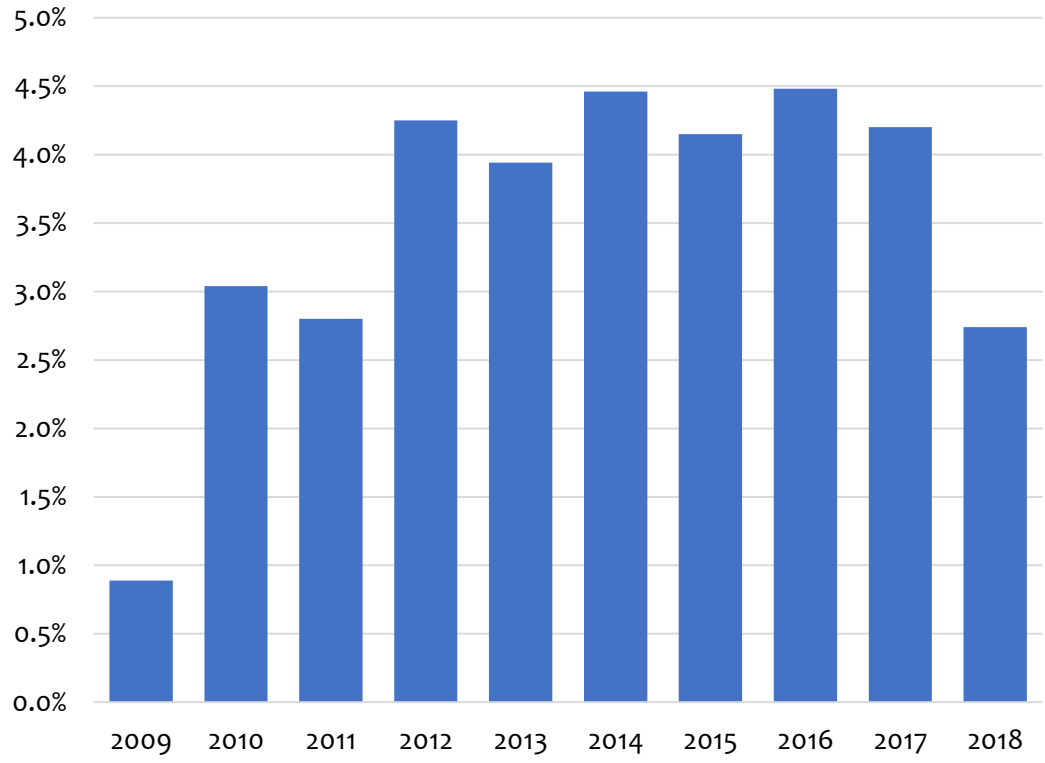
Financial performance

Allowed Weighted Average Cost of Capital (WACC) for energy networks



Source: Commission analysis of Ofgem data
Note: Cost of capital measured as Vanilla Weighted Average Cost of Capital (WACC), real terms using Retail Price Index (RPI).
WACCs are plotted in the first year of the price control to which they applied.

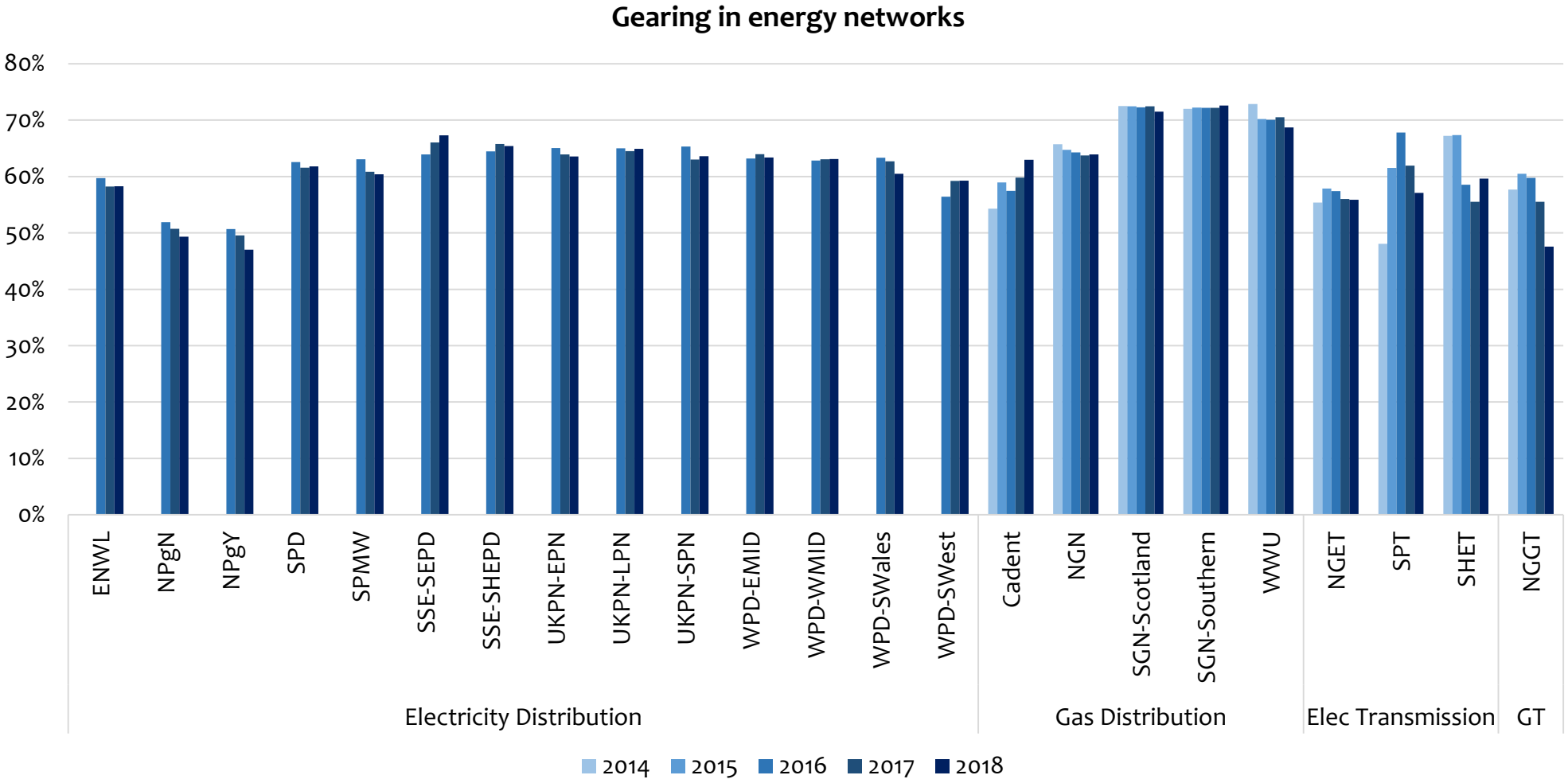
Pre-tax domestic supply margins of large suppliers, combined gas and electricity



Source: Ofgem data portal

NATIONAL INFRASTRUCTURE COMMISSION

Financial performance

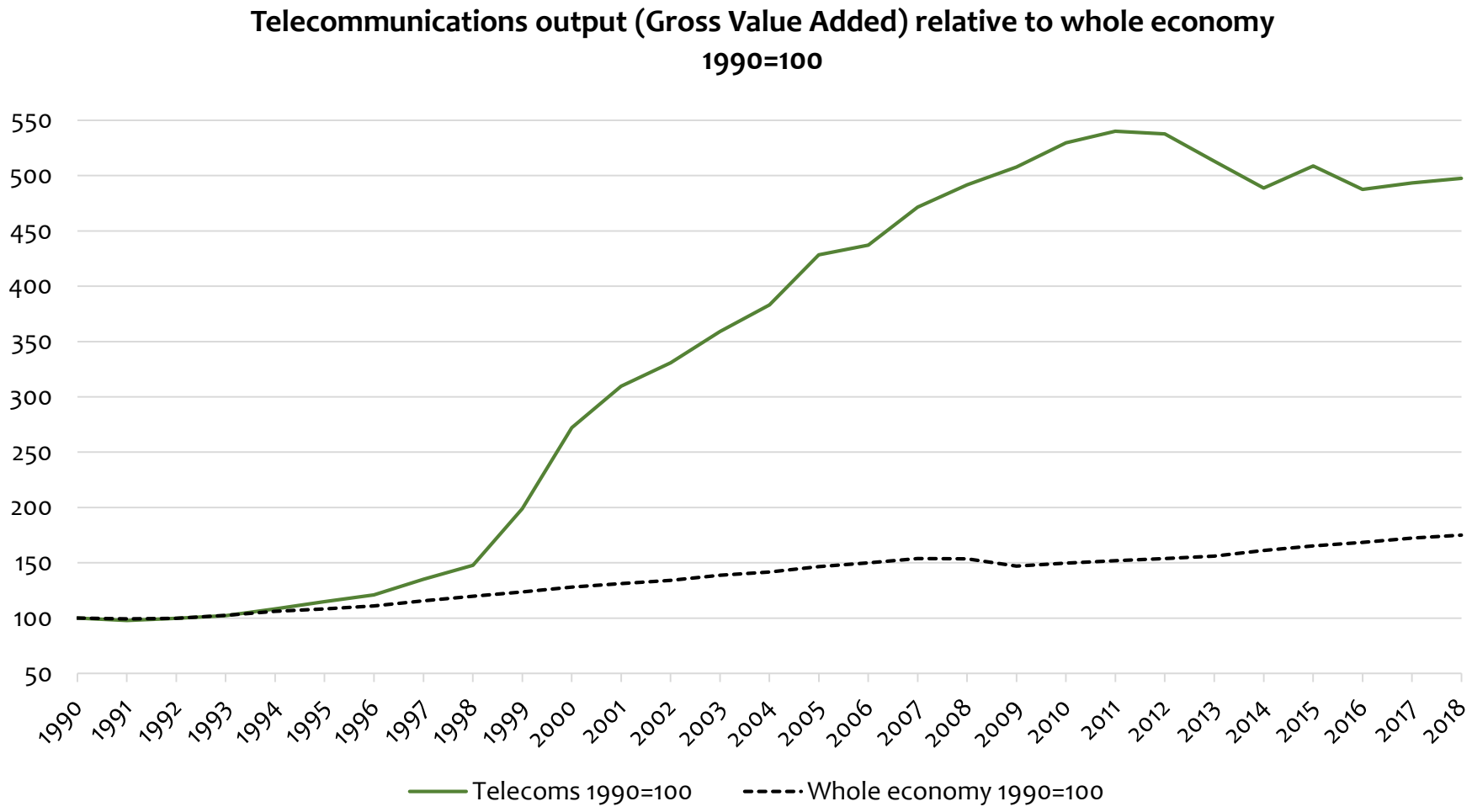


Source: Ofgem (2019) Regulatory Financial Performance annex to RIIO-1 annual reports 2017-18, Individual Licensee Regulatory Financial Performance Reporting Templates
Notes: Gearing defined as Net Debt as a proportion of Regulated Asset Value.
Cadent has one licence but operates four gas distribution networks.

NATIONAL INFRASTRUCTURE COMMISSION

Telecoms

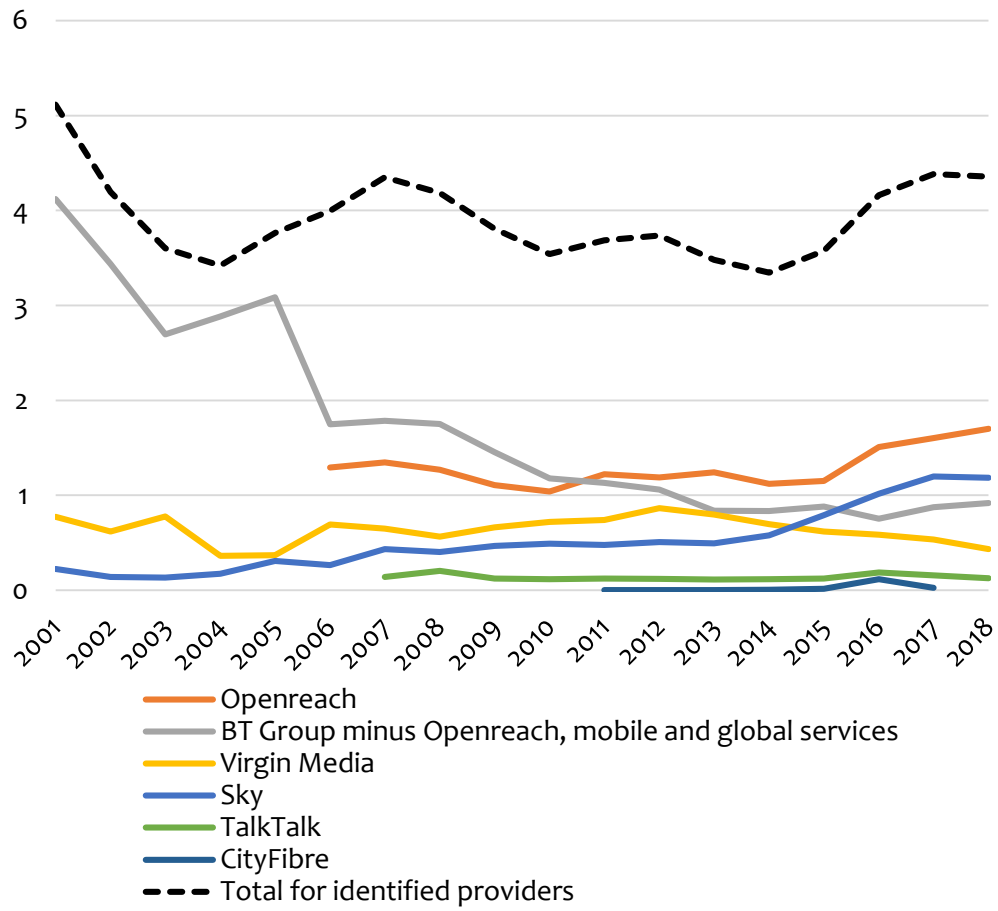
Volume



Source: Commission calculations using ONS (2019) GDP(O) low level aggregates, Chained Volume Measure.
SIC 2007 division 61 (Telecommunications)
Note: Telecommunications output is particularly sensitive to the choice of methodology for quality adjustment in price deflation: this may have resulted in underestimation of telecoms output growth. For a discussion, see Abdirahman et al for the Economic Statistics Centre of Excellence (2017) A Comparison of Approaches to Deflating Telecoms Services Output

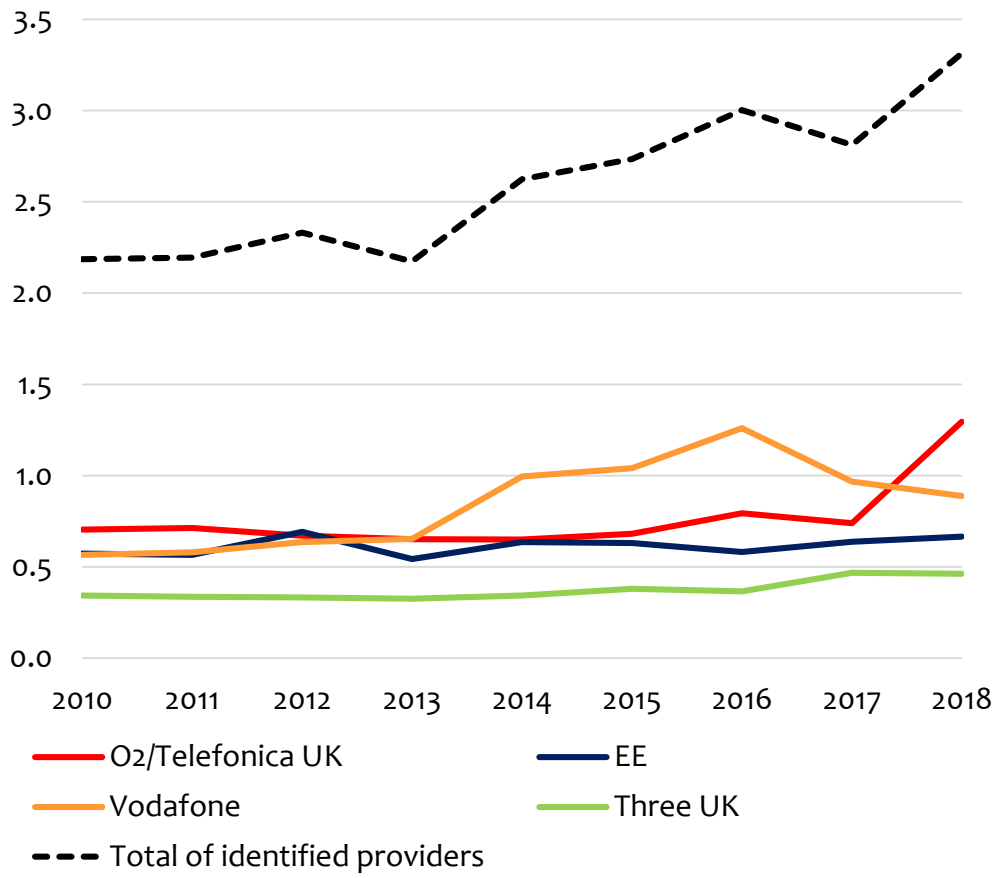
Investment

Annual capital expenditure by fixed telecoms operators
£ billion, 2018 prices



Source: Commission calculations using company annual reports, Refinitiv Eikon for data extraction
Notes: Where possible, segmental reporting in company accounts has been used to identify capital expenditure (capex) in the UK, but some capex outside the UK by operators may remain in the data.
2018 prices using GDP deflator

Annual capital expenditure by mobile network operators
£ billion, 2018 prices

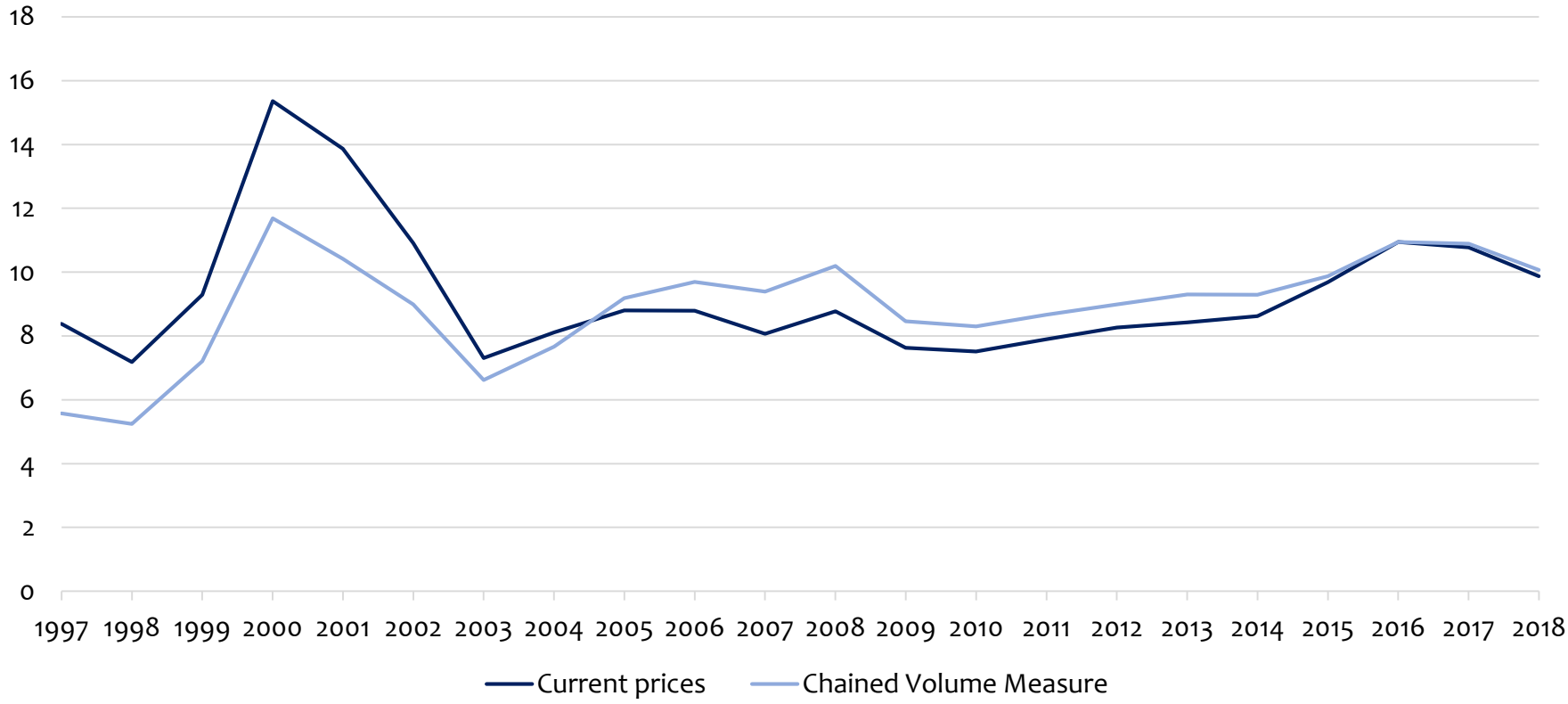


Source: Commission calculations using company annual reports, Refinitiv Eikon for data extraction
Notes: Where possible, segmental reporting in company accounts has been used to identify capital expenditure (capex) in the UK, but some capex outside the UK by operators may remain in the data. 2018 prices using GDP deflator

NATIONAL INFRASTRUCTURE COMMISSION

Investment

Gross Fixed Capital Formation in telecommunications
£ billion



Source: Office for National Statistics (2019) Annual gross fixed capital formation by industry and asset
Note: SIC 2007 division 61 (Telecommunications)

Efficiency

Growth in labour productivity, investment and profitability around telecoms privatisation in 1984

Figure 2. – Investment, labour productivity and profitability in BT (1980=100)

Note: investment = purchase of tangible fixed assets/turnover; labour productivity = (real turnover)/number of employees; ROCE = return on average capital employed.
Source: BT Annual reports, presented by Armstrong and Vickers in Bishop et al., 1994, p.288; BT Annual reports 1994–1998.

Source: Markou and Waddams Price (1999) UK utilities: past reform and current proposals

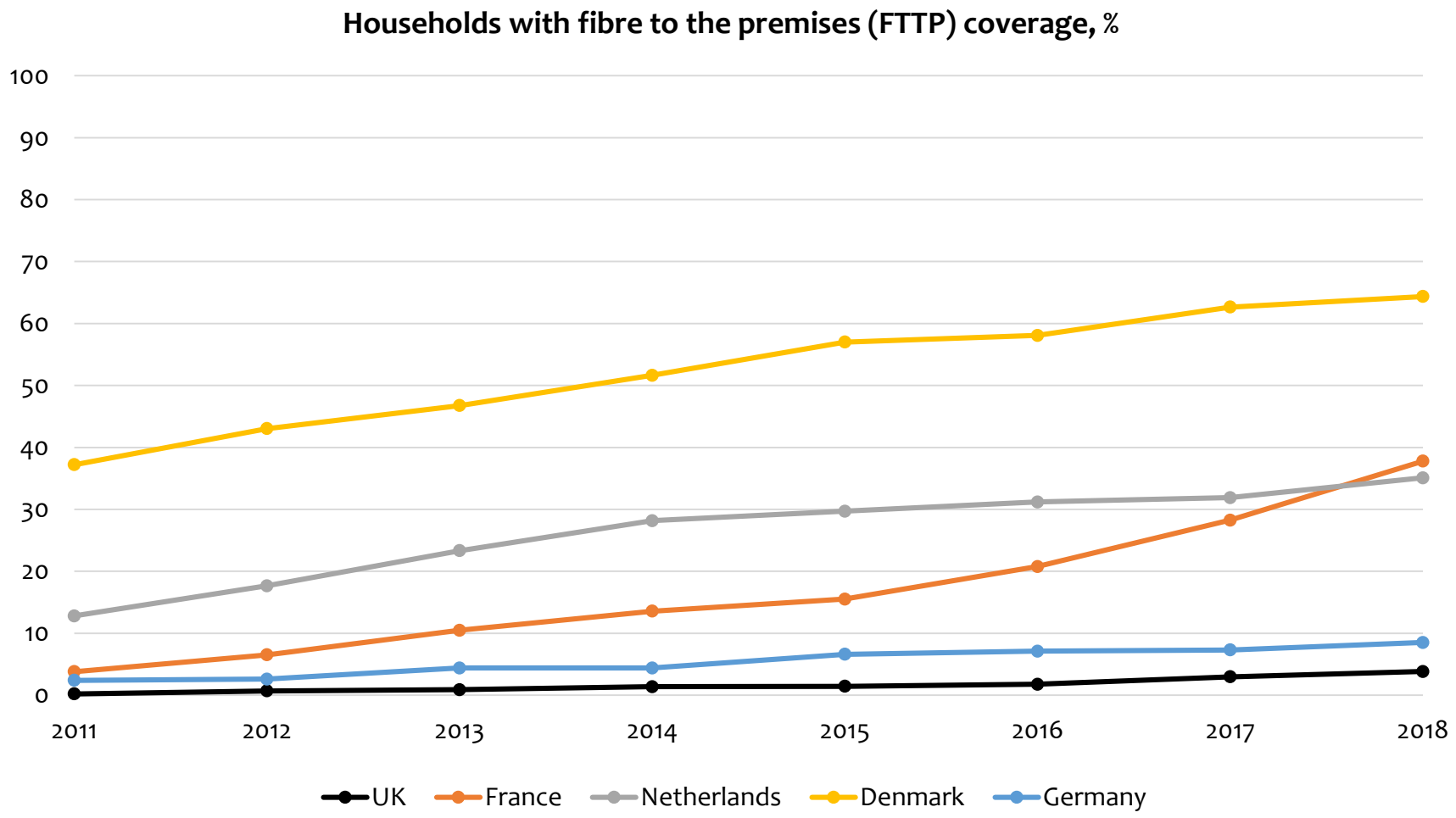
Volume & service quality

Measure	2007	2012	2017	2018
Average monthly mobile data per active connection	N/A	0.24 GB	2.33 GB	2.91 GB
Fixed broadband uptake, % of households	52%*	72%	82%	80%
Superfast broadband connections	N/A	3.1 million	13.4 million	15.6 million
Average broadband speeds	3.6 Mbit/s**	12 Mbit/s	46.2 Mbit/s	54.2 Mbit/s
Average monthly data per residential fixed broadband line	N/A	23 GB	190 GB	240 GB
Fixed voice call minutes, total	149 billion	103 billion	54 billion	44 billion
Mobile voice call minutes, total	105 billion	132 billion	154 billion	161 billion
Mobile outdoor voice coverage for all operators, % of UK landmass	N/A	59%***	69%	78%
Mobile outdoor 4G coverage for all operators, % of UK landmass with at least 2 Mbit/s	N/A	N/A	49%	66%
Mobile outdoor 3G coverage for all operators, % of UK landmass	N/A	20%	70%	83%

* Total broadband uptake
** Figure for 2008
*** 2G coverage

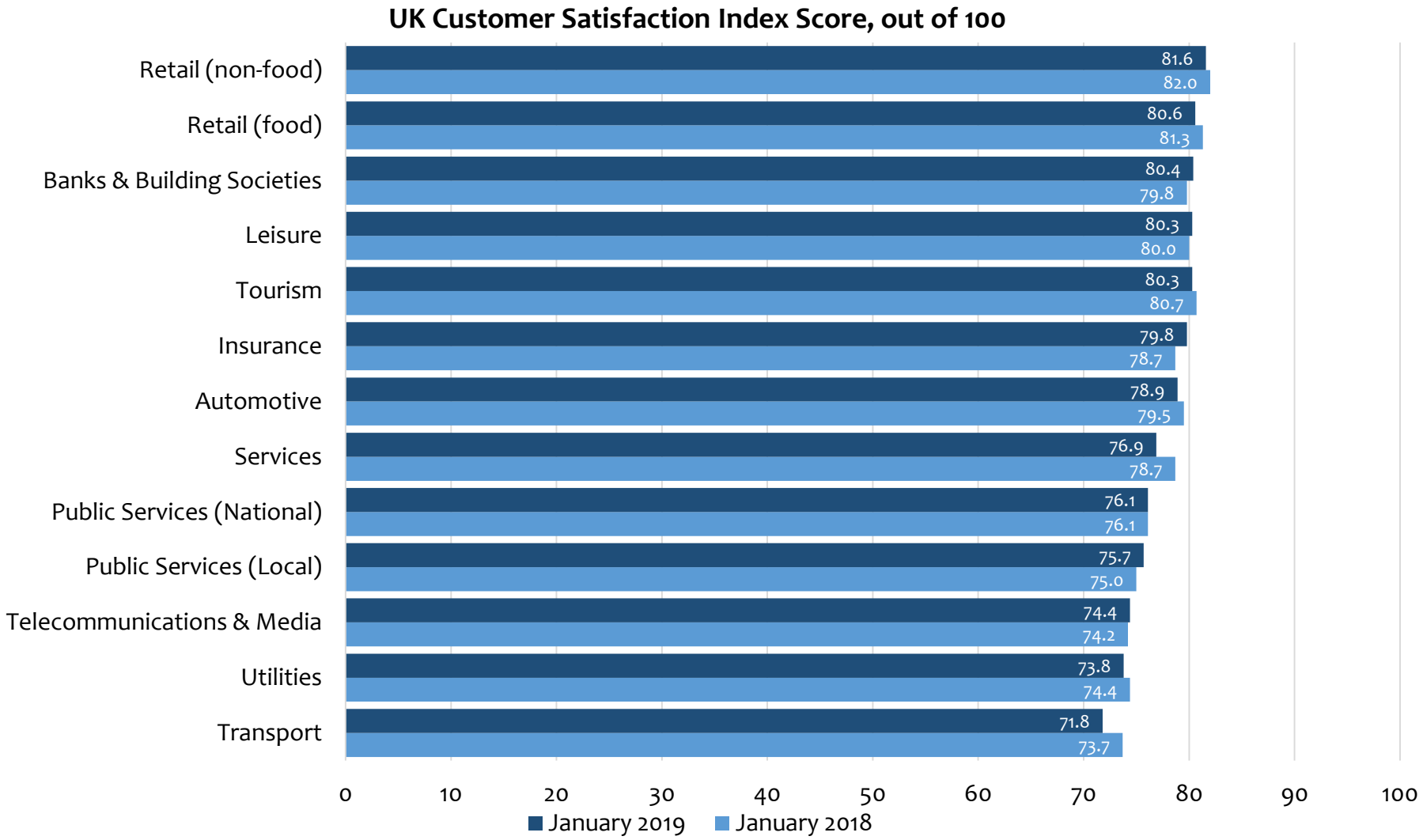
Sources: Ofcom (2019, 2018, 2012) Communications Market Reports; Ofcom (2018) Connected Nations Report; Ofcom (2012) Infrastructure Report; Ofcom (2009) UK broadband speeds 2008.
Note: Revisions and methodology changes may affect comparisons over time.

Service quality



Source: European Commission (2019) Digital Agenda Scoreboard Indicators

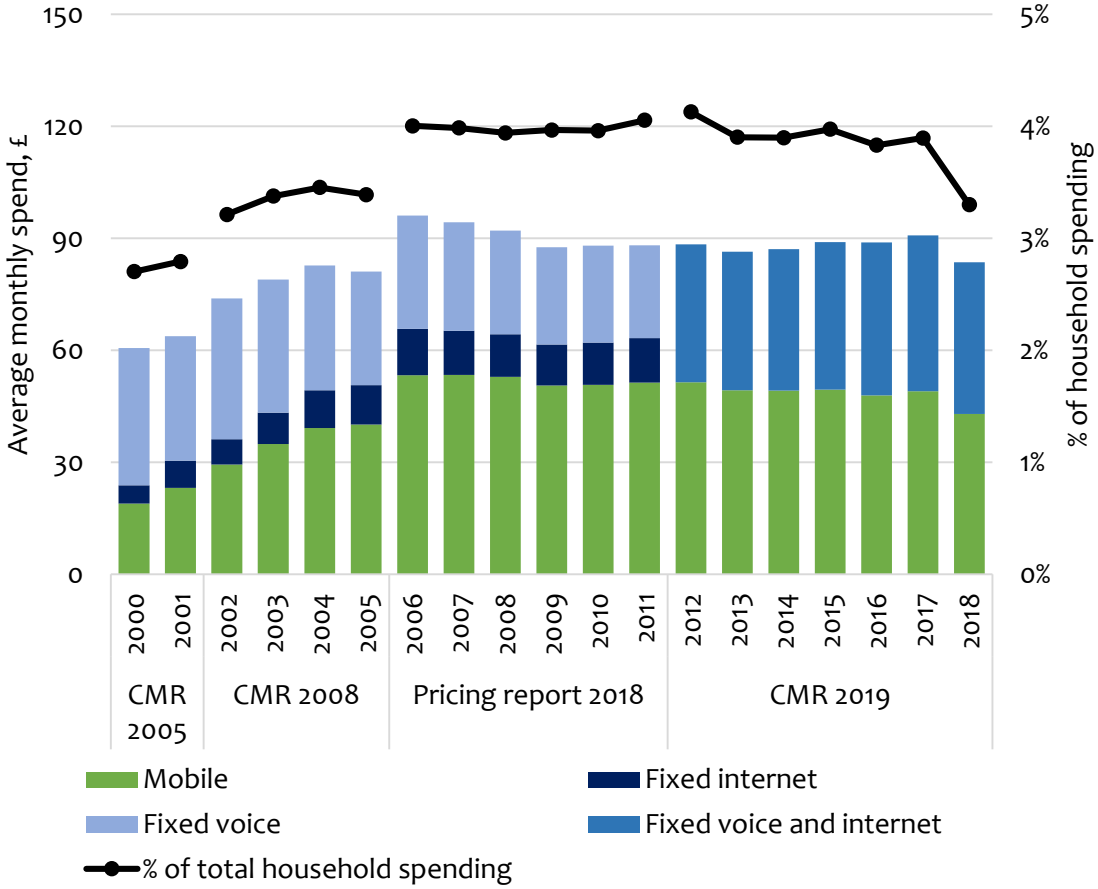
Quality of user experience



Source: The Institute of Customer Service (2019) UK Customer Satisfaction Index

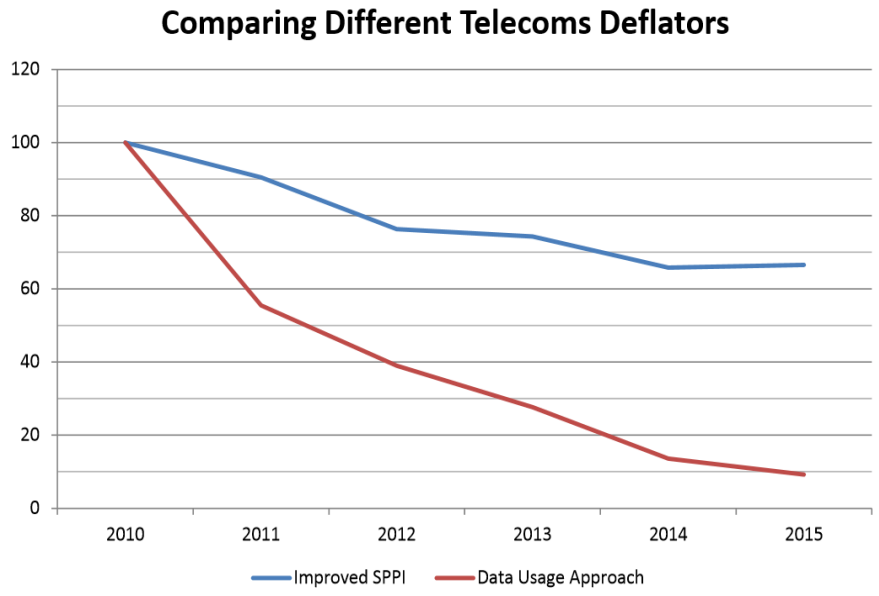
Prices and bills

Average household monthly spend on telecoms services £, 2018 prices



Source: Commission analysis of Ofcom Communications Market Reports (CMR) and pricing reports; Office for National Statistics Living Costs and Food Survey
Notes: Mobile telecoms in 2018 does not include spend on handsets due to a change in accounting standards, so is not directly comparable with earlier years.
Methodology changes over time mean that price trends from different reports may not be comparable.
2018 prices using GDP deflator

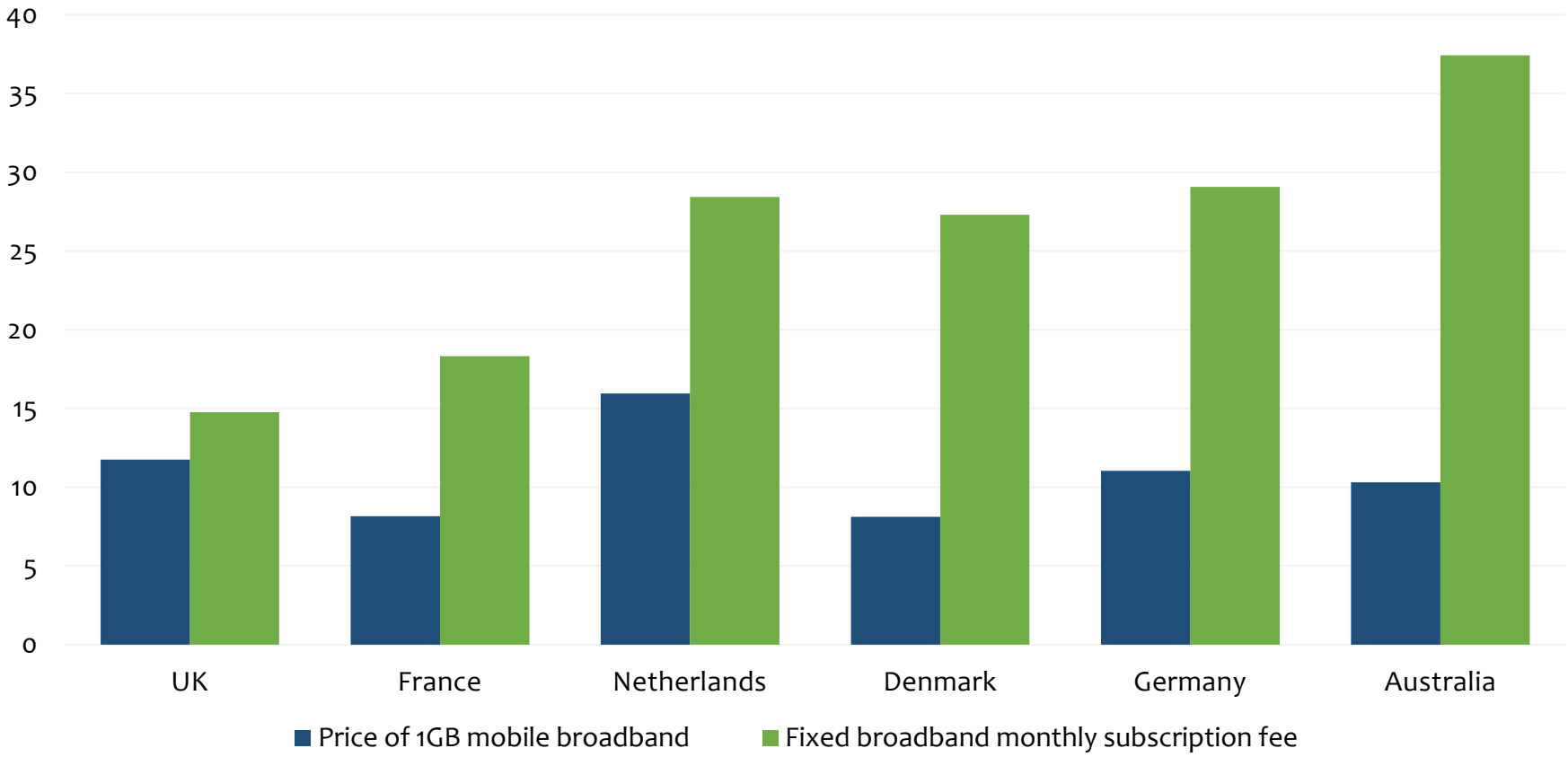
Impact of quality adjustment methodology on telecoms price deflators



Source: Abdirahman et al. for Economic Statistics Centre of Excellence (2017) A Comparison of Approaches to Deflating Telecoms Services Output.
Notes: This research illustrates that changes in headline telecoms prices do not necessarily reflect underlying improvements in the quality of telecoms services. This has implications for the price deflation of telecoms output, potentially resulting in an underestimate of telecoms output growth. In this example, the authors compare an improved version of the Services Producer Price Index (SPPI) with a 'data usage approach' which divides total revenue in the industry by the total data volume, to give an average price per bit of data transported.

Prices and bills

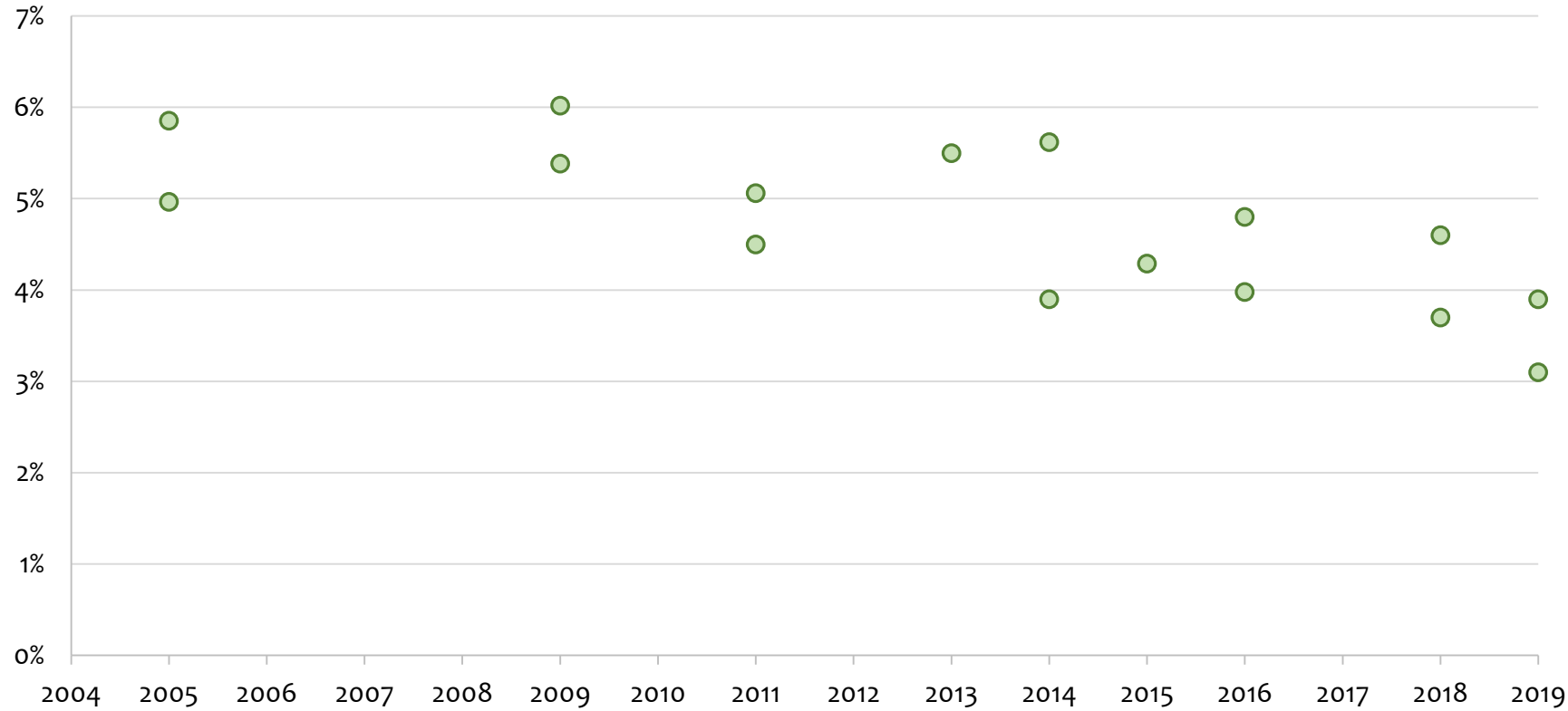
Average price of broadband and mobile, £ (2015-2017 average), 2018 prices



Source: International Telecommunication Union - World Telecommunication/ICT Indicators Database
Note: Average of prices across three years 2015 to 2017
2018 prices using national GDP deflators, OECD

Financial performance

Weighted Average Cost of Capital (WACC) estimates for telecoms segments and charge controls, where available



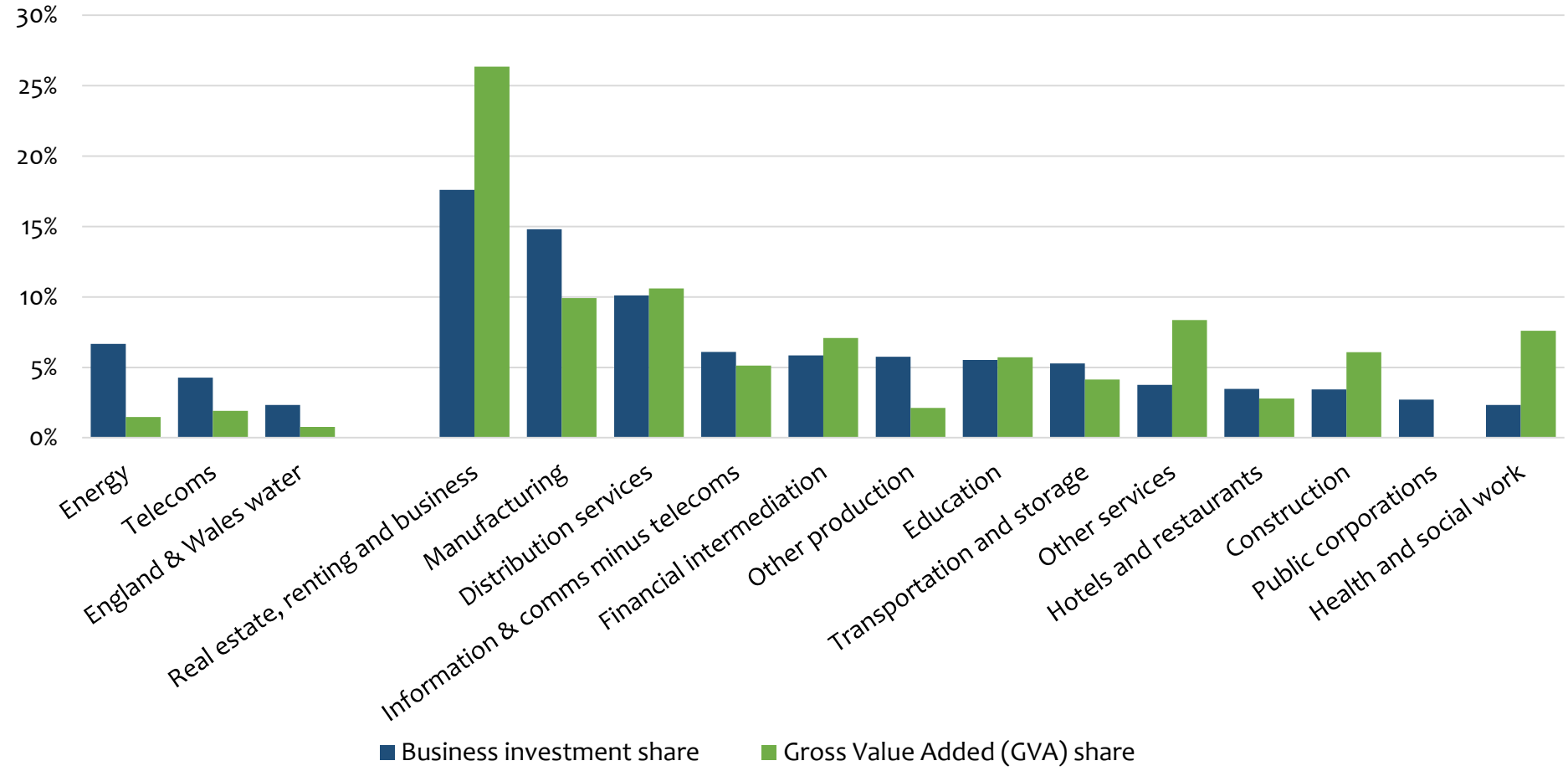
Source: Commission calculations using various UKRN Cost of Capital Update Reports, and various Ofcom reports.
Note: Cost of capital measured as Vanilla Weighted Average Cost of Capital (WACC), real terms using Retail Price Index (RPI). Cost of capital assessment of telecoms segments (eg Openreach, Rest of BT etc) usually undertaken by Ofcom in preparation for charge controls.

NATIONAL INFRASTRUCTURE COMMISSION

Cross-sector

Investment and volume

Share of business investment and Gross Value Added (GVA) from water, energy, telecoms and other industries, 2018 (Each series sums to 100%)



Sources: Gross Value Added (GVA) from ONS (2019) GDP output approach – low-level aggregates. Water investment from water company data provided by Ofwat. Energy investment from ONS (2019) Quarterly acquisitions and disposals of capital assets survey (QCAS) investment made by energy industries. Telecoms investment from telecoms company annual reports, Refinitiv Eikon for data extraction. Other business investment from ONS (2019) Business investment by industry and asset

Financial performance

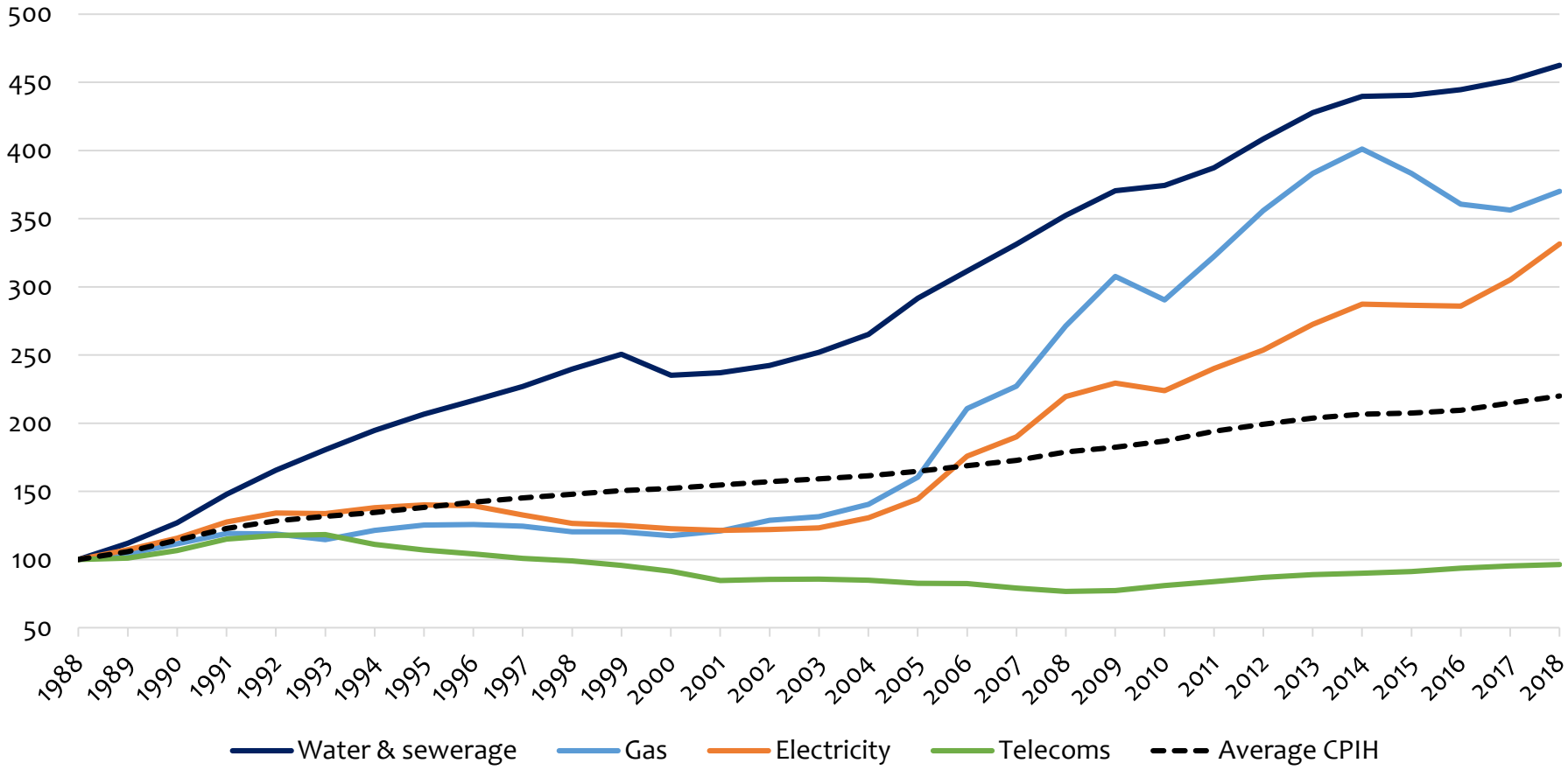
Weighted Average Cost of Capital (WACC) estimates and allowances, where available

** 2020 based on PR19 draft determinations for water and expected WACC for energy*

Source: Commission analysis of data from Ofwat, Ofgem, Ofcom and UK Regulators Network (UKRN)
Notes: Cost of capital measured as Vanilla Weighted Average Cost of Capital (WACC), real terms using Retail Price Index (RPI). Combination of WACC allowances for price controls (water and energy) and WACC estimates for charge controls (telecoms). Thames Tideway Tunnel construction = TTT.

Prices and bills

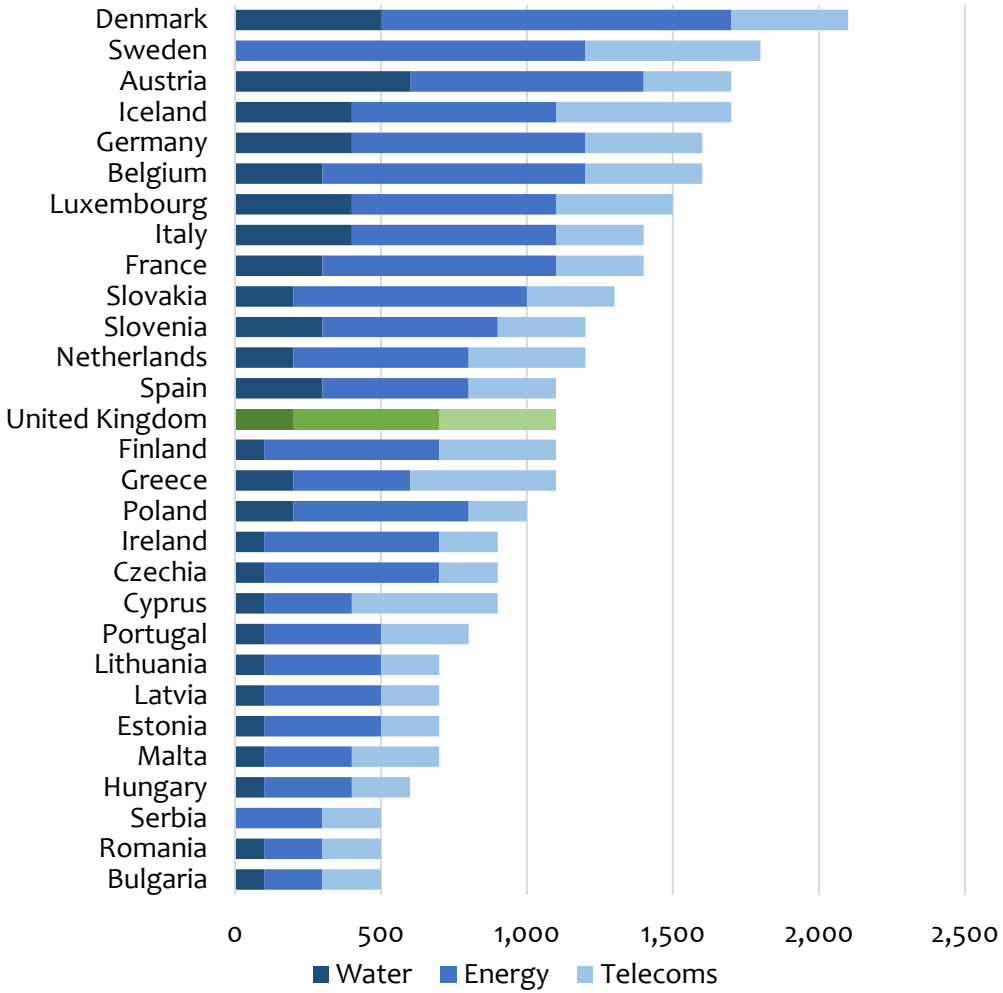
Price indices for electricity, gas, water, sewerage and telecoms compared to average consumer price inflation (CPIH), 1988=100



Source: Commission calculations using ONS (2019) Consumer price inflation tables, CPIH Detailed indices annual averages
Notes: Consumer Prices Index including owner occupiers' housing costs (CPIH) *indices used are: 04.4 Water supply and misc. services for the dwelling, 04.5.1 Electricity, 04.5.2 Gas, 08.2/3 Telephone and telefax equipment and services, and CPIH (overall index)*
All rebased to 1988=100

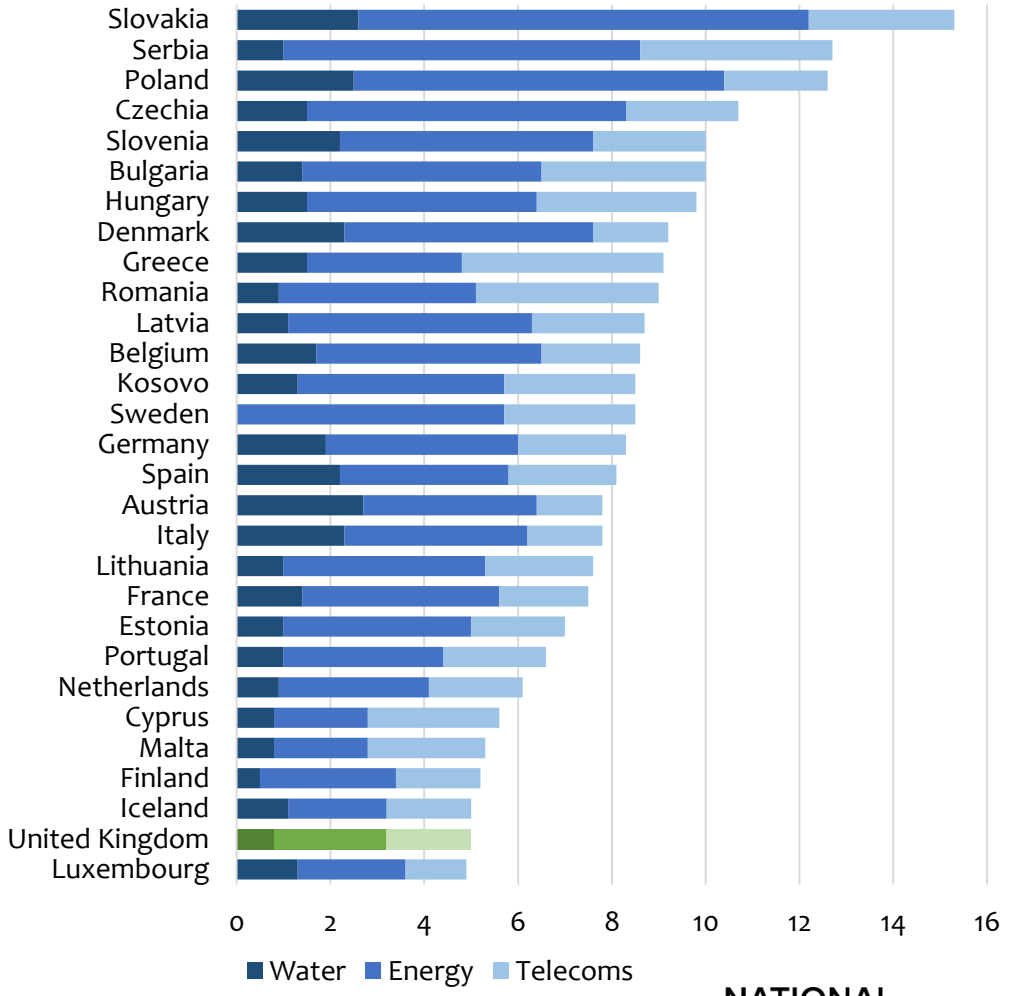
Prices and bills

Household expenditure on water, energy and telecoms: 2017 current prices, euro per capita



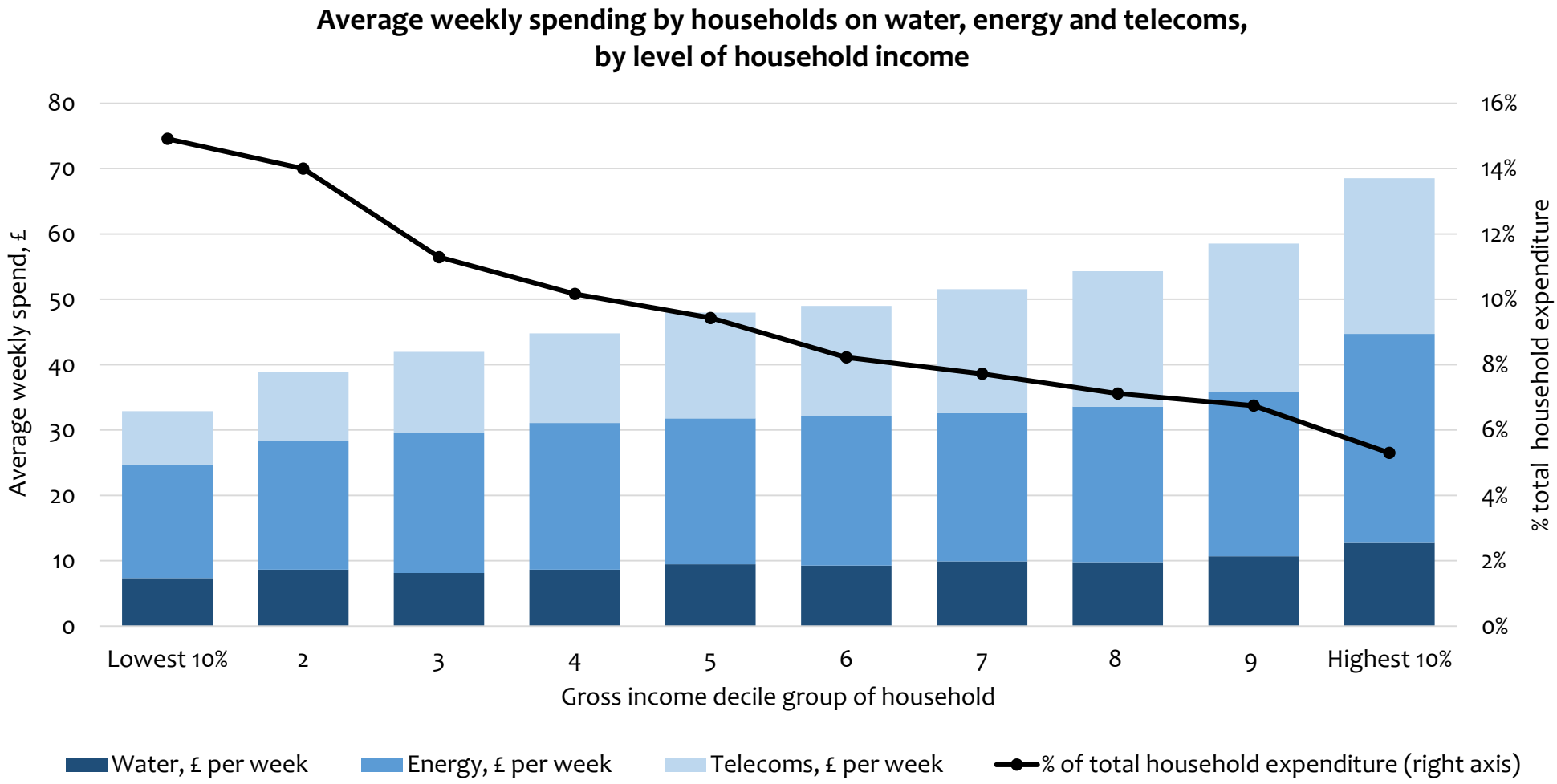
Source: Eurostat, Final consumption expenditure of households by consumption purpose (COICOP 3 digit)

% of total household consumption expenditure on water, energy and telecoms, 2017



Source: Eurostat, Final consumption expenditure of households by consumption purpose (COICOP 3 digit)

Prices and bills



Source: Commission analysis of Office for National Statistics (2019) Family spending in the UK: April 2017 to March 2018
Notes: The % of total household expenditure spent on water, energy and telecoms is not on the same basis as the international comparisons chart, which uses a national accounts approach to measuring household consumption.
2017-18 data, in 2018-19 prices using GDP deflator