

Energy and carbon report

Reporting and assurance

We measure and report the greenhouse gases that result from all United Utilities' activities. We have used the financial control approach so our energy and greenhouse gas emissions reports are aligned with the consolidated financial statements for United Utilities Group PLC. This includes its subsidiaries listed in section A8 on page 260.

Our measurement and reporting is aligned to the GHG Protocol Corporate Accounting and Reporting Standard (2015) and the recommendations of the TCFD. As required, we report under the Companies Act 2006 (Strategic Report and Directors' Reports) Regulations and we apply the 2019 UK Government Environmental Reporting Guidelines, including the Streamlined Energy and Carbon Reporting Guidance (SECR). Our reporting is compliant with the international carbon reporting standard (ISO 14064, Part 1) and assured by the Carbon Reduce programme previously known as Certified Emissions Measurement and Reduction Scheme (CEMARS). We hold a Platinum status certificate as we have demonstrated emission reductions over ten years.

How we measure our greenhouse gas emissions

A carbon footprint is calculated by converting all emissions of Kyoto Protocol gases into a carbon dioxide equivalent (tCO₂e). Emissions are categorised as direct, indirect or avoided emissions.

Direct emissions (scope 1 emissions) are those from activities we own or control, including those from our treatment processes, company vehicles, and burning of fossil fuels for heating.

Indirect emissions, known as scope 2 and 3 emissions, result from operational activities we do not own or control. These include emissions produced as a consequence of electricity we purchase to power our treatment plants (scope 2) and other indirect emissions such as products and services we buy and travel on company business (scope 3).

Avoided emissions are reductions from the purchase, or export, of renewable energy. Gross emissions are the sum of all three scopes. Net emissions are the gross emissions minus reductions from avoided emissions and removals.

The GHG Protocol recommends using two methods to quantify emissions

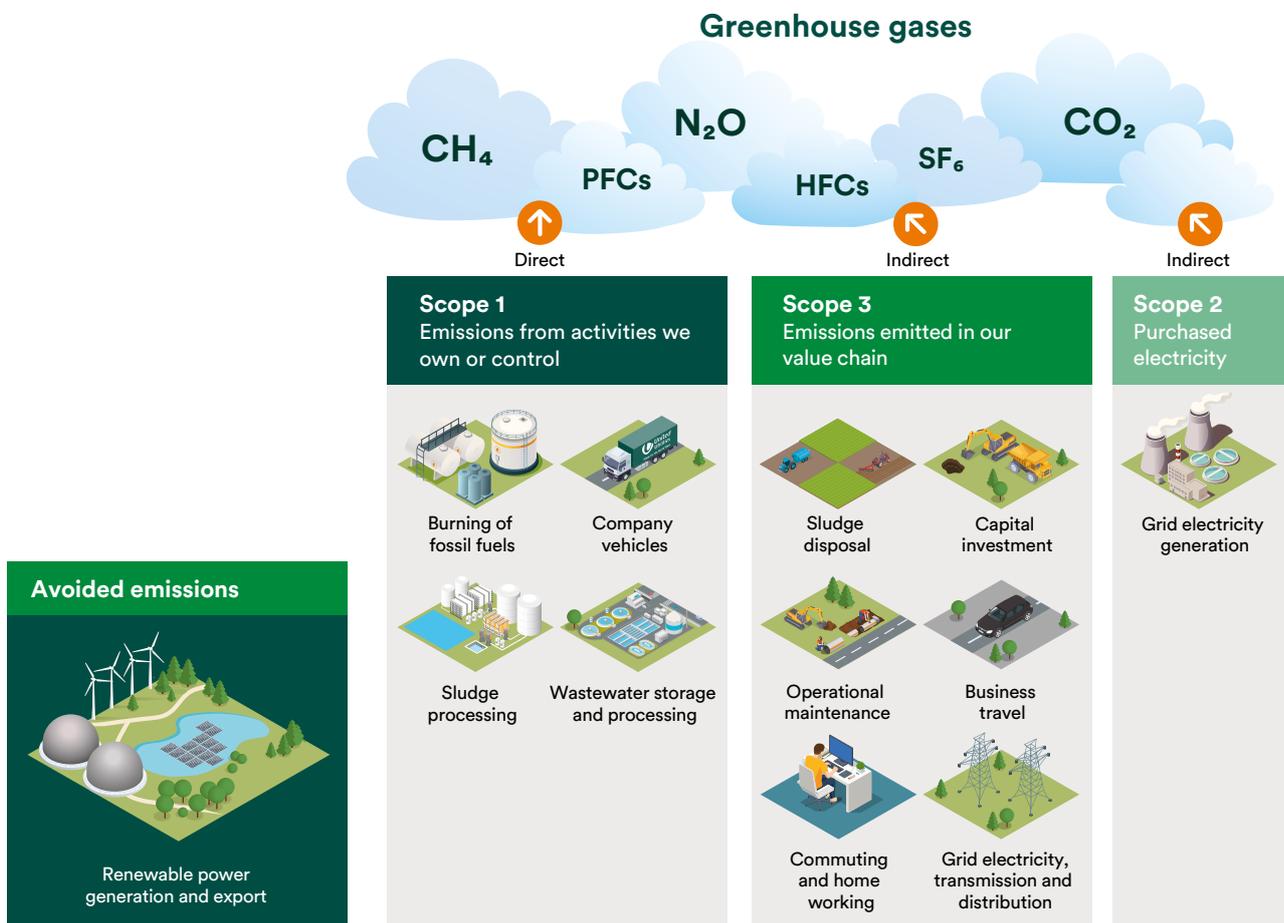
– the 'location-based' method which uses average grid electricity emissions factors and the 'market-based' method which is specific to the actual electricity purchased. Following the GHG protocol recommendation we report results using both methods and use the 'market-based' figures to report our headline emissions.

Greenhouse gas emissions and energy performance in 2020/21

Our investment in renewable energy generation has resulted this year in a further increase to 205.3 GWh, equivalent to a quarter of the electricity we consumed.

Our net scope 1 and 2 greenhouse gas emissions for 2020/21 were 127,173 tCO₂e, 1.5 per cent more than last year. This is due to an increase in fossil fuel use, the volume of wastewater being processed and the subsequent amount of wastewater sludge being produced.

Our scope 3 emissions, covering our new comprehensive inventory, have increased by 4 per cent, due to increased spend in the value chain on goods and services. In the coming years we plan to reduce the reliance on spend-based emissions calculations and will incentivise use of lower emission products, services and suppliers.



Our approach to climate change

Greenhouse gas emissions and energy

The greenhouse gas emissions for the financial year 2020/21 are presented in the table below. Emissions have been estimated using the water industry Carbon Accounting Workbook v15 (CAW v15) which incorporates the UK Government GHG conversion factors for company reporting. 2019/20 data has been restated using CAW v15 to reflect the significant changes from the previous version of the workbook, including improvements to the accounting for biogas and renewable electricity generated and used on site and an increased emission factor for wastewater process emissions (following the recommendation in UK Water Industry Research project report 'Quantifying and reducing direct greenhouse gas emissions from waste and water treatment processes – Phase 1' (20/CL/01/28)).

Scope 1, 2 and 3 emissions have been separated to align with the boundaries of our science-based targets. We now disclose all the scope 3 emissions categories described in the Corporate Value Chain (scope 3) Accounting and Reporting Standard that are deemed relevant to United Utilities. This change in scope 3 emissions reporting boundary has significantly increased our emissions in this area. The increase over the past year is due to variation in supply chain spend on goods and services.

		Current CAW v15 2020/21 tCO ₂ e	SBT baseline		
			CAW v15 2019/20 tCO ₂ e	CAW v13 2020 2019/20 tCO ₂ e	CAW v13 2019 2018/19 tCO ₂ e
Scope 1 Direct emissions					
Direct emissions from burning of fossil fuels		17,371	15,247	17,129	16,809
Process and fugitive emissions from our treatment plants – including refrigerants		98,569	96,186	84,048	88,136
Transport: company-owned or leased vehicles		16,634	15,739	15,739	14,409
Scope 1 Total		132,575	127,172	116,916	119,354
Scope 2 Energy indirect emissions					
Grid electricity purchased – generation	Market-based ⁽¹⁾	8,507	11,789	11,789	18,503
	Location-based	149,030	164,521	164,521	187,171
Scope 2 Total		8,507	11,789	11,789	18,503
SCOPE 1 AND 2 GREENHOUSE GAS EMISSIONS (GROSS)	Market-based	141,082	138,961	128,705	137,857
Avoided emissions from renewable electricity					
Renewable electricity exported		-4,184	-3,979	-3,979	-3,434
Biomethane exported		-9,725	-9,302	-9,302	-8,446
Avoided emissions Total		-13,909	-13,281	-13,281	-11,880
SCOPE 1 AND 2 GREENHOUSE GAS EMISSIONS (NET)	Market-based	127,173	125,680	115,424	125,977
Scope 3 Other indirect emissions					
Purchased goods and services		271,871	213,442	–	–
Capital goods		95,968	128,286	–	–
Fuel and energy-related emissions	Market-based	42,599	45,262	1,007 ⁽²⁾	1,577 ⁽²⁾
Upstream transportation and distribution (sludge transport)		1,119	3,374	–	–
Waste generated in operations (including sludge disposal to land)		26,333	27,936	27,410 ⁽³⁾	26,186 ⁽³⁾
Business travel (public transport, private vehicles and hotel accommodation)		1,226	3,508	2,123 ⁽⁴⁾	2,236 ⁽⁴⁾
Employee commuting and home working		4,108	4,231	–	–
Scope 3 Total	Market-based	443,223	426,039	n/a	n/a
SCOPE 3 GREENHOUSE GAS EMISSIONS (excluding capital goods)	Market-based	347,255	297,753	n/a	n/a
Science based target measure	Market-based	347,255	297,753	n/a	n/a

⁽¹⁾ Market-based figures for electricity purchased on a standard tariff have been calculated using specific emissions factors from published generator fuel mix disclosures, shown in energy use table. Location-based figures use average grid emissions and are shown in blue.

⁽²⁾ Well-to-tank emissions were not included in previous scope 3 inventory. We include well-to-tank emissions for electricity, natural gas and all liquid fuels.

⁽³⁾ Sludge-to-land and grit and screenings only, other business waste was not included in the previous scope 3 inventory.

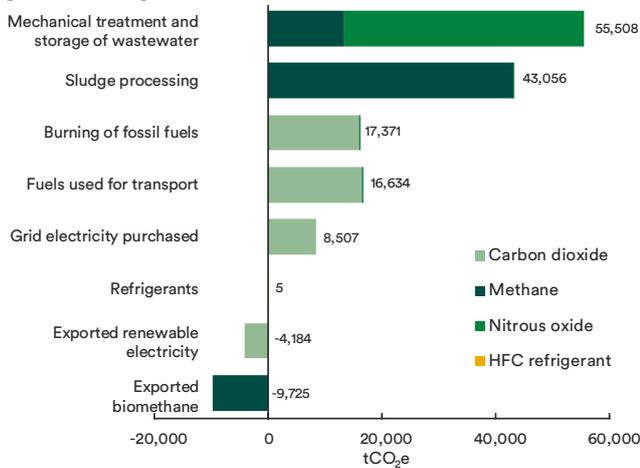
⁽⁴⁾ Hotel accommodation, other travel services and outsourced transport were not included in the previous scope 3 inventory.

United Utilities' greenhouse gas emissions intensity

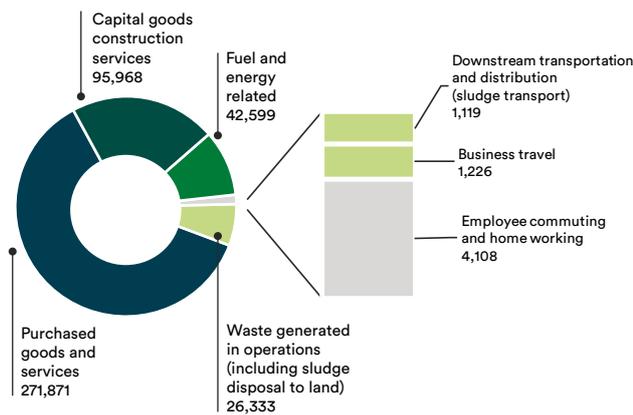
As in previous years we state our emissions as tonnes CO₂e per £million revenue. We include scope 1 and 2 emissions only in this measure. We also report the regulated emissions tonnes CO₂e per megalitre treated (using the location-based method as calculated in the CAW v15), as these are common metrics for our industry. The methodology for this calculation changed from CAW v13 so the figure is not available for 2018/19.

Greenhouse gas emissions intensity measures		2020/21	2019/20	2018/19
Scope 1 and 2 greenhouse gas emissions (gross) per £m revenue	tCO ₂ e	78.0	74.7	75.8
Scope 1 and 2 greenhouse gas emissions (net) per £m revenue	tCO ₂ e	70.3	67.6	69.3
Regulated emissions per megalitre of treated water	kg tCO ₂ e/MI	118.51	131.98	n/a
Regulated emissions per megalitre of sewage treated	kg tCO ₂ e/MI	152.26	168.51	n/a

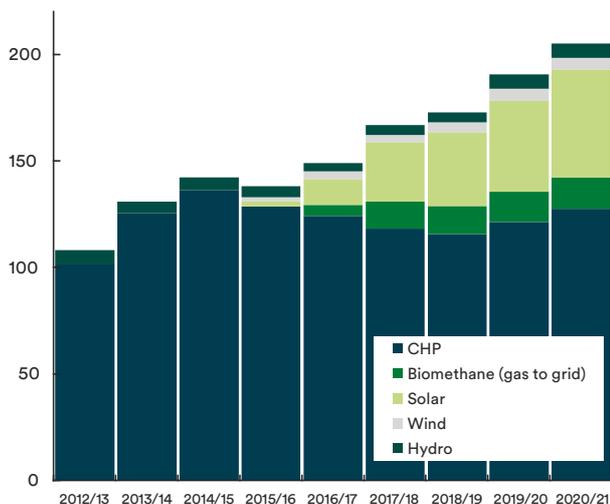
Scope 1 and 2 emissions – breakdown by activity and greenhouse gas



Scope 3 emissions by GHG Protocol category



Renewable energy generated



Energy use, generation and export

	2020/21 GWh	2019/20 GWh	2018/19 GWh
Energy use			
Electricity	807.3	802.3	807.9
Natural gas	40.0	38.3	33.0
Other fuels ⁽¹⁾	104.0	116.3	135.0
Total energy use	951.3	956.9	975.8
Electricity purchased			
Renewable Tariff ⁽²⁾	591.4	602.9	601.5
Supplier Standard Tariff ⁽³⁾	47.8	40.8	59.7
Total electricity purchased	639.2	643.7	661.2
Renewable energy generated			
CHP	127.6	121.5	115.7
Solar	50.7	42.6	34.6
Wind	5.3	5.7	4.8
Hydro	6.9	6.8	4.6
Biomethane ⁽⁴⁾	14.8	14.2	13.2
Total renewable energy generated	205.3	190.8	172.9
Renewable energy exported			
Electricity	22.4	18.1	13.0
Biomethane ⁽⁴⁾	14.8	14.2	13.2
Total renewable energy exported	37.2	32.3	26.2

- (1) Other fuels includes liquid fuel purchased for processing and transport plus business mileage in private vehicles converted to GWh using 2020 UK Government GHG Conversion Factors for Company Reporting.
- (2) Electricity purchased on a renewable tariff had 0 CO₂e/kWh emissions.
- (3) Electricity purchased on our standard tariff had 289 CO₂e/kWh emissions in 2019/20 and 178 CO₂e/kWh emissions in 2020/21.
- (4) Biomethane generated and exported to grid is expressed as an electricity equivalent.

Energy use and emissions

Our energy management strategy aims to achieve an appropriate balance between managing energy consumption, use of renewables and self-generation and being smart about how we operate our assets to get best value while maintaining security of supply. We are a relatively energy-intensive business, consuming 951 GWh in 2020/21. We have increased the amount of energy generated from renewable sources, such as hydro, solar photovoltaics, wind, biomethane and sewage sludge powered combined heat and power (CHP) generators. In 2020/21 we generated the equivalent of 205 GWh of renewable electricity, an increase of 14 GWh on 2019/20. We exported 37.2 GWh back to the national electricity and gas grids, 4.9 GWh more than the previous year. Overall we reduced our electricity purchase by 4.5 GWh.

Energy efficiency action taken

Our energy management programme brings together management processes, asset optimisation and data analytics. We have focused on optimisation of existing operations alongside realising opportunities through our capital programme to improve our use of pumps and how we manage wastewater treatment processes.

A focus area for 2020/21 has been our use of pumps. At Watchgate water treatment works, performance analysis of two key pump types led to the tactical refurbishment of the worst performing pumps and changes to the control philosophy – resulting in better efficiency, saving an estimated £40,500 per year, and a longer asset life.

At Heronbridge water treatment works, analysis of pump operation identified an opportunity to operate two pumps at minimum speed rather than a single pump at maximum speed. Running pumps closer to their best efficiency point reduces energy use and costs and should save approximately £45,000 per year.