Our environmental performance in 2022/23

Progress against our carbon pledges

In 2020 United Utilities made six pledges that set out our initial priorities in the global goal to curb climate change to no more than 1.5°C. Our progress meeting these pledges is below.

Pledge 1

42% reduction of scope 1 & 2 emissions from our 2020 baseline by 2030

Our progress

↓ 3.6% Confident of meeting pledge

We are making good progress towards our pledge and SBT, having made a year-on-year 1.5 per cent reduction from 2021/22. Progress is not expected to be linear while we have emerging challenges that drive increasing emissions.

2019/20: 138,961 tCO_2e Baseline
2022/23: 133,930 tCO_2e 3.6% reduction

Pledge 2

100% renewable electricity by 2021

Our progress

100% Pledge met

Since October 2021 all electricity we use is renewable. Around 25 per cent of our needs are renewably generated directly by us or with partners and the remainder is purchased on a renewable tariff backed with REGO certificates. We are working on plans to increase the energy we can self-supply through new investment in renewable capacity and storage.

Pledge 3

100% green fleet by 2028

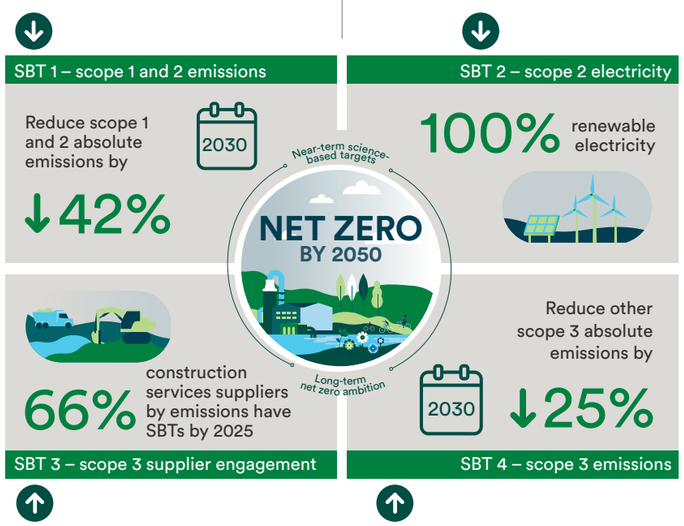
Our progress

33 vehicles Confident of meeting pledge

Our initial focus has been on understanding the travel patterns of our fleet. With this insight we have begun the delivery of the required charging infrastructure, the purchase of an initial 200 electric vehicles and are continuing to explore options for HGVs.

We are also supporting colleagues to switch to electric with a salary sacrifice scheme.

Remuneration: LTP



Pledge 4

1,000 hectares of peatland restoration by 2030

Our progress

585ha Confident of meeting pledge

We have peatland restoration activities across the North West at different stages of maturity including the 2000ha improved through our 2005–15 SCaMP projects. We have 585ha currently under restoration towards meeting this pledge.

Remuneration: LTP

Pledge 6

Set a scope 3 science-based target by 2021

Our progress

SBTs verified July 2021 Pledge met

We have two science-based targets which between them cover all our relevant scope 3 emissions. 29 per cent of our scope 3 emissions are from our construction services partners delivering infrastructure as part of our AMP7 business plan. We are working with our partners to reduce the emissions from building these projects by supporting their own environmental ambitions and encouraging them to set their own science-based targets. 23 per cent of these suppliers (by 2022/23 emissions) have set SBTi verified science-based targets for their organisation and approximately 60 per cent more have either made an SBTi or other public commitment statement to set targets that are science-based.

Remuneration: LTP

Pledge 5

Plant one million trees to create 550 hectares of woodland by 2030

Our progress

37ha Confident of meeting pledge

Weather and tree disease slowed our planting progress but we have two well established nurseries and plans for more and have identified hundreds of sites for new and 'replanted' woodlands.

Remuneration: LTP

TCFD Energy and carbon report

The Companies Act 2006 (Strategic Report and Directors' Reports) Regulations require us to publish this energy and carbon report applying the 2019 UK Government Environmental Reporting Guidelines, including the Streamlined Energy and Carbon Reporting Guidance (SECR).

We use the financial control approach so our energy and carbon accounting is aligned with the consolidated financial statements for United Utilities Group PLC for 1 April 2022 to 31 March 2023. This includes subsidiaries listed in section A8 on page 286.

Our greenhouse gas inventory, including the underlying energy data summarised below, has undergone independent third-party verification by the Achilles Group to the requirements of Toitu CarbonReduce programme.

	2022/23 GWh	2021/22 GWh	2020/21 GWh	2019/20 GWh
Energy use				
Electricity	**818.8**	803.3	807.3	802.3
Natural gas	**33.6**	33.8	40.0	38.3
Stationary fossil fuels (Gas oil, kerosene, diesel)	**59.8**	50.5	36.5	50.8
Stationary low carbon fuels (HVO, LPG)	**<0.1**	<0.1	0	0
Energy for transport (from fuel used or distance travelled)	**71.7**	72.6	67.5	65.5
Total energy used	**983.9**	960.2	951.3	956.9
Electricity purchased				
Grid renewable	**655.7**	611.0	591.4	602.9
Grid standard tariff[1][2]	**<0.1**	22.3	47.8	40.8
Total purchased	**655.7**	633.3	639.2	643.7
Renewable energy generated				
CHP	**123.0**	133.8	127.6	121.5
Solar	**46.4**	47.8	50.7	42.6
Wind	**5.1**	4.8	5.3	5.7
Hydro	**6.9**	7.2	6.9	6.8
Biomethane[3]	**14.5**	15.9	14.8	14.2
Total generated	**195.9**	209.5	205.3	190.8
Renewable energy exported				
Electricity	**18.3**	23.5	22.4	18.1
Biomethane[3]	**14.5**	15.9	14.8	14.2
Total exported	**32.8**	39.4	37.2	32.3

(1) Non half hourly metered supplies were on a standard tariff up to the end of September 2021. The emissions were 289g CO_2e/kWh in 2019/20, 178g CO_2e/kWh in 2020/21 and 188g CO_2e/kWh in 2021/22. Non half hourly supplies moved to a new supplier on a 0g CO_2e/kWh renewable tariff on 1 October 2021.

(2) The residual electricity on a standard tariff is associated with default tariffs for recently adopted sites.

(3) Biomethane generated and exported to grid is expressed as an electricity equivalent.

Energy strategy

Our energy management strategy has four objectives:

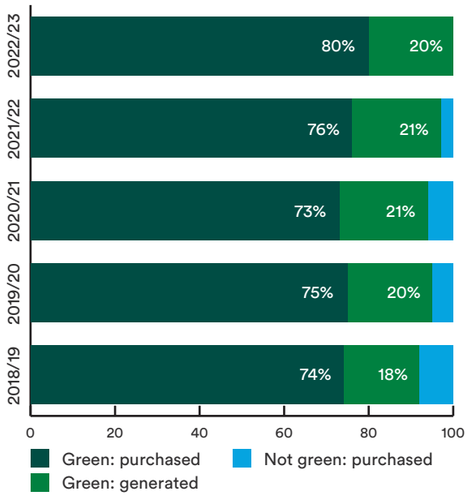
- Efficient use of energy;
- Maximising self-generation and direct supply opportunities;
- Reducing costs (through time of use); and
- Supply resilience to ensure we can deliver our services.

In 2021/22, we set a record for renewable energy generation of 210 GWh through a focus on end-to-end performance of our bioresources operations, which produce electricity, heat and biomethane.

Each year we serve a growing population, driving increased energy use as we strive to achieve environmental performance targets. We seek to mitigate this through our energy management programme and in recent years have maintained consistent energy use in the face of these considerable upward pressures.

100 per cent green electricity transition

Since October 2021 100 per cent of our electricity used has either been renewably generated on site or its purchase backed by REGO (Renewable Energy Guarantee of Origin) certificates.



Energy efficiency actions taken

Our approach to energy efficiency is based on continuous improvement of:

- people – optimising ways of working;
- systems – improving visibility of use and analysis of data systems; and
- technology – targeted investment to remove technological inefficiencies.

Our Energy Management Programme is now firmly established and working well after activities were restricted during COVID-19. The programme carries out site-based workshops and develops ways of working to optimise operations at sites and local areas and is underpinned by e-learning packages and a comprehensive energy performance reporting and analysis capability.

To support reporting and analysis, we have invested over recent years to capture data from our fiscal meters and have installed thousands of sub-meters. The resulting data is used to identify opportunities, assess impacts and benefits of trials and maintain good performance. We are use analytics to identify optimisation interventions, such as pump specification.

We have a dedicated investment programme to implement targeted energy solutions in current operations. Examples invest-to-save projects include pump optimisation, time-of-use actions and improved control of wastewater treatment. We are also working to ensure energy and chemical efficient outcomes from our capital programme.

TCFD Greenhouse gas emissions inventory

Our greenhouse gas inventory (including all the underlying energy data) has undergone independent third party verification by Achilles group and is certified to the requirements of the Toitu CarbonReduce programme, as aligned to the GHG Protocol Corporate Accounting and Reporting Standard (2015) and the international carbon reporting standard ISO 14064, Part 1:2018. The assurance certificate and report can be found at **unitedutilities.com/corporate/responsibility/environment/climate-change**

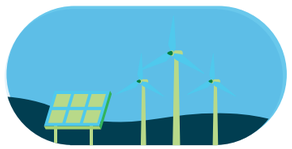
Emissions are calculated by estimating the individual greenhouse gases that result from all United Utilities' activities, converted into a carbon dioxide equivalent (tCO_2e). Emissions have been estimated using the UK water industry Carbon Accounting Workbook. v17 (CAW v17), the 2022 UK Government GHG conversion factors for company reporting and CEDA Global '22 (Comprehensive Environmental Data Archive) factors. We report scope 1, 2 and all relevant scope 3 emissions.

Scope 1

Emissions from activities we own or control, e.g. burning fossil fuels, wastewater and sludge processing.

Scope 2

Emissions from purchased electricity including for use in vehicles.



Scope 3

Emissions from our value chain, e.g. sludge disposal, business travel and products and services.

Scope 1 & 2 greenhouse gas emissions		2022/23 tCO_2e	2021/22 tCO_2e	2020/21 tCO_2e	SBT baseline 2019/20 tCO_2e
Scope 1:					
Direct emissions from burning of fossil fuels		**21,339**	19,207	17,371	15,247
Process and fugitive emissions – including refrigerants		**94,915**	96,020	98,569	96,186
Transport: Company-owned or leased vehicles		**17,665**	16,507	16,634	15,739
Scope 2:					
Purchased electricity – generation	Market-based[1]	**9.3**[5]	4,201	8,507	11,789
	Location-based[2]	***126,813***	*134,492*	*149,030*	*164,521*
Purchased electricity – vehicles	Market-based	**1.7**	0.04	0	0
	Location-based	***1.7***	*0.04*	*0*	*0*
Total scope 1 & 2 emissions (Gross)	Market-based	**133,930**	135,936	141,081	138,961
	Location-based	***260,734***	*266,226*	*281,604*	*291,693*
Emissions reduction from					
Renewable electricity exported[3]		**-1,310**	-4,317	-4,184	-3,979
Biomethane exported[4]	*Location-based*	***-9,360***	*-10,283*	*-9,725*	*-9,302*
Green tariff electricity purchased	*Location-based*	***-125,746***	*-133,197*	*-138,015*	*-164,210*
Total scope 1 & 2 emissions (Net)	Market-based	**132,620**	131,619	136,897	134,982
	Location-based	***124,318***	*118,429*	*129,680*	*114,202*

(1) Market-based figures use emission factors specific to the actual electricity purchased. If electricity is on a standard grid tariff they are calculated using factors from suppliers' published fuel mix disclosures.

(2) Location-based figures use average UK grid emissions to calculate electricity emissions and are shown in *italics*.

(3) Exported electricity emissions use the average UK grid emissions factor for both market and location-based totals.

(4) Exported biomethane was sold with green gas certificates so has zero emissions reduction benefits in market-based accounts.

(5) The residual market-based electricity emissions is associated with default tariffs for recently adopted sites.

Scope 3 greenhouse gas emissions	2022/23 tCO_2e	2021/22 tCO_2e	2020/21 tCO_2e	SBT baseline 2019/20 tCO_2e
Category 1: Purchased goods and services[6]	**250,189**	292,946	271,871	213,442
Category 2: Capital goods[6]	**138,182**	112,498	95,968	128,286
Category 3: Fuel and energy-related emissions[7]	**53,487**	58,948	42,599	45,262
Category 4: Upstream T&D – sludge transport[7]	**35**	103	1,119	3,374
Category 5: Waste generated in ops: including sludge disposal[7]	**27,454**	25,458	26,333	27,936
Category 6: Business travel: public transport, private vehicles and hotel stays[7]	**1,486**	1,138	1,226	3,508
Category 7: Employee commuting and homeworking[8]	**5,336**	4,066	4,108	4,231
Total scope 3	**476,169**	495,158	443,224	426,039
Scope 3 SBT measure (excluding category 2)	**337,987**	382,660	347,256	297,753

(6) For Category 1 and 2 we use CEDA Global '22 (an EEIO (environmentally-extended input-output) inventory) to estimate emissions based on the £ spent by spend category.

(7) Category 3, 4, 5 and 6 use company activity records and UK Government conversion factors.

(8) Category 7 uses EcoAct models to estimate emissions from employee commuting and homeworking based on company FTE figures and home, site, hybrid working patterns.

United Utilities' greenhouse gas emissions intensity

As in previous years, we report the regulated emissions kilograms CO_2 equivalent per megalitre treated (using the location-based method as calculated in the CAW v17), as these are common metrics for our industry.

We also state our scope 1 plus 2 emissions (market-based) as tonnes CO_2 equivalent per £million revenue.

Regulated emissions per megalitre water treated (kg)	
2022/23	101.4
2021/22	106.91
2020/21	118.51

Regulated emissions per megalitre sewage treated (kg)	
2022/23	158.76
2021/22	144.21
2020/21	152.26

Scope 1 and 2 emissions (gross) per £m revenue (tCO_2e)	
2022/23	73.4
2021/22	73.0
2020/21	78.0

Scope 1 and 2 emissions (net) per £m revenue (tCO_2e)	
2022/23	71.4
2021/22	70.7
2020/21	75.7

Scope 1 emissions

Wastewater and sludge processes cause approximately 70 per cent of our scope 1 emissions as the gases released, nitrous oxide (N_2O) and methane (CH_4) have much greater global warming potentials than carbon dioxide (CO_2). Our process emissions are currently estimated as a direct function of the amount of wastewater we treat. We are undertaking research with other UK water companies to better quantify these emissions from measured values and to find ways to reduce or capture those emissions for beneficial use.

Scope 2 emissions

Our market-based scope 2 emissions are negligible as our agreed supply contracts are REGO backed renewable tariffs.

Scope 3 emissions

Most of our scope 3 emissions are in GHG Protocol categories 1 (products and services) and 2 (capital goods); the latter being those provided by our construction services suppliers. We currently calculate category 1 and 2 emissions using records of the amount we have spent. This provides an indicative estimate but is determined by the scale of our investment programme rather than our design choices. We are working internally and with supply chain partners to enhance our data and systems so that we can calculate these emissions based on types and quantities of materials used, thereby showing the full impact of our management decisions.

The next highest category is indirect emissions from fuel and energy use. Electricity and fuels used at our operational sites make up 90 per cent of this quantity, so our clean energy and renewable generation ambitions will reduce these as well as scope 1 emissions.

Fuel and energy 21,339 tCO_2e + 54,487 tCO_2e

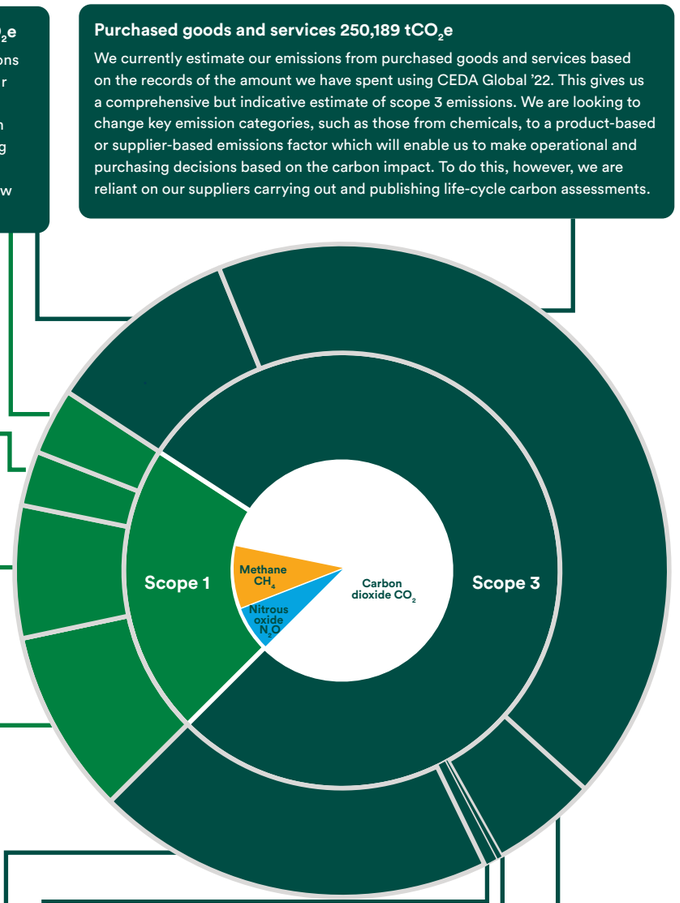
Fuel and energy emissions include scope 1 emissions from burning of fossil fuels such as kerosene in our treatment processes and also scope 3 emissions associated with the losses from well to tank and in transmission and distribution. We are investigating and trialling ways to reduce our use of fossil fuels through both efficiencies and use of alternative low emission fuels.

Purchased goods and services 250,189 tCO_2e

We currently estimate our emissions from purchased goods and services based on the records of the amount we have spent using CEDA Global '22. This gives us a comprehensive but indicative estimate of scope 3 emissions. We are looking to change key emission categories, such as those from chemicals, to a product-based or supplier-based emissions factor which will enable us to make operational and purchasing decisions based on the carbon impact. To do this, however, we are reliant on our suppliers carrying out and publishing life-cycle carbon assessments.

Transport 17,665 tCO_2e

We made a ten-year green fleet commitment in 2018 to convert our fleet to low-carbon fuels. We have begun our investment in electric vehicles and are exploring options to fuel HGVs, including hydrogen and HVO.



Sludge processing 38,886 tCO_2e

Processing of sludge releases methane. Half of our facilities use advanced digestion which captures more of this methane to power and heat our processes or generate electricity. This reduces the methane lost as an emission.

Wastewater processing 55,665 tCO_2e

The biological processes used in wastewater treatment produce N_2O and CH_4 both potent GHGs. Emissions are approximately proportional to the size of the communities producing the wastewater. Recent monitoring studies show that they may be far higher than the UK water industry currently estimate, but further knowledge will enable mitigation.

Capital goods 138,182 tCO_2e

We have a significant capital programme to develop our water and wastewater services infrastructure and this construction will drive substantial emissions.

Employees – commuting and homeworking 5,336 tCO_2e

Estimated based on our colleagues numbers and ways of working (office/ site based or hybrid) using EcoAct's UK models.

Business travel 1,486 tCO_2e

Public transport, private vehicles and hotel stays.

Sludge transport 35 tCO_2e

Contracted sludge transport.

Waste (biosolids to land) 27,454 tCO_2e

97 per cent of these emissions are from disposal of sludge biosolids to agricultural land. Recent UKWIR data shows that the industry estimation method is likely to be significantly overestimating these emissions.