Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

# UWTSD CARBON MANAGEMENT PLAN

# 2025-2030

**A future-ready institution where sustainability is embedded across education, research, operations and daily practice, honouring our responsibility to current and future generations.**

UWTSD Group Environmental Sustainability Strategy

**Mae'r ddogfen hon ar gael yn Gymraeg ac yn Saesneg | This document is available in Welsh and English**

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## 1. Introduction

This Carbon Management Plan 2025–2030 forms a core delivery document under the UWTSD Group Environmental Sustainability Strategy 2025–2030.

Within that Strategy, Carbon Reduction is identified as Strategic Priority 1, with a clear objective:

"Deliver a sustained reduction in the UWTSD Group's carbon footprint through energy efficiency, renewable generation, and low-carbon operations, supporting the transition to Net Zero while maintaining a resilient and high-quality learning environment."

This Management Plan translates that strategic commitment into operational delivery, measurable targets, and phased investment programmes across the Group estate.

The UWTSD Group is committed to:

- Meet UWTSD Group Scope 1 and 2 carbon reduction targets
- Reduce energy consumption across UWTSD Group Estates
- Increase kWh of energy from Group-owned renewable sources
- To measure and minimise the environmental impact of our digital operations

LLEIHAU CARBON
CARBON REDUCTION

This Plan therefore operates within:

- The Environmental Sustainability Strategy 2025–2030
- The UWTSD Strategic Plan 2025–2030
- The Well-being of Future Generations (Wales) Act 2015
- Welsh Government Public Sector Decarbonisation Route Map

By 2030, the ambition is not only to reduce carbon emissions, but to ensure that low-carbon decision-making has become routine, culturally embedded, and self-regulating across UWTSD.

The Carbon Management plan is centred around the UN Sustainable Development Goals and particularly:

## 2. Alignment with UWTSD Group Environmental Sustainability Strategy 2025-2030

This Carbon Management Plan supports the Sustainability Vision through the three institutional pilers by delivering Carbon Reduction Through Our People, Our Purpose and Our Place:

**OUR PEOPLE:** Through carbon literacy training, behavioural change programmes, and engagement initiatives, we will build a carbon-aware community where every staff member and student understands their role in reducing emissions.

**OUR PURPOSE:** By embedding carbon awareness into curriculum, research, and applied learning projects, we support the development of green skills and empower learners to contribute to a low-carbon economy.

**OUR PLACE:** Our estate will serve as a living laboratory for decarbonisation, demonstrating best practice in energy efficiency, renewable generation, and heat decarbonisation.

Delivery of Strategic Priority 1 (Carbon Reduction) requires coordinated action across multiple Strategic Priorities within the Environmental Sustainability Strategy:

- Strategic Priority 1 – Carbon Reduction
- Strategic Priority 3 – Sustainable Estate
- Strategic Priority 5 – Leadership, Engagement and Culture
- Strategic Priority 6 – Monitoring and Reporting

Carbon reduction is therefore not an isolated technical exercise, but a cross-institutional transformation programme integrating estate investment, behaviour change, digital optimisation, and governance oversight.

**Measures of Success**

The UWTSD Group Environmental Sustainability Strategy 2025-2030 sets out Measures of success linked to this plan including:

- **SP1.1 -** Percentage reduction in Scope 1 and 2 carbon emissions relative to the 2013/14 baseline
- **SP1.2 -** Percentage reduction in energy consumption per kWh/m² of active estate, relative to the 2024/25 baseline
- **SP 1.3 -** Real term increase, year on year, in kWh of energy from Group-owned renewable sources commencing from the 2024/25 baseline
- **SP 1.4 -** Reduction in carbon emissions from onsite and offsite digital operations

This Management Plan will provide a delivery pathway for these measures.

## 3. Building on past success

With the move to this Carbon Management Plan 2025-2030 successes of previous plans should be acknowledged. Notable achievements form the "Net Zero Carbon Action Plan 2022-2024" were:

- Construction of the Innovation Matrix to BREEAM 'Excellent' standard
- Investing in on-site generation which saw the addition of 1,822 Solar PV panels across the estate with a forecast annual generation of 574,376kWh and CO2 saving of 146.8 tonne per year from 2025 onwards
- Electrification of the University Fleet which has seen over 65% of university fleet vehicles move to EV with a saving of 58,987 $kgCO_2e$ through EV charging in the 23-24 year
- Other Estate energy efficiency measures including window, lighting and insulation upgrades to improve building fabric
- 2023/2024 academic year scope 1 and 2 emissions were 3,517$tCO^2e$ representing a 54% reduction in emissions from the 2013/14 baseline.

## 4. Reaching our Scope 1 and 2 Targets

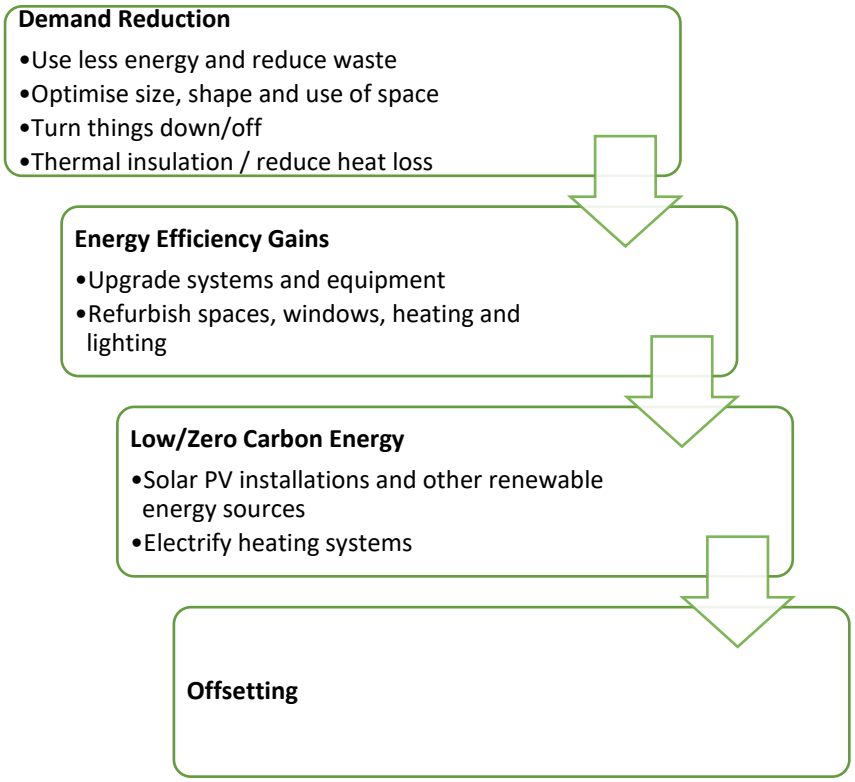
- Scope 1 emissions - are from operations that are owned or controlled by UWTSD
- Scope 2 emissions - are from the generation of purchased or acquired electricity, steam, heating, or cooling generated by a third party and consumed by UWTSD.

For the purpose of tracking the carbon emissions of UWTSD the 2013/14 academic year was adopted as the baseline for Scope 1 & 2 emissions, which was 7,757 $tCO^2e$. This baseline has been used for setting reduction targets within this plan.

UWTSD is committed to the following targets in reducing scope 1 and 2 emissions during the term of this plan:

50% reduction to 3,878 $tCO^2e$ by the end of the 2024/25 academic year – **Achieved in 23/24**
70% reduction to 2,327 $tCO^2e$ by 2027/28 academic year

There is no single intervention that will deliver our ambition. To achieve our objectives the University will need a blend of interventions that will need to be delivered over the period of this Management Plan involving the whole University body and will follow the hierarchy of decarbonisation.




### Electricity Grid Carbon Intensity

The University's carbon footprint is dependent on the amount of energy it uses on site supplied from the National Grid. The current carbon intensity of grid electricity is 207gms $CO^2e$ per kWh. The Government estimates this will reduce down to 66gms $CO^2e$ per kWh by 2035. This would see a reduction of 927 $tCO^2e$ for UWTSD based on current grid electricity use.

## 4.1 Areas of Focus

UWTSD will pursue 5 areas of focus for the reduction of scope 1 and 2 emissions over the course of this management plan. These will be:

- **Efficient monitoring and smarter buildings**

Supported by the Universities Digital Enablement for Sustainability Guidance, Upgrade sub-metering and utilise advanced analytics, including AI-enabled monitoring and utilisation sensors, to identify energy waste, optimise building performance, and ensure interventions are data-driven and effective.

- **Energy efficiency improvements to new and refurbished buildings**

Implement a sustainable refurbishment standard across all projects, supported by improved monitoring, with the aim of achieving a minimum DEC rating of B across the estate by the end of this plan period.

- **Increase in on-site energy generation and storage**

Expand on-site renewable energy generation, particularly solar PV, to meet increasing electricity demand resulting from heat decarbonisation and reduce reliance on grid electricity.

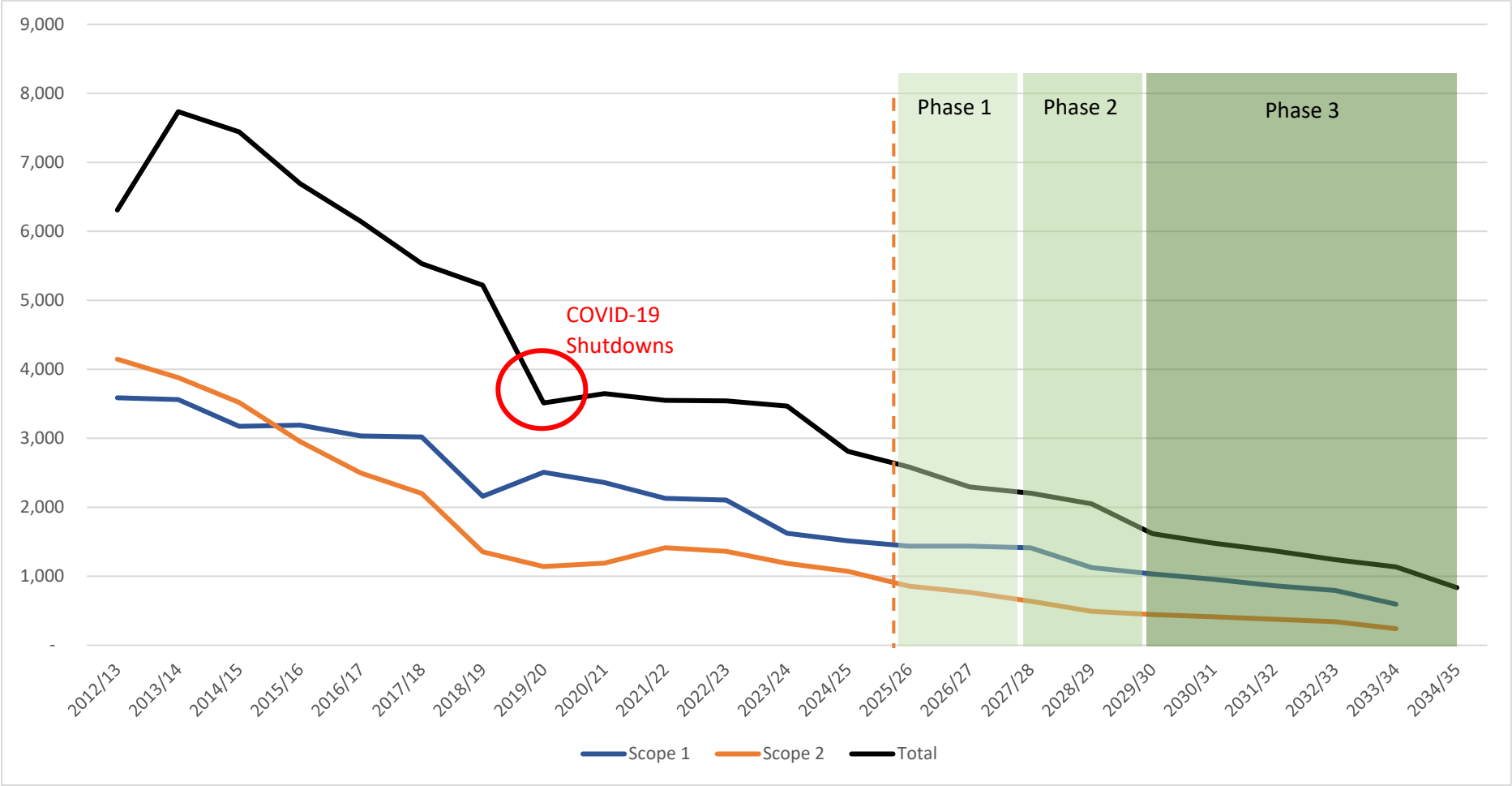
- **Heat decarbonisation**

Transition away from natural gas heating through the deployment of low-carbon heating technologies and efficiency improvements, addressing the largest contributor to Scope 1 and 2 emissions.

- **Estate rationalisation**

Optimise the estate portfolio by prioritising the retention and improvement of energy-efficient buildings, reducing operational emissions and focusing investment on strategically important assets.

## 4.2 Scope 1&2 Carbon Emissions Forecast



## 5. Estate Decarbonisation

Strategic Priority 3 within the UWTSD Group Environmental Sustainability Strategy 2025-2030 is Sustainable Estate with the objective:

> Decarbonise and enhance the physical estate through investment in low-carbon infrastructure, biodiversity, and efficient resource management—creating a resilient and sustainable physical environment that puts learners first.

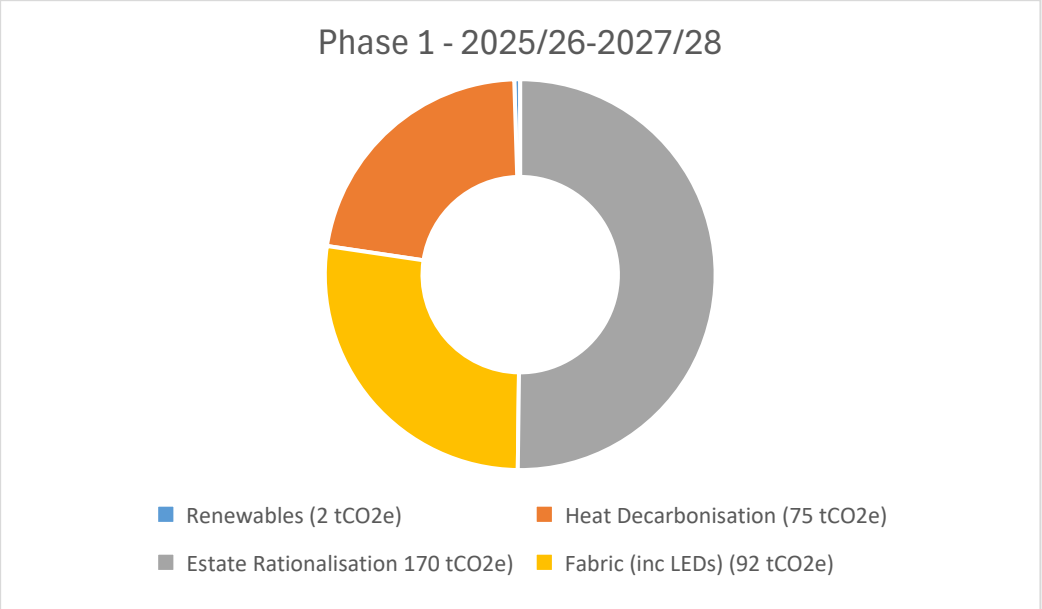
In 2025 UWTSD undertook RIBA Stage 2 building decarbonisation studies on large parts of its estate looking at potential projects and mapping the impact these would have. Interventions scoped included, rooftop Solar PV, Heat Decarbonisation plans, LED lighting and other efficiency upgrades. This has then been used to develop a list of viable projects and a road map split into 3 phases.

The listed projects in each phase can be categorised by the following intervention category.

| Intervention Category | Estimated total carbon saving ($tCO^2e$) | | |
|---|---|---|---|
| | Phase 1<br>25/26 - 27/28 | Phase 2<br>28/29 - 29/30 | Phase 3<br>30/31 - 34/35 |
| Heat Decarbonisation | 74.88 | 159.83 | 467.30 |
| Renewables | 1.65 | 46.82 | 65.35 |
| Fabric Improvement (Inc LED Lighting) | 92 | 11.29 | 22.87 |
| Estate Rationalisation | 169.55 | 188 | 0 |
| Total Reduction | 337.77 | 406.07 | 555.51 |

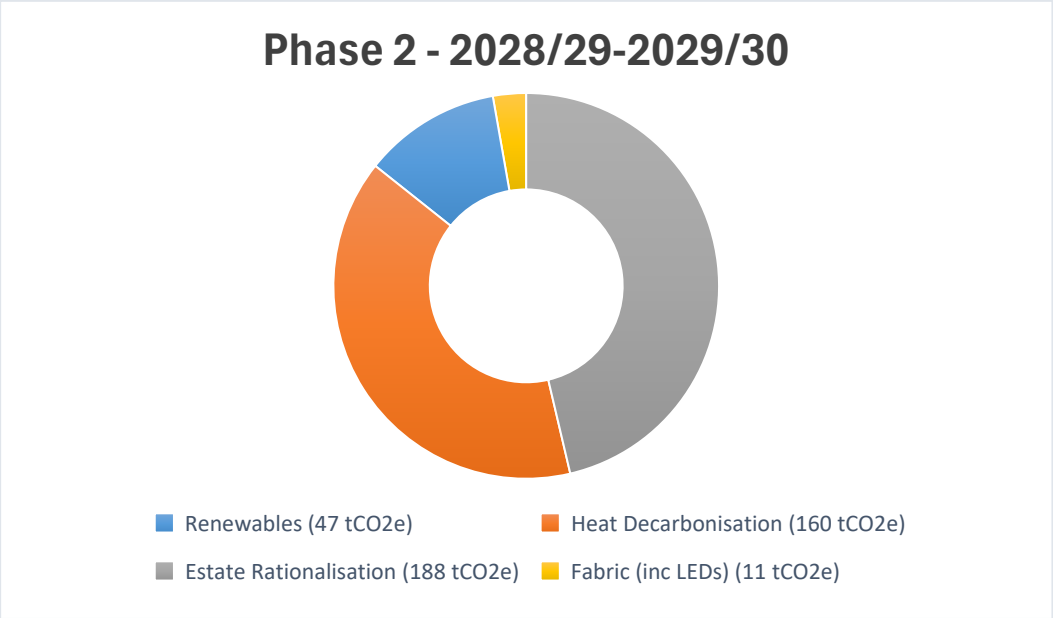
## 5.1 Phase 1 Projects

1. Carmarthen – Llwyfan
   - Solar PV and battery System installed in 2025
   - Delivery planned for ASHP heating system in 2026
2. Carmarthen – T&L
   - Solar PV system installed 2025
   - Delivery planned for ASHP heating system in 2026
3. Swansea – Dynefor
   - Delivery planned for ASHP heating system to Ceramics building 2026
   - Delivery planned for LED lighting upgrade to whole site 2026/27
4. Swansea – Technium 1
   - Delivery of additional Solar PV 2026/27
   - Delivery planned for ASHP heating system in 2026
   - Delivery planned for LED lighting upgrade to whole site 2026/27
5. Swansea – Technium 2
   - Delivery planned for ASHP heating system in 2026
   - Delivery planned for LED lighting upgrade to whole site 2026/27
6. Swansea – Alex Building
   - Delivery planned for LED lighting upgrade to whole site 2027/28
7. Planned Estate Rationalisation



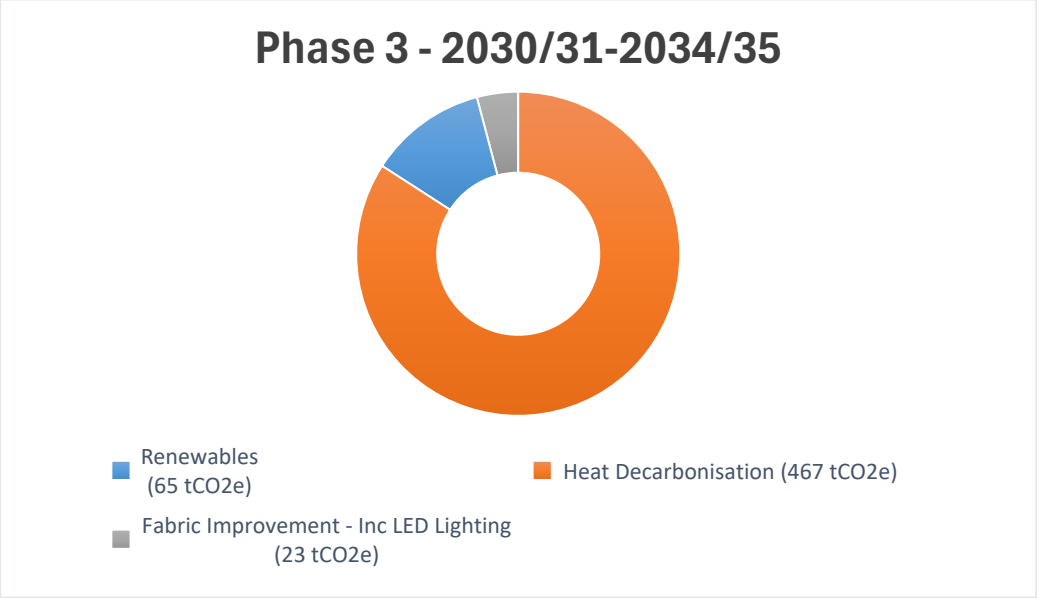
## 5.2 Phase 2 Projects

8. Aberystwyth – CAWCS
   - Connection to NLW Ground Source Heat Pump scheme.
9. Carmarthen – Library and ABN Halls of Residence
   - Installation of Solar PV
   - Installation of ASHP heating
   - LED lighting Projects
10. Swansea – Dynefor
    - Installation of ASHP heating
11. Swansea – SA1 Waterfront
    - Installation Renewable Energy System
12. Estate Rationalisation



### 5.3 Phase 3 projects

Additional projects across Cardiff, Swansea and Carmarthen including but not limited to Solar PV installations, ASHPs and other heat decarbonisation, Building Fabric and LED lighting upgrades.



## 5.4 Scope 1 and 2 Carbon Emissions Forward Plan

Carbon reductions from these interventions have been mapped into the below table including the forecast grid carbon intensity.

| | tCO2e | | | | | |
|---|---|---|---|---|---|---|
| **Phase** | **Year** | **Type** | **Scope 1** | **Scope 2** | **Total** | **% Reduction** |
| 2012/13 | 2012/13 | Actual | 2,830 | 3,479 | 6,309 | |
| 2013/14 | 2013/14 | Actual | 3,588 | 4,147 | 7,735 | -23% |
| 2014/15 | 2014/15 | Actual | 3,562 | 3,880 | 7,443 | 4% |
| 2015/16 | 2015/16 | Actual | 3,174 | 3,519 | 6,693 | 10% |
| 2016/17 | 2016/17 | Actual | 3,190 | 2,954 | 6,144 | 8% |
| 2017/18 | 2017/18 | Actual | 3,035 | 2,497 | 5,531 | 10% |
| 2018/19 | 2018/19 | Actual | 3,020 | 2,200 | 5,220 | 6% |
| 2019/20 | 2019/20 | Actual | 2,159 | 1,354 | 3,513 | 33% |
| 2020/21 | 2020/21 | Actual | 2,507 | 1,141 | 3,648 | -4% |
| 2021/22 | 2021/22 | Actual | 2,360 | 1,191 | 3,551 | 3% |
| 2022/23 | 2022/23 | Actual | 2,129 | 1,414 | 3,543 | 0% |
| 2023/24 | 2023/24 | Actual | 2,105 | 1,362 | 3,467 | 2% |
| Phase 1 | 2024/25 | Target | 1,623 | 1,187 | 2,811 | 19% |
| Phase 1 | 2025/26 | Target | 1,513 | 1,072 | 2,585 | 8% |
| Phase 1 | 2026/27 | Target | 1,438 | 857 | 2,295 | 11% |
| Phase 1 | 2027/28 | Target | 1,438 | 767 | 2,205 | 4% |
| Phase 2 | 2028/29 | Target | 1,413 | 639 | 2,051 | 7% |
| Phase 2 | 2029/30 | Target | 1,126 | 492 | 1,618 | 21% |
| Phase 3 | 2030/31 | Target | 1,035 | 446 | 1,481 | 8% |
| Phase 3 | 2031/32 | Target | 956 | 413 | 1,370 | 7% |
| Phase 3 | 2032/33 | Target | 863 | 378 | 1,241 | 9% |
| Phase 3 | 2033/34 | Target | 795 | 342 | 1,137 | 8% |
| Phase 3 | 2034/35 | Target | 595 | 240 | 836 | 26% |
| **Total** | | | | | **836** | **tCO2e** |
| **Total % Reduction** | | | | | **76%** | |

## 6. Managing our Scope 3 emissions

Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting organisations. Accurately measuring Scope 3 emissions remains a challenge but this area is fast developing. The University will implement a consistent and robust system for quantifying, refining and reporting scope 3 emissions.

Recognising that Scope 3 emissions represent 76% of total emissions, UWTSD commits to:

- Developing a detailed Scope 3 Reduction Roadmap by 2030
- Setting a quantified procurement emissions reduction target
- Transitioning from spend-based reporting to supplier-specific carbon data.

Using a Standard Industrial Coding (SIC) calculation model, the total Scope 3 emissions for the 23/24 academic year were 10,909 tCO2e and accounted for 76% of the University's total overall emissions. It is understood though, as measuring of scope 3 emissions improves and evolves there may be an increase in these emissions during the period of this management plan.

6 areas of focus for the reduction of scope 3 emissions over the course of this management plan will be:

### 6.1. Sustainable transport and travel

Reduce transport-related emissions by prioritising active travel, low-emission fleet transition, digital-first meetings, and strengthened travel planning policies, while engaging staff, students, and partners to minimise unnecessary journeys.

- 2023/24 Baseline: 1,393 $tCO^2e$
- 2030/31 Target: 15% reduction to 1,184 $tCO^2e$

The UWTSD Sustainable Travel Plan details the actions to be taken to continue to reduce these emissions.

### 6.2. Circular resource and waste management

Apply circular economy principles to reduce waste generation, increase reuse and recycling rates, and eliminate waste to landfill, working with suppliers and contractors to minimise lifecycle emissions.

- 2023/24 Baseline: 2.6 $tCO^2e$
- 2030/31 Target: 30% reduction to 1.82 $tCO^2e$

The UWTSD Waste Management Plan details the actions to be taken to continue to reduce these emissions.

### 6.3. Water supply; sewerage, waste management and remediation activities

Reduce the water consumption across the estate, using metering to identify and target waste events early and avoid excess consumption.

- 2023/24 Baseline: 331 $tCO^2e$
- 2030/31 Target: 25% reduction to 248 $tCO^2e$

The UWTSD Water Management Plan details the actions to be taken to continue to reduce these emissions.

### 6.4. Accommodation and food services activities

Decarbonisation of the residential estate through building improvement and education of students

staying in halls of residence. The catering department will also continue to reduce food related emissions through their procurement and service .

- 2023/24 Baseline: 238 $tCO^2e$
- 2030/31 Target: 20% reduction to 198 $tCO^2e$

The UWTSD Sustainable Food Plan details the actions to be taken to continue to reduce the emissions from Food Services and the Sustainable Construction and Refurbishment Plan for accommodation related emissions.

### 6.5. Embodied Carbon from Capital Projects

All construction and major refurbishment projects will be required to conduct whole life carbon assessments and ensure technological solutions are implemented to reduce operational carbon emissions. The details of this are presented in the Sustainable Construction and Refurbishment Plan.

### 6.6. Digital Carbon Management

The University will begin to assess Scope 3 emissions associated with digital operations, including:

- Data centres
- Cloud hosting
- IT equipment lifecycle
- Digital procurement

During the 2025-2030 period, the University will develop its understanding of its emissions linked to digital operations and establish a Digital Carbon Management Plan 2030-2035. This will define scope, measurement approach, ownership and further reduction pathways for this Scope 3 emission category.

## 7. Financing

It is understood that decarbonising UWTSDs operations will require financial investment at a time when the UK University Sector is struggling and energy markets are particularly volatile. It is therefore essential that decarbonisation plans form part of the routine annual maintenance plans alongside specific additional investment.

Investment mechanisms include:

- Welsh Government funding streams
- Grant funding and capital partnerships
- Internal capital planning cycles

All major capital decisions will be assessed against:

- Carbon reduction impact
- Lifecycle cost
- Climate resilience
- Contribution to Net Zero pathway

A costed decarbonisation roadmap will be developed to 2030 and beyond, ensuring financial planning aligns with institutional carbon targets identifying:

- Capital cost per intervention
- Carbon savings ($tCO_2e$)
- Cost per tonne saved (£/$tCO_2e$)
- Funding source

## 8. SMART targets

In order to proactively manage all SMART (Specific, Measurable, Achievable, Relevant and Time-bound) targets for Sustainability related Management Plans the targets relating to this plan are held in the "UWTSD Sustainability SMART targets" document.

This document contains a responsible person, stakeholders, reporting mechanism and actions for each year of this plan. These are aligned to this plan and the Welsh Government Public Sector Decarbonisation targets. They represent a mix of practical infrastructure changes, behavioural shifts and engagement strategies to ensure a systematic approach to reducing carbon emissions.

Targets can be found here:
https://uowtsd.sharepoint.com/teams/Sustainability_7fuztl_GRP/Shared%20Documents/General/Policy%20&%20Strategy/Strategy%202025-2030/UWTSD_SMART_Targets.xlsx

## 9. Monitoring and Reporting

Monitoring of carbon performance will operate within the governance framework established under 'Strategic Priority 6: Monitoring and Reporting' of the UWTSD Group Environmental Sustainability Strategy.

Oversight will follow the Group's three-line assurance model:

**Operational Oversight**

- Head of Sustainability and Environment
- Director of Estates
- Sustainability Steering Group (SSG)
- Integration into Sustainability Action Plan
- Termly KPI reporting

**Governance Oversight**

- Resources and Performance Committee
- University Council

**External Assurance**

- Green Dragon Level 5 Environmental Management System
- Annual external audit

Progress will be:

- Reported annually through the UWTSD Sustainability Report
- Integrated into institutional KPI dashboards
- Aligned where appropriate with recognised frameworks such as SBTi

## 10. Links to other policies and procedures

A series of Sustainability management plans have been developed for the 2025-2030 period:

- Group Environmental Sustainability Strategy 25-30
- Sustainability Engagement Action Plan 25-30
- Sustainable Construction and Refurbishment Plan 25-30
- Energy Management Plan 25-30
- Sustainable Travel Plan 25-30
- Waste Management Plan 25-30
- Water Management Plan 25-30
- Sustainable Food Plan 25-30
- Biodiversity Action Plan 25-30

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